



Instruction Manual

Hako-Citymaster 1250 (1433.21/.22/.31/.32)

Introduction

Preface

Dear Customer,

We are certain that the excellent qualities of the Hako-Citymaster 1250 will justify the faith you have shown in us through your purchase.

Your safety, and that of others, basically lies in your ability to control and operate the vehicle. Before using the vehicle for the first time, read this translation of the original manual thoroughly, act according to the information contained and keep it in a safe place for future reference or subsequent owners. Please read the Chapter "Safety Information" prior to starting the vehicle to ensure it is operated and used safely.

The operating manual contains all the most important information regarding operation, maintenance and service. Throughout this manual, texts which concern safety are indicated by the corresponding danger pictogram. Should you have any questions in respect of the vehicle or operating instruction manual, your authorized Hako dealer is available to provide help at any time.

We explicitly point out that no legal claims may be asserted based on the information contained in this manual. Please pay attention that only original spare parts are used for any necessary maintenance and repair work. Only original spare parts can guarantee long, reliable equipment operation. We reserve the right to make technical improvements.

Valid from: March 2012

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Intended use

The Hako-Citymaster 1250 is a Multi-purpose machine intended for commercial and municipal all-year deployment. This includes e.g. sweeping, lawn mowing, deployment with a snow plough and a sand and salt spreader. The scrubber assembly allows cleaning of city centers, parking garages, underground parking areas or marketplaces. Any use of the vehicle beyond this scope is considered to be unintended use. The manufacturer is not deemed liable for damage resulting from unintended use; the risk lies solely with the operator. The intended use also includes observing the operating and maintenance conditions stipulated by the manufacturer.

The machine may only be operated, serviced or repaired by personnel who are familiar with the work involved and are aware of the risks.

The machine and its attachment devices correspond to the usual health and safety requirements in the EC Directives (see Declaration of Conformity) on account of their design and construction as well as the type distributed by us. In the event of an unauthorized modifica-

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tion to the machine, the Certificate of EC Conformity the Declarations will become void. The manufacturer is not deemed liable for any damage resulting from unauthorized modifications to the machine.

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Notes on warranty

The terms defined in the purchase agreement apply. Claims for compensation in relation to damage are excluded from the terms of the warranty when the damage is the result of the failure to observe rules concerning servicing and maintenance. Maintenance work must be carried out by authorized Hako service centers and confirmed in the "Maintenance Report", which serves as a warranty logbook.

The following are excluded from the terms of warranty: wear and tear through overuse, defective fuses, improper handling and use and unauthorized modifications. Claims under the terms of the warranty are also annulled when damage occurs to the vehicle resulting from the use of parts or accesso-

ries not explicitly approved of by us or from failure to observe maintenance rules.

Acceptance of the machine

Inspect the machine immediately on delivery for signs of transport damage. It will be replaced if the damage is immediately confirmed by the haulage contractor and the damage report is sent to our authorized sales partner together with the consignment note.

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Conditions for approval

The Hako-Citymaster 1250 is a multi-purpose machine (tractor for use in agriculture or forestry) in terms of the EC Directive 2003/37/EC. The manufacturer provides an EC Certificate of Conformity and an EC Declaration of Conformity. Based on the EC Certificate of Conformity, the local licensing authorities will produce the registration certificate part 2 (vehicle registration) and part 1 (vehicle registration). For use on public roads, paths and areas the Hako-Citymaster 1250 has to be licensed and display an official license plate. In accordance with the StVZO, the vehicle must carry a first-aid kit, warning triangle and the vehicle type approval when used on public roads, paths and pedestrian precincts. The Hako-Citymaster 1250 is subject to regular general inspection according to § 29 StVZO (every 24 months)



If any modifications or additions are made to the Hako-Citymaster 1250, which affect the contents and are not contained in the registration certificate, it will become void. In

consequence the insurance cover and the vehicle tax will also become void. To acquire a new registration certificate, the vehicle must be presented to an officially accepted expert to produce a new report. The modifications have to be included in the registration certificate by the registration authorities. In the EC Declaration of Conformity the manufacturer declares that the attachments approved by Hako adhere to the rulings in the EC Directive 2006/42/EC.

Introduction

Driving license

According to the driving license law the Hako-Citymaster 1250 may be driven as a multi-purpose machine by drivers with the following classes of driving license:

- Class B and BE: Vehicle up to 3.5 t and trailer up to 750 kg (permitted total weight) or trailer up to the dead weight of the tractive unit as long as the permitted maximum total weight of 3.5 t for the tractor/trailer combination is adhered to.
- Class C and C1: Vehicle above 3.5 t with trailer up to 750 kg
- Class CE: Vehicle above 3.5 t with trailer above 3.5 t (but only up to the total weight of the tractor-trailer combination approved by the manufacturer)



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Safety Information

1 Safety Information

1.1 Safety and warning symbols

All sections related to personal safety, safety of the equipment and environmental protection are assigned the following symbols throughout the operating manual:

Symbol	Risks to ...	Definition
Safety information 	persons or property	Safety information on preventing hazardous situations caused by failure to follow instructions or prescribed working procedures accurately or at all.
Note 	the machine	Important information on handling the equipment in order to maintain its functionality.
Ecological hazard 	the environment	Ecological hazard through the use of substances which represent a potential hazard to health and to the environment.

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1.2 General information

- In addition to the information in this operating manual, the general, legally applicable industrial safety and accident prevention regulations must also be observed.
- Before starting up the vehicle for the first time, read the operating manual supplied with it thoroughly as well as any separate manuals provided with additional or attachment devices, and observe all the information when working.
- The machine may only be operated, serviced and repaired by personnel trained by Hako technical experts.
- Particular attention should be paid to the information regarding safety. Technical expertise is the key to preventing errors when operating the equipment and for ensuring trouble-free operation.
- The operating manual must always be kept at the operating location of the vehicle and, therefore should be kept in a safe place on the vehicle.
- If the machine is sold or leased, this documentation as well as the registration certificates are to be handed to the new owner/operator. The

transfer should be confirmed!

- The warning labels attached to the equipment provide important information concerning safe operation. Labels which are illegible or missing must be replaced.
- Registration certificate 1 (vehicle license) and the operating manual have to be available at all times at the location where the machine is operated and should therefore be carefully stored near the driver's seat.
- Original spare parts must be used to ensure safety.
- The Hako-Citymaster 1250 is equipped with a safety cabin (ROPS = Roll Over Protection Structure) according to 86/298/EEC

1.3 Operating information

- Check the operational safety of the vehicle each time before starting it up! Clear any faults immediately!
- During operation a first aid kit and an advance warning triangle has to be carried.
- Before starting work, the operator must be fully familiar with all features, operating and control ele-

ments as well as their functions.

Once the vehicle is actually in operation it is too late to do this !

- The effectiveness of steering and brakes has to be checked daily at a safe location before starting work.
- Always wear heavy duty, non-slip footwear when working with the vehicle.
- The machine may only be driven on those areas which have been approved by the contractor or the person appointed by him for the deployment of this machine.
- Do not use tires for climbing on or off - danger of slipping!
- When using the vehicle, it is essential to pay attention to third parties, especially children.
- The vehicle is not suitable for clearing up hazardous, inflammable or explosive fluids, dust or substances.
- Remove the ignition key to prevent unauthorized use of the vehicle.
- The condition and operational safety of the vehicle and working equipment have to be checked before starting work. The vehicle must not be used if it is not in a proper working condition.

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- Before starting up the vehicle, adjust the driver's seat and mirrors so that you have a perfect view of the front and rear path of travel and the working area.
- For safety reasons, the driver's seat is equipped with a seat contact switch. The functioning of this seat contact switch must not be bypassed.
- The vehicle must only be started, put into motion and stopped from the seat.
- It is forbidden to use the vehicle in potentially explosive atmospheres.
- Always switch off all the drives before starting up the engine.
- Do not let the engine run in enclosed spaces. Risk of poisoning!
- It is forbidden to transport people on the vehicle!
- It is forbidden to move into the hazard areas of the machine (e.g. near the articulated joint, the attachment devices, below the raised dirt hopper, tractor/trailer combination).
- The driving speed must always be adapted to the ambient conditions and load status. When driving up, down or across slopes, avoid turning corners suddenly or in jerks. There is a risk of tipping when in an inclined position!
- The permitted gross vehicle weight and the permitted gross weight of the multi-purpose machine/trailer combination as well as the permitted axle loads must not be exceeded under any circumstances. Check the fill level of the dirt hopper at frequent intervals.
- If the view is restricted, particularly when driving the machine backwards, a banksman is needed to signal to the driver. The banksman has to be within the driver's view at all times.
- When unblocking a jam in the suction hose or connecting the (optional) hand suction hose, the engine has to be switched off and the suction turbine has to be allowed to come to a standstill.
- The dirt hopper may only be raised in the vicinity of the container. Never sweep when the dirt hopper is in an elevated position.
- For tilting the dirt hopper, the Hako-Citymaster 1250 has to be placed onto a sufficiently load-supporting, horizontal surface! Driving is not allowed when the dirt hopper is tilted! Before lowering, ensure that there is nobody within the hazard zone!
- Note that the steering behavior of an articulated vehicle is considerably different to that of an ordinary car. Abrupt steering movements at a high speed or an excessive speed in a bend can cause the Hako-Citymaster 1250 to overturn.
- Do not switch off the engine when it is running at a high rotational speed; this may only be done in the event of malfunctioning.
- Before leaving the driver's seat, apply the parking brake.
- Do not turn the engine off while leaving the attachment devices switched on.
- One of the two side doors is used as an emergency exit.
- When driving the machine on public roads, the working lights are to be switched off and the circular brushes and the vacuum nozzle are to be fully lifted into the transport position.
- The maximum allowed towing speed is 2 km/h and the maximum allowed towing time is 30 minutes. Towing

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distance = 1 km.

- Before leaving the driver's seat, apply the parking brake.
- The machine is only suitable for deployment on level surfaces with a maximum slope of 12% (Total weight for tractor/trailer combination).

1.4 Maintenance information

- Operating personnel must complete the necessary daily and weekly maintenance work. All other maintenance work must be completed at your nearest Hako service center.
- The maintenance work and maintenance intervals prescribed in the operating manual must be adhered to.
- Before cleaning and maintenance work, switch the engine off and allow to cool down. Danger of burns from hot surfaces. The parking brake is to be applied, the ignition key is to be removed and the vehicle is to be secured against accidental starting up and unintended movement.
- Suitable tools must be used for cleaning and maintenance work.
- As required by the accident prevention rules, the vehicle has to be inspected by a recognized technical

expert at reasonable intervals (we recommend at least annually), and also following any modification or repair, in order to check that it is operationally safe.

- Replacement parts have to comply with the minimum technical requirements stipulated by the manufacturer. This is ensured by the use of original spare parts.
- During maintenance work when the dirt hopper is raised, the safety support has to be moved to the upper position and inserted.
- Prior to cleaning or servicing the machine or replacing parts, the equipment has to be switched off.
- Do not use a steam cleaner or high pressure washer. Do not direct the water jet directly against electrical or electronic components.
- For maintenance work, access can be gained via the doors in the side cover panel.
- If the Hako-Citymaster 1250 is jacked up with a jack, an additional secure support is required.
- Nobody may be on the Hako-Citymaster 1250 when it is jacked up or raised.

- Do not remove or replace tires or repair while still mounted on the rim. Always go to a proper workshop for work on tires and rims because they have specially trained personnel and special safety tools.
- Do not carry out any welding, drilling, sawing or grinding work on frame parts. Damaged parts may only be replaced by specialist workshops approved by Hako.
- Only use original fuses. Using fuses with a too high rating could damage the electrical installation and lead to fires.
- Regularly subject the brake system to a thorough inspection. Adjustments and repairs to the brake system may only be completed by specialist workshops approved by Hako or by recognized brake service workshops.
- Before repairs to the hydraulic system lower any attachments and depressurize the hydraulic system.
- Regularly subject the hydraulic system to a thorough inspection! Adjustment and repair work on the hydraulic system may only be performed in specialist Hako work-

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shops.

- Liquids (fuel, hydraulic oil) could escape under high pressure and penetrate the skin and cause severe injuries. Call for medical assistance immediately to prevent infections. Caution when draining hot oil - danger of scalding!
- Before disconnecting the hydraulic lines, depressurize the system. Check all lines before re-pressurizing the system. Hydraulic oil escaping from a small opening is not very easy to see; for this reason use a piece of cardboard or wood when searching for leaks.
- Regularly check the hydraulic hose connections. Replace if any damage or signs of aging are discovered. The replacement lines have to conform to the technical requirements stipulated by the device manufacturer.
- If transported on a vehicle or trailer and during maintenance and repair work, the articulated joint has to be locked by means of the lock plate.

1.5 Attachment devices

- Only attachments approved by the manufacturer may be used. We will

not accept liability for damage arising from the use of unauthorized devices or accessories.

- Observe the information in the operating instructions for the attachment devices.
- Handling, steering and braking as well as stability are influenced by attachment devices, trailers and the vehicle payload (e.g. full dirt hopper). For this reason, pay attention to adequate steering and braking capability as well as stability.
- If attachments obscure the external lighting elements on the machine, or if the maximum distances according to StVZO are exceeded, additional lights have to be attached to the vehicle (see information sheet on attachment devices StVZO § 30, explanatory notes 11 and 12).
- For the safe setting down of attachment devices, use the frames provided for this purpose.
- Coupling devices to the Hako-Citymaster 1250 is associated with the risk of injury. Special caution is to be applied in the area between the Hako-Citymaster 1250 and the attachment device. Only connect at-

tachment devices to the fixtures provided for this purpose.

- Nobody may be present between the Hako-Citymaster 1250 and the attachment device unless the Hako-Citymaster 1250 is secured against rolling by applying the parking brake or inserting wheel chocks.
- When driving on the road with the attachment device raised, do not operate the switch lever for the power lift. Before leaving the Hako-Citymaster 1250, lower the attachment devices.
- When driving on the road with the attachment device raised, the transport lock on the attachment device has to be activated.
- When connecting attachment devices to the hydraulic system, ensure that the hydraulic hoses are connected correctly. Swapping the connection can lead to reverse functioning of the attachment device, e.g. movement to the right rather than the left - risk of accident.
- The connection of front or rear attachment devices must not lead to the maximum total weight, the maximum axle loads or the load-bearing capacity of the tires of the machine

Safety Information

being exceeded. The front axle and the rear axle of the tractor/trailer combination (multi-purpose vehicle and trailer) always have to be loaded with at least 20% of the empty weight. Before purchasing an attachment, check that this condition is fulfilled by weighing the machine/attachment combination.

- When connecting rear attachment devices, always ensure that there is an adequate load on the front axle; if necessary, provide ballast. The steering capability has to be maintained.
- When connecting front attachment devices with a weight > 160 kg, ensure that there is an adequate load on the rear axles and provide ballast. The ability to brake has to be maintained.
- When providing ballast, observe the load-bearing capability of the tires and the necessary tire pressure.
- Connect attachment devices only to the specified fixtures.
- When connecting devices, exercise particular caution.
- Only start up any device when all the protective equipment is in place and

is operative.

1.6 Particular risks

Safety equipment

- Never operate the Hako-Citymaster 1250 without effective protective equipment. (This includes all cover panels and the doors in the side panels).

Re-fuelling

- Take the utmost care when handling fuel - increased risk of fire!
- Never fuel up close to naked flames or ignitable sparks.
- Do not smoke during fuelling. Switch off the engine, remove the ignition key and apply the parking brake before fuelling.
- Never re-fuel in enclosed spaces. Clear up spilt fuel immediately.

Electrical system

- Only use original fuses with the prescribed amperage.
- In the case of defects in the electrical installation, switch the vehicle off immediately and rectify the fault.
- Work on the electrical equipment may only be carried out by electricians who have received the necessary training and in accordance with

the electrical engineering regulations.

- Always disconnect the negative pole of the battery when working on the electrical installation.
- The vehicle's electrical equipment must be inspected/checked at regular intervals. Defects, such as loose connections and cable damage, must be rectified immediately.
- Observe the information in the operating manual provided by the battery manufacturer.
- Never place any metallic objects or tools on batteries - risk of short circuit!
- Caution when handling battery acid - corrosive!
- Ensure sufficient ventilation in the charging area when charging the batteries. Explosion hazard!

Safety Information

1.7 Installation of electrical devices

The machine is equipped with electrical components whose function can influence other devices on account of the emission of electromagnetic radiation. Such interference can cause danger of injury if the following safety information is ignored:

When electric or electronic devices and/or devices or components are retro-fitted to the machine, and are connected to the on-board electrical system, the user has the responsibility to check himself whether the installation could cause interference to the vehicle electronics or other components.

In particular, it has to be ensured that any retro-fitted electrical or electronic components conform to the EMC Directive in its valid version and that they display the CE-mark.

For the retro-fitting of mobile communication systems (e.g. radio, telephone), in addition the following conditions have to be fulfilled:

- Only devices conforming to the national regulations of the country may be installed (e.g. BZT approval in

Germany).

- The device has to be permanently installed.
- Use of a mobile phone is only allowed when the engine is at standstill and in conjunction with a separate external antenna.

The sender unit has to be installed physically separated from the vehicle electronics.

- When installing the antenna, proper installation with good connection to the vehicle ground potential has to be ensured.

Safety Information

1.8 Environmental protection

- Adequate knowledge is required for the safe handling of substances which could represent a risk to health and the environment.
- Observe the applicable laws and local regulations when disposing of cleaning agents.
- During maintenance work and repairs, operating agents and filters have to be collected in suitable containers and properly disposed of observing the statutory and local regulations.
- Leaked oil, diesel fuel and lubricants etc. must not enter into the soil. Otherwise this would create a serious risk of groundwater contamination.
- Any contamination from leakages has to be cleared up without delay and disposed of properly. Used filters usually have to be disposed of as special waste depending on the filtered substance, e.g. fuel filters.
- Used batteries with the recycling symbol contain reusable commodities. In accordance with the symbol showing the crossed-out garbage bin, these batteries must not be disposed of in domestic waste. Return

and recycling have to be arranged with the authorized Hako dealer as required in § 6 and § 8 BattV!

Safety Information

1.9 Labels on the vehicle

The following safety and warning labels are attached to the vehicle at easily legible locations. Missing or illegible labels must be replaced immediately.

Basic vehicle with loading platform and front coupling triangle

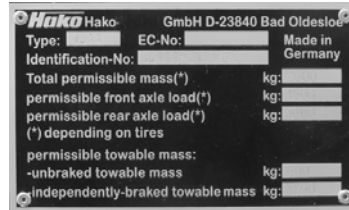
Read the operating instructions (Fig. 1/1)



Air pressure (Fig. 1/2)

Bereifung Tyre	Luftdruck v / h Pressure f / r
195 R 14C	3,5 bar / 3,5 bar
26X 12.00-12	1,5 bar / 1,5 bar
215/65 R15 RF	2,9 bar / 2,9 bar

Ratings plate (Fig. 1/3)



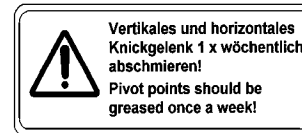
Company logo (Fig. 1/4)



Parking brake (Fig. 1/5)

Achtung!
Vor Verlassen des Fahrersitzes
Handbremse betätigen.
Caution!
Engage the parking brake before
leaving the seat.

Greasing the articulated joint (Fig. 1/6)

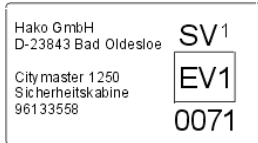


Articulated joint area (Fig. 1/7)



Safety Information

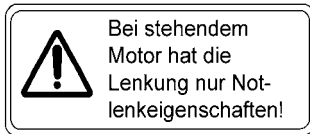
Safety cabin (Fig. 2/1)



Noise emission value (Fig. 2/4) (with the sweeping system option)



Engine/emergency steering properties (Fig. 2/2)



Risk of crushing (Fig. 2/5)



Pressure washer (Fig. 2/3)



Safety Information

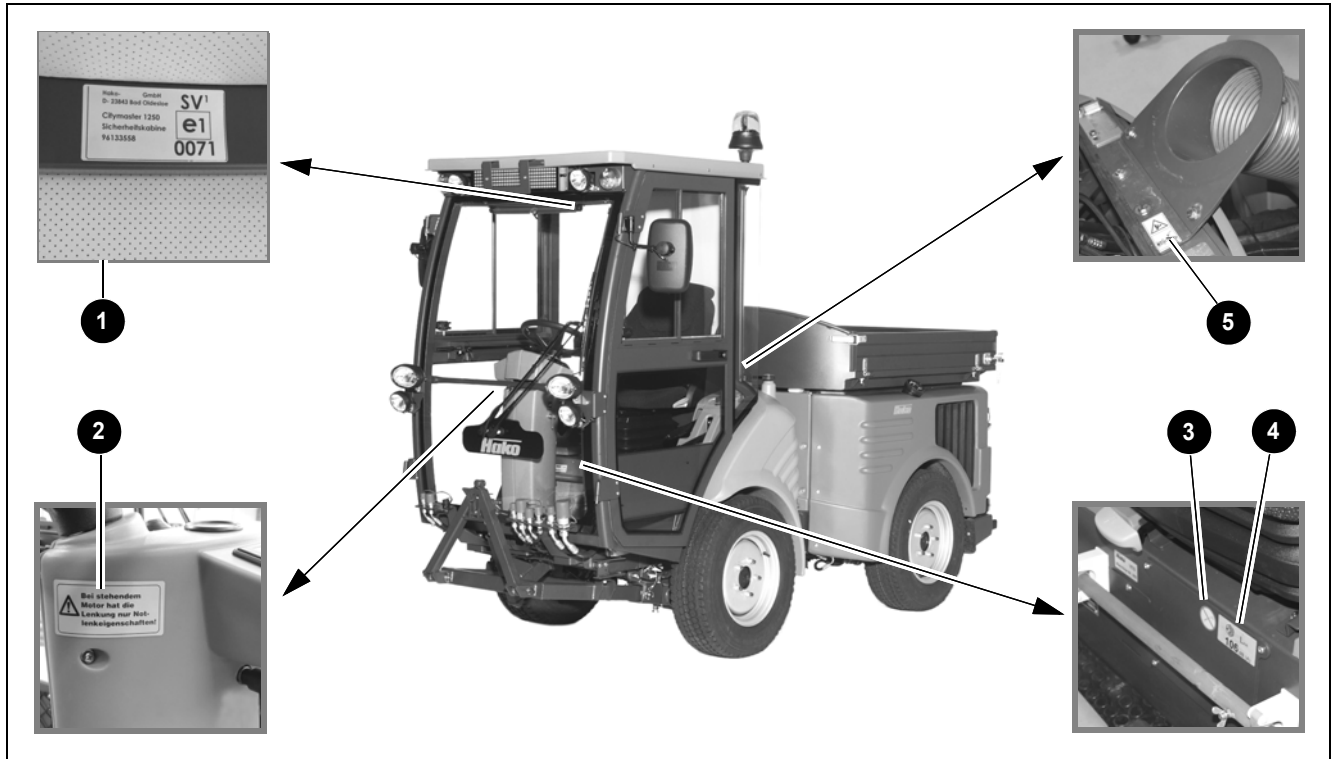


Fig.2

Safety Information

Company logo (Fig. 3/1)



Speed (Fig. 3/2)



Vehicle identification number (Fig. 3/3)

1433xxxxxxxx

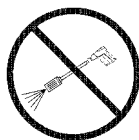
Articulated joint area (Fig. 3/4)



Rotating parts (Fig. 3/5)



Pressure washer (Fig. 3/6)



Safety distance (Fig. 3/7)



Safety film, red/white (Fig. 3/8)



Safety Information

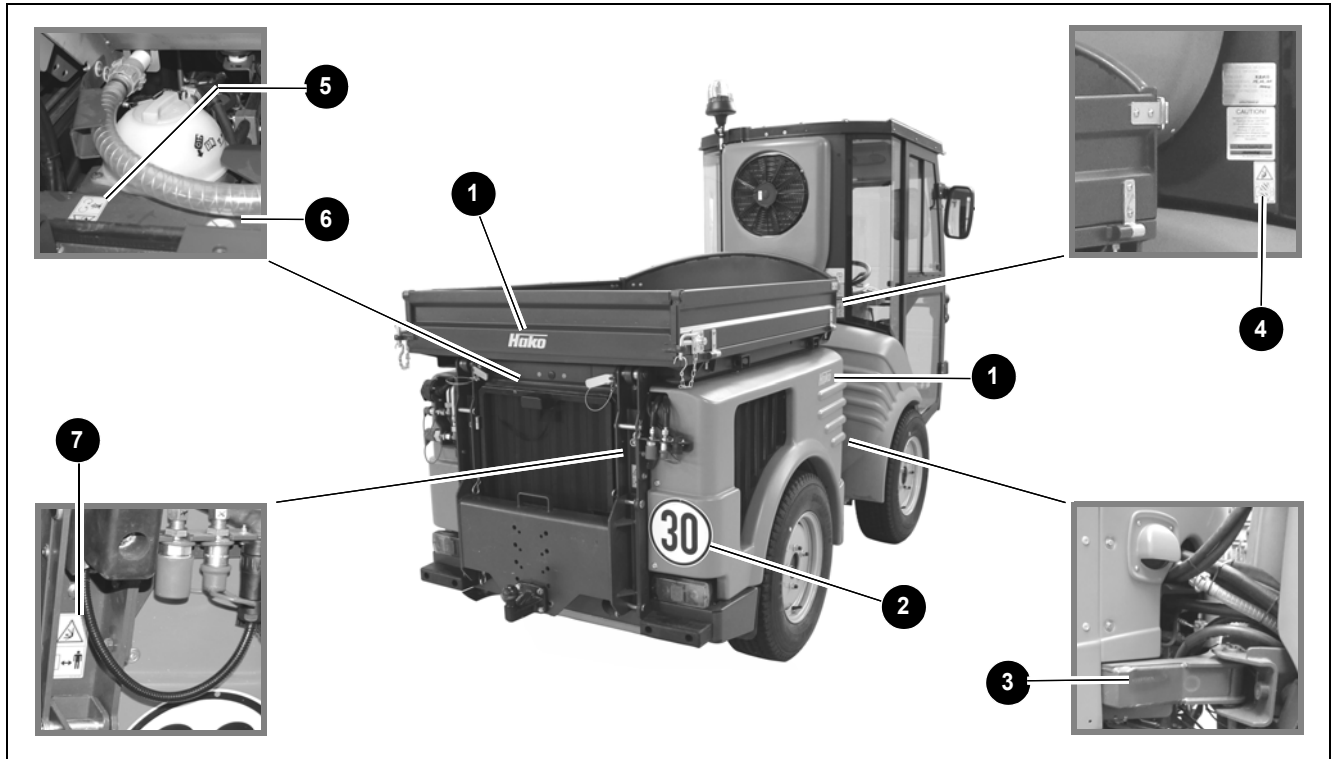


Fig.3

Safety Information

Basic vehicle with sweeping system

Company logo (Fig. 4/1)



Safety film, red/white (Fig. 4/2)



Dirt hopper certificate (Fig. 4/3)

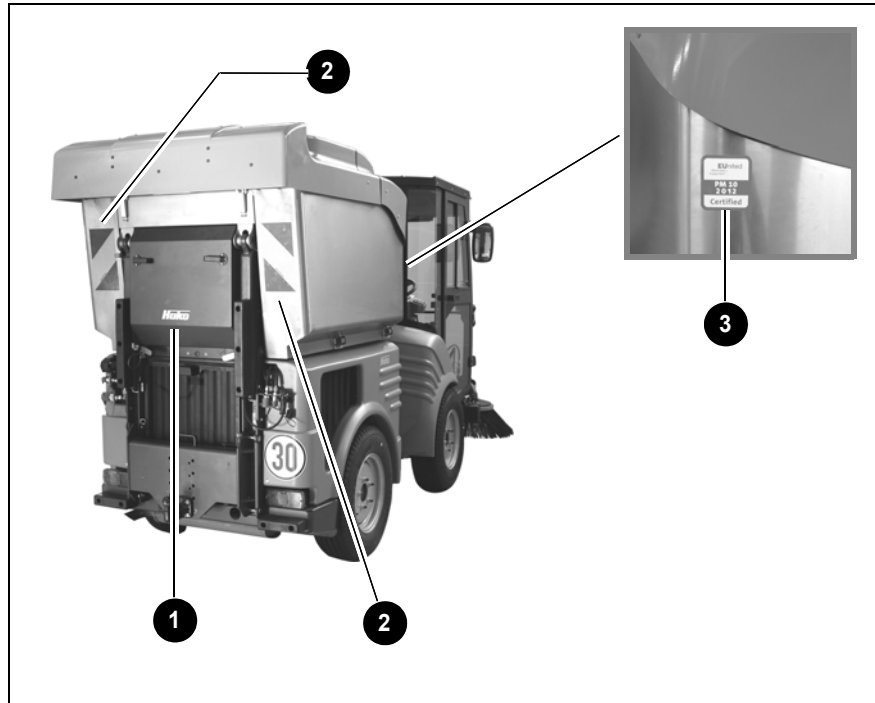


Fig.4



Safety Information

Basic vehicle with scrubber system

Company logo (Fig. 5/1)



Ratings plate (Fig. 5/2)

	Hako GmbH D-23840 Bad Oldesloe Made in Germany	■
	Fahrzeugtyp: ■■■■■■■■■■	■
	Fz. Ident.-Nr.: ■■■■■■■■■■	■
	Zul. Gesamtgewicht kg: ■■■■	WV: ■■■■ Baujahr: ■■■■
	Zul. Achslast vorn kg: ■■■■	Zul. Achslast hinten kg: ■■■■

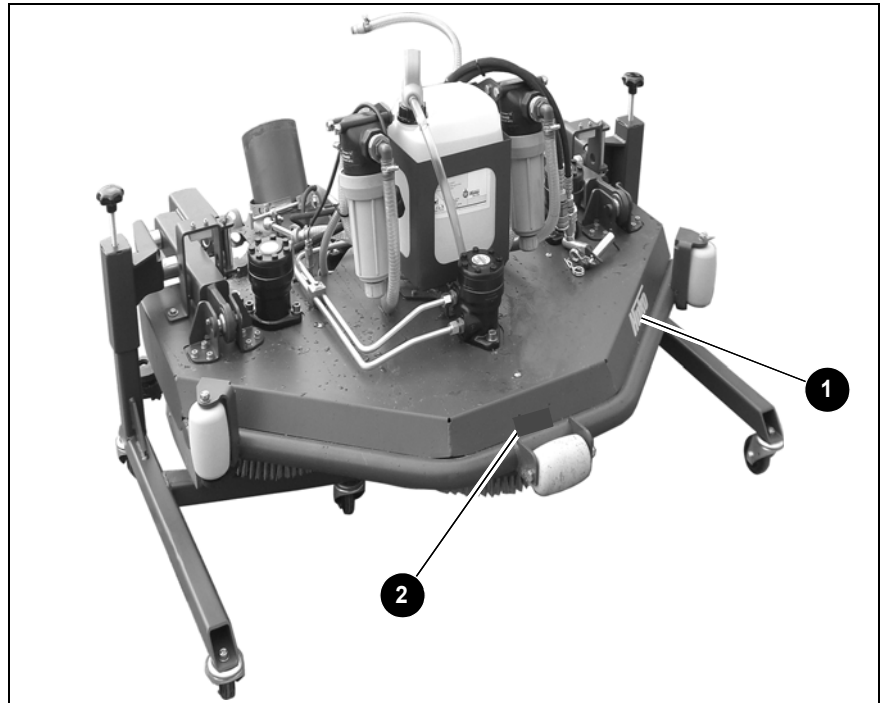
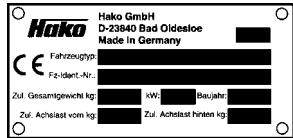


Fig.5

Safety Information

Setting down frame

Ratings plate (Fig. 6/1)



Read the operating instructions (Fig. 6/2)

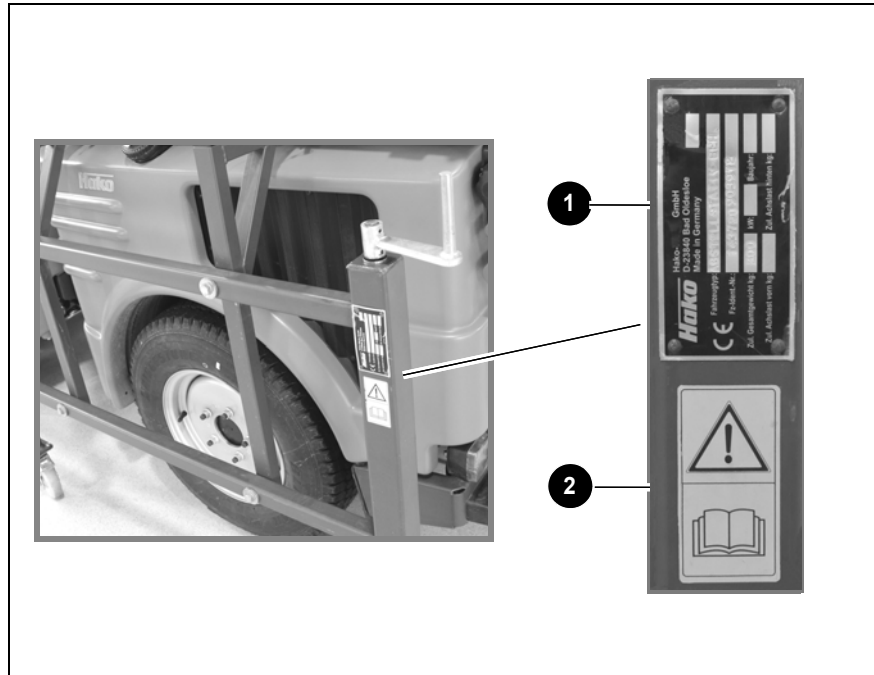


Fig.6

2 Operation

2.1 Overview front unit

- 1 Cabin with:
 - Air-conditioning unit
 - Steering column
 - Operating panels
 - Pedal system
 - Driver's seat
- 2 License plate bracket
- 3 Additional working lights (optional)
- 4 Direction indicator lamp (Front) with marker light
- 5 Wing mirror (optionally heated)
- 6 Dipped beam
- 7 Working lights
- 8 Windscreen wiper
- 9 Coupling triangle (optional)
- 10 Connections for front attachment devices
- 11 Solution tank
- 12 Flashing beacon

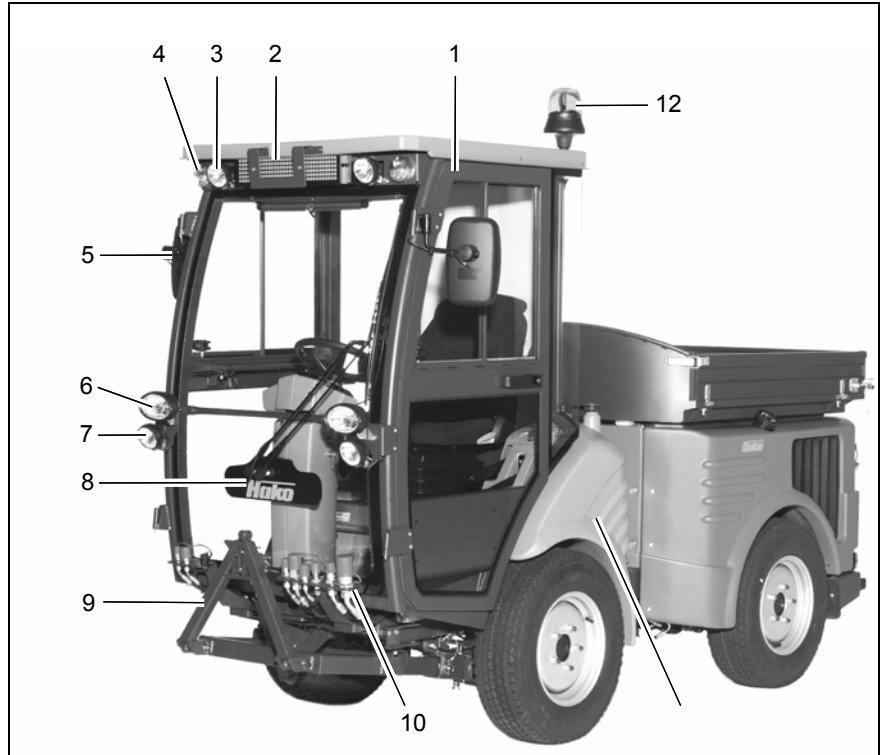


Fig.7

Operation

2.2 Overview rear section of the vehicle

- 1 Indicator lamp, tail light and brake lamp
- 2 Connections for rear attachment devices
- 3 Assembling the loading platform (optional)
- 4 Trailer hitch either as bar coupling or ball head hitch (optional)
- 5 13-pole socket
- 6 Reversing lamp (optional)

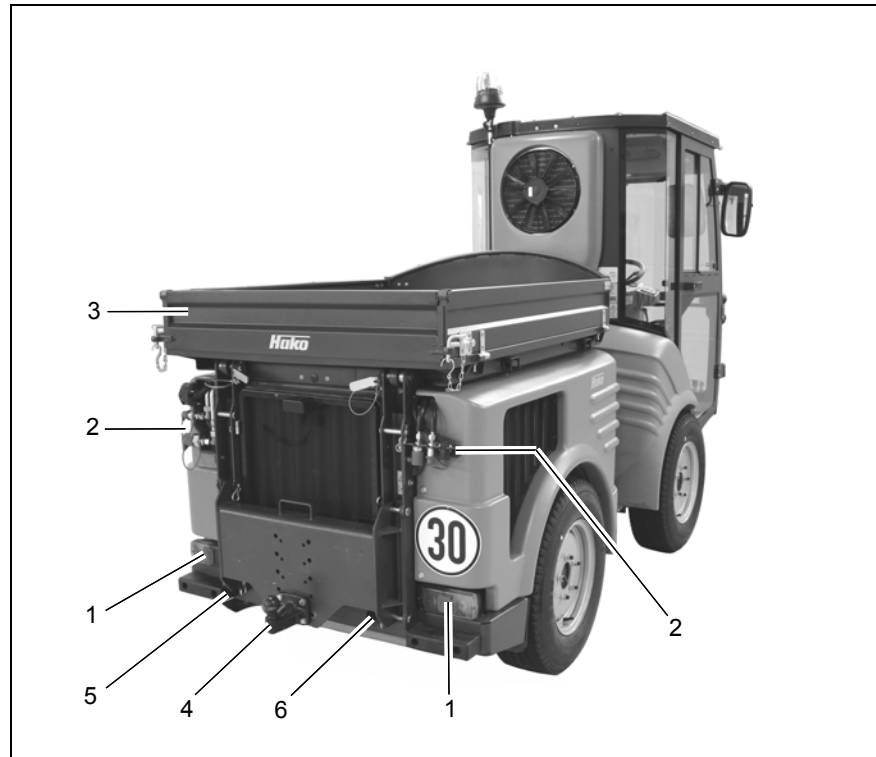


Fig.8

2.3 Functional description

The models Hako-Citymaster 1250 and Hako-Citymaster 1250C can be combined with attachment devices and options for a wide range of applications. The basic unit of the Hako-Citymaster 1250 is a single purpose machine for sweeping or, if equipped with a corresponding extension attachment (with optional wet cleaning unit 1463), for scrubbing

The multi-purpose machine Hako-Citymaster 1250C offers the following applications:

- Sweeping
- Scrubbing (with optional wet cleaning unit 1463)
- Transportation
- Lawn mowing
- Flushing
- Snow sweeping
- Snow clearing
- Snow blowing
- Spreading

The Classic vehicle type is equipped with warm water heating, the Comfort type has additional air conditioning. If you have any queries about applications and the additional options, your Hako contract partner will be available

to you at any time.

2.3.1 Sweeping system

The sweeping system contains the sweeping unit, vacuum nozzle and dirt hopper. The circular brushes on the sweeping unit sweep the material towards the joint-friendly vacuum nozzle. The working width and speed of rotation for the circular brushes can be adjusted hydraulically. The vacuum nozzle runs on rollers suspended flexibly and protected against impacts between the front wheels and can be lifted hydraulically. For dust prevention an adjustable amount of water is added from the solution tank. The spray nozzles are located at the front of the circular brushes in such a way that the water jet is directed in front of the circular brush to prevent dust. One nozzle is located inside the vacuum nozzle in order to keep the intake pipe moist.

In the case of coarser debris the larger material flap can be operated via a foot lever. The debris is sucked into the dirt hopper by means of a suction blower. For dust prevention, the vacuum nozzle is supplied with additional water from the water circulation system. The ab-

sorbed water is returned to the vacuum nozzle via a separator system. For flexible cleaning an optional manual vacuum hose is provided.

2.3.2 Scrubbing system

The scrubbing system comprises of scrubbing unit, vacuum nozzle and dirt hopper. The scrubbing unit sweeps the material towards the joint-friendly vacuum nozzle.

The speed and surface pressure on the brushes can be hydraulically adjusted.

The amount of water supplied to the brushes can be adjusted.

The vacuum nozzle runs on rollers suspended flexibly and protected against impacts between the front wheels and can be lifted hydraulically.

For increasing the duration of work, a recycling system is available as an option. Here the dirt hopper is used as a water tank and the water is processed in a filtering system.

In addition, a chemicals metering system for 10 liter packages is available. Any mixing ratio from 1:6 to 1:512 is possible.

2.3.3 Hako-Citymaster 1250 for transportation operation

For transportation operation the Hako-Citymaster 1250 can be equipped with a loading platform and a trailer which can be pulled by means of a coupling system.

The loading platform can be hydraulically tipped backwards. The side walls and the rear wall can be folded down. The dimensions of the loading platform are approx. 1.200 x 910 x 170 mm. The payload is 800 kg.

For operation with a trailer the Hako-Citymaster 1250 can be equipped with a bar coupling or a ball head hitch. The coupling can be attached to the vehicle rear without tools. For the loading, please observe the calculated system limits, see Chapter 4.4 - Ballast and for the total gross weight observe Chapter 5 - Technical Data.

2.3.4 Front coupling triangle

The Hako-Citymaster 1250 can be equipped with a category 0 front coupling triangle. The front coupling triangle can be used to support front-mounted attachments. The lifting, lowering and floating position functions can

be activated by the buttons on the right-hand operating panel. The floating position is required when a front attachment has to follow the surface contour.

2.3.5 High pressure washer

The Hako-Citymaster 1250 can be equipped with a high pressure washer. The high pressure washer is suitable for the normal cleaning of steps, platforms, corners, edges and small covered areas which otherwise cannot be reached by the machine. The capacity of the high pressure washer is approx. 15 l/min. The working pressure is max. 140 bar.

Operation

2.4 Operating elements inside the cabin

2.4.1 Cabin overview

- 1 Steering column operating panel
- 2 Operating panel, left-hand side
- 3 Operating panel, right-hand side
- 4 Operating panel, cabin roof
- 5 Pedal system
- 6 Sun blind
- 7 Auxiliary tool
- 8 Driver's seat

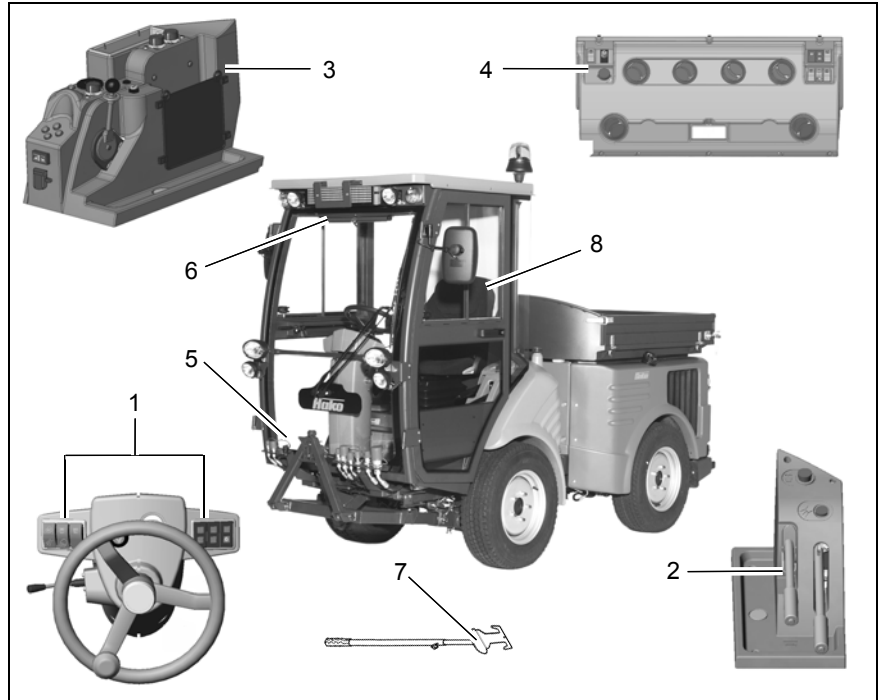


Fig.9

Operation

2.4.2 Steering column operating panel

- 1 Indicator light switch / horn
- 2 Switch for suction turbine and water pump
- 3 Working lights
- 4 Flashing beacon
- 5 Hazard warning lights switch
- 6 Control lamp, indicator lamp
- 7 Control lamp, water temperature
- 8 Control lamp, battery charging control
- 9 Control lamp, preheating
- 10 Control lamp, oil pressure
- 11 Control lamp, fuel
- 12 Lever for solution for vacuum nozzle
- 13 Temperature display for the hydraulic oil

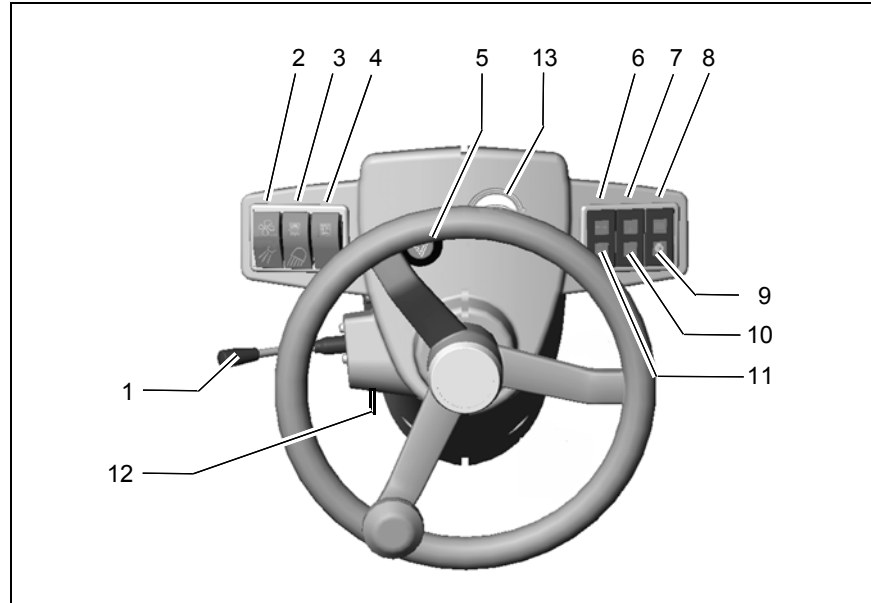
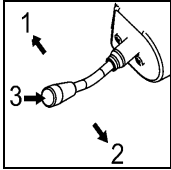


Fig.10

Operation

Combination switch (Fig. 10/1)



This offers the following functions:

- Switch direction 1 = indicator on right-hand side
- Switch direction 2 = indicator on left-hand side
- Switch direction 3 = horn

Switch for suction turbine and water pump (Fig. 10/2)



Switch (Fig. 10/2) is only active when turned to the work mode!

If the vehicle is equipped with the optional sweeping system or scrubbing

system the switch is used for switching the suction turbine and the water pump on and off. The switch has two switching levels.

1. level: suction turbine OFF
2. level: suction turbine ON
3. level: suction turbine and solution pump ON

When the solution pump is switched on, the green control light is illuminated.

Switch for the optional mowing unit (Fig. 10/2)

If the vehicle is equipped with the optional mowing unit, this switch is used for switching the mowing unit on and off.

If the operator rises from the driver's seat, the mowing unit immediately switches off. If the operator rises from the driver's seat for longer than 1 second, a start-up lockup becomes activated.

Operation

Switch for working lamps (Fig. 10/3)



This serves to switch the working lamps in the operating zone on and off. The switch has three switch levels.

1. level: lower working lights OFF
2. level: lower working lights ON
3. level: upper working lights ON (optional)

Switch for flashing beacon (Fig. 10/4)



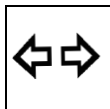
This is used for switching the flashing beacon on and off.

Switch for hazard warning lamps (Fig. 10/5)



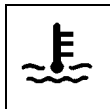
This is used for switching the hazard warning lamps on and off. When the hazard warning lamps are switched on a control lamp in the switch flashes. The hazard warning lamps also works when the the ignition is switched off.

Control lamp (green) indicator lamps (Fig. 10/6)



This comes on when the indicator lights are flashing and simultaneously serves as a function control. Rapid flashing indicates a defective indicator light.

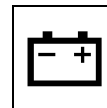
Control lamp for the temperature indicator for the cooling water (Fig. 10/7)



The control lamp comes on when the cooling agent is excessively warm or

when the cooling water level in the compensation container has fallen below the minimum mark. At the same time, an acoustical signal is sounded.

Battery charging control lamp (red) (Fig. 10/8)



This comes on when the vehicle is started up. After starting up the engine it has to switch off again.

Operation

Control lamp (yellow) for preheating (Fig. 10/9)



Preheating is only necessary at low temperatures (e.g. $<0^{\circ}\text{C}$). Above 0°C the engine can be started immediately after turning the ignition on. Then the preheating indicator will extinguish.



Starting the engine is only possible when the driver is sitting on the driver's seat. For safety reasons the Hako-Citymaster 1250 is equipped with a seat contact switch.

Control lamp (red) for engine oil pressure (Fig. 10/10)



This comes on when the vehicle is started up. After starting up the engine it has to switch off again. If the indicator lamp does not extinguish, immediately switch

off engine and identify the cause.

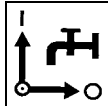
Control lamp for fuel indicator (Fig. 10/11)



The Hako-Citymaster 1250 is equipped with a fuel tank holding approx. 60 liters. When the tank contents reaches the reserve zone, the control lamp comes on.

Remaining quantity: approx. 7.5 liters

Lever for solution for the vacuum nozzle (optional) (Fig. 10/12)



If the vehicle is equipped with the optional sweeping or scrubbing system, this lever is used for opening or closing the solution supply for the vacuum nozzle.

Position I = open

Position O = closed

Temperature display for the hydraulic oil (Fig. 10/13)

The Hako-Citymaster 1250 is equipped with a temperature display for the hydraulic oil. When the hydraulic oil becomes excessively hot, the pointer of the display moves into the red area. Switch off the hydraulic functions but allow the engine to continue running!

These are the potential causes for overheating:

- Combination cooler contaminated
- Outside temperature too hot
- Mixed hydraulic oil

Operation

2.4.3 Operating panel right-hand side

- 1 Solution quantity for scrubbing system (optional)
- 2 Speed adjustment for circular brushes/circular scrubbers
- 3 Pressure adjustment (optional) for front attachment devices
- 4 Key pad lifting, lowering and sideways movement for front attachment devices
- 5 Selection switch for wedge snow-plow
Selection switch for scrubbing system (optional)
- 6 3-pole socket
- 7 Operating hour meter
Sweeping distance meter (optional)
- 8 Speed adjustment lever for engine
- 9 Switch for wing mirror heating (optional)
- 10 Reversing signal ON/OFF (optional)
- 11 Ignition switch
- 12 Reset switch for operating hour meter
- 13 Compartment for operating manual
- 14 Space for installing a radio

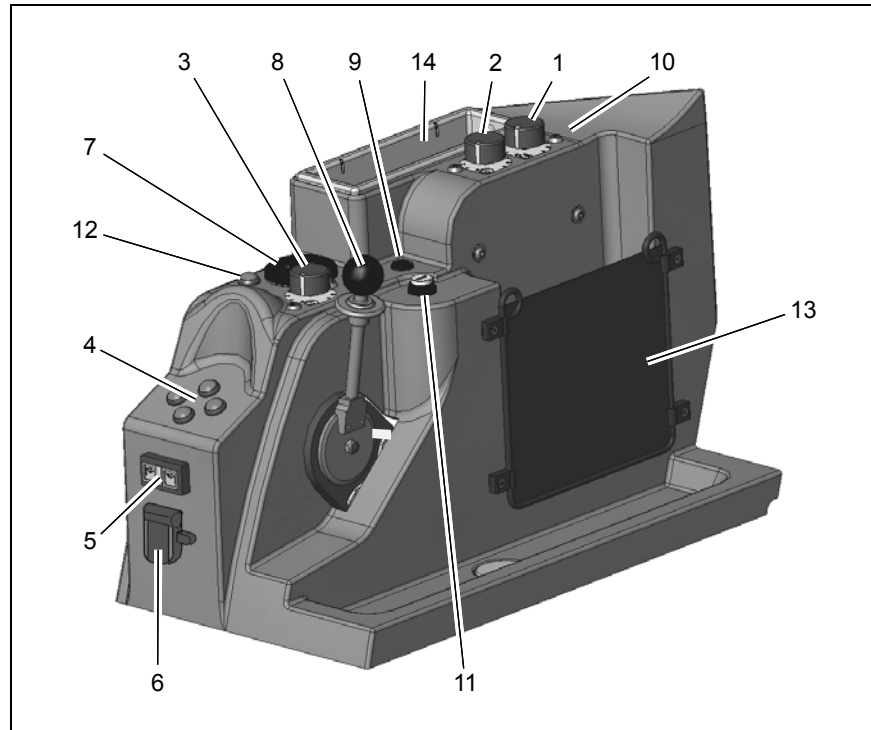


Fig.11

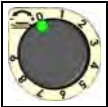
Operation

Solution quantity for scrubbing system (Fig. 11/1)



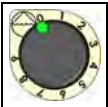
This is used for adjusting the solution quantity for the scrubbing system.

Speed adjuster for circular brushes/circular scrubbers (Fig. 11/2)



This is used for adjusting the speed as required during deployment.

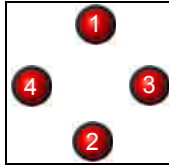
Pressure adjustment (optional) for front attachment device (Fig. 11/3)



The knob with the ON/OFF switch is used for switching on and adjusting the load on the front attachment device.

Key pad for lifting, lowering and sideways movements (Fig. 11/4)

The key pad is used for lifting, lowering and sideways movements of the front attachment device.



Key 1: lifting

Key 2: lowering (floating position)

For the optional attachment devices:

Key 3: move inwards

Key 4: move outwards



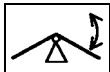
In order to ensure the “lifting” function for work with the attachment devices, the speed adjustment lever (Fig. 11/8) has to be set to the preferred engine speed (2450 1/min).

Operation

Wedge snowplow selection switch (Fig. 11/5)

For the optional wedge snowplow, this selection switch is used for selecting the side of the wedge snowplow to be adjusted. The device is operated via the key pad (Fig. 11/4).

Selection switch on right-hand side



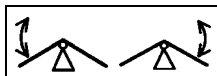
In this setting the adjustment of the right-hand side of the wedge snowplow is preselected.

Selection switch on left-hand side



In this setting the adjustment of the left-hand side of the wedge snowplow is preselected.

Scrubbing system (optional) selection switch (Fig. 11/5)



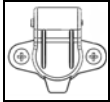
This switch is used for selecting the water supply (solution or dirty water) for the scrubbing unit.

Selection switch on left-hand side: dirty water

Selection switch on right-hand side: solution

Operation

3-pole socket (Fig. 11/6)



The 3-pole socket is provided for unrestricted use, voltage supply max. 10A independent of the ignition control. The voltage supply for the optional spreader is provided via the 3-pole socket (for this the optional working distance meter is required).

Operating hour meter (Fig. 11/7)



This is used to display the number of hours of operation. The meter only works when the engine is running.



After turning on the ignition, the operating hour meter displays the total operating hours. Then the operating hour display appears.

Sweeping distance meter (optional)



Functions:

- Total operating hours
- Total kilometers
- Working hours
- Working kilometers
- Time of day
- Speed

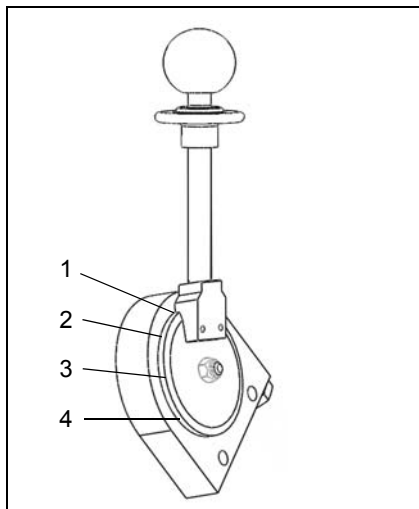
By repeatedly, briefly pressing the left-hand key, the working hours, working kilometers, total operating hours, total kilometers and the speed are displayed respectively.

In order to reset the working hours and the working kilometer meter, they have to be displayed by pressing the left-hand key. In this case both keys are pressed at the same time until after 3 seconds the display of the working hours starts flashing and then, after a further 3 seconds, goes to zero.

Operation

Speed adjustment lever for engine (Fig. 11/8)

This serves to modify the engine speed and to choose the driving mode.



- 1 Up to the first notch
- 2 Past the first notch
- 3 Before the second notch
- 4 End stop



The changeover from the transport mode to the work mode is only allowed when the vehicle is at standstill.



When changing the driving mode from the transport mode to the work mode on a slope, the parking brake has to be applied in order to prevent rolling backwards during the change-over process.



The speed adjustment lever has to be lifted up to move it across the stop.

Driving speeds

- Transport mode (front-wheel drive)
 - 0-30 km/h forwards
 - 0-12 km/h reversing
- Work mode (all-wheel drive)
 - 0-16 km/h forwards
 - 0-10 km/h reversing

Driving mode

- Before the first notch:
 - engine idling; transport mode (front-wheel drive); automotive driving; working hydraulics blocked
- Post the first notch:
 - engine idling; work mode (all-wheel drive); automotive driving; working hydraulics active
- Before the second notch:
 - preferred engine speed (2450 1/min); work mode (all-wheel drive); automotive driving; working hydraulics active
- End stop:
 - max. engine speed (2750 1/min); work mode (all-wheel drive); automotive driving; working hydraulics active

Operation

Automotive drive

By pressing down the accelerator pedal the engine speed and travel speed are increased together. Utilize this mode when driving on the road or when carrying out work which does not require a constant working speed for the working device.

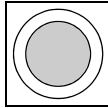
All-wheel drive

Under difficult conditions, e.g. snow, ice or difficult surface conditions, starting the vehicle movement can be improved by means of the all-wheel drive. In addition to the front axle the rear axle is also driven

Maximum travel speed

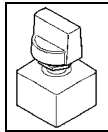
If the speed adjustment lever (Fig. 11/8) is between the first and the second notches, increasing the pressure on the accelerator pedal can briefly increase the engine speed to a maximum of 2450 1/min with a corresponding higher travel speed (overriding the manual lever setting). After returning the accelerator pedal the engine returns to the previously set engine speed.

Button for wing mirror heating (optional) (Fig. 11/9)



The button is used for switching the wing mirror heating on or off.

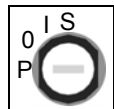
Rotary switch for the reversing signal (optional) (Fig. 11/10)



The optional reversing signal can be switched on and off with the rotary switch. When reversing, a signal is sounded and the reversing lamp lights up.

Operation

Ignition switch (Fig. 11/11)



The ignition switch serves to start up the engine and to switch the electrical system on and off.

The ignition switch has four positions: P: warning indicators, illumination, rotating beacon and interior lamp functioning. The key can be removed. The P position is reached from the 0 position. Push the key in whilst turning it to the left.

0: the electrical system and the engine are switched off. The key can be removed

I: the electrical system and the engine are switched on

S: start up engine.

Repeat ignition lock: for starting up again, the ignition key first has to be returned to the 0 position.



Do not repeat the start-up process more often than 3 times, rather allow the starter motor to cool down.



After starting up the cold engine, allow it to warm up with a slightly increased idling speed.



At ambient temperatures of -10°C warm up for approx. 20 minutes, from $+10^{\circ}\text{C}$ warming up is no longer necessary.



When starting up the engine, the driver has to sit on the driver's seat. During the start-up process do not push down the accelerator pedal!

Reset switch for operating hour meter (Fig. 11/12)



This is used for resetting the display of the hours per day to zero on the operating hour meter.

Operation

2.4.4 Left-hand operating panel

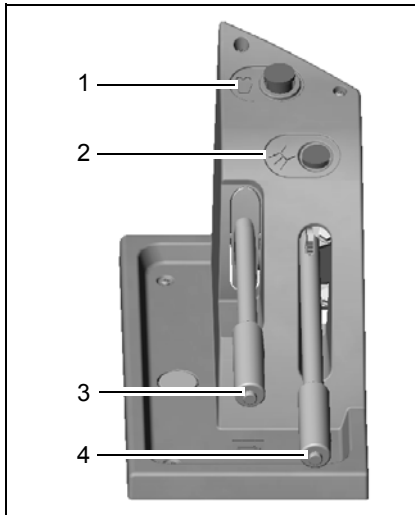


Fig.12

Filling opening for windscreen washer system (Fig. 12/1)

This is used for filling the liquid into the windscreen washer system.



At temperatures below 0°C degrees use an antifreeze.

Spray for circular brushes (Fig. 12/2)

For the control of the water flow to the spray nozzles for the circular brushes.

The water pump must be switched on!

Locking lever for circulation water to the vacuum nozzle (Fig. 12/3)

This serves to block the circulation water to the vacuum nozzle.

Lever down = water supply blocked

Lever up = water supply unblocked

Manual lever for parking brake (Fig. 12/4)

This is used for applying the parking brake. The lever is locked after it is pulled up.

Operation

2.4.5 Operating panel on cabin roof

- 1 Heating valve
- 2 Air-conditioning unit (Comfort)
- 3 Rotary switch, fresh air / heating fan
- 4 Air flow openings
- 5 Control lamp for parking brake
- 6 Indicator control lamp trailer/ spreader (optional)
- 7 Control lamp for hydraulics temperature
- 8 Control lamp for dirt hopper lifted
- 9 Pre-selection switch for pushing down the front attachment device / rapid emptying for rear-mounted spreader
- 10 Button for lifting and lowering the dirt hopper
- 11 Dipped beam / side lamps
- 12 Switch / button for windscreen washer system
- 13 Interior lamp
- 14 Control lamp for load indicator (optional)

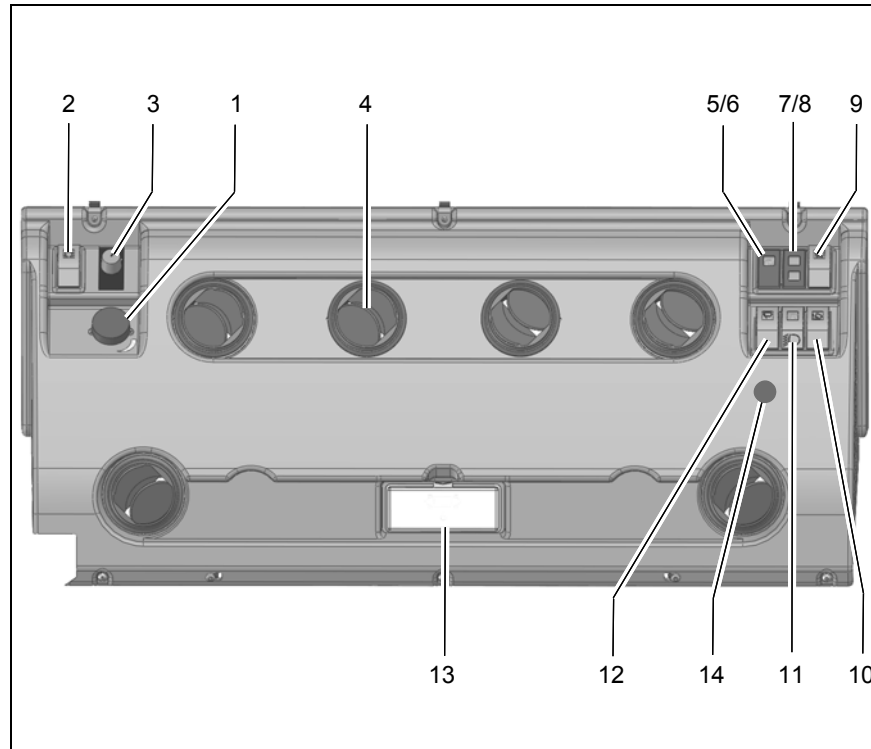


Fig.13

Operation

Cab heating

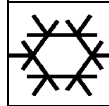
The Hako-Citymaster 1250 is equipped with a fresh air heater system. The ventilator system has a 3-stage regulator. The fresh air is taken in from the outside through the ventilation slots behind the license plate and blown into the cabin. The air flow openings (Fig. 13/4) for the supply of warm or cold air are adjustable so that the air flow can be directed against the windscreen in order to keep the windscreen free of condensation and ice.

The regulation of the heating is done by means of a rotating valve (Fig. 13/1).

Rotating valve for heating (Fig. 13/1)

It is used for switching on and off the heating and for controlling the heating.

Switch for air conditioning system (Comfort) (Fig. 13/2)



This is used for switching the air conditioning system on and off.



The air conditioning system only works when the rotary switch (Fig. 13/3) is turned from "0" to one of the fan levels.

Rotary switch for fan (Fig. 13/3)

This is used for switching the fan on and off and for setting the fan level.

Switched on = levels "1 to 3"

Switched off = level "0"

The fan can be used for blowing fresh air or warm air, when the heating is switched on, or cold air, when the air-conditioning unit is switched on, into the cabin.

Air flow openings (Fig. 13/4)

These are the outlets for the warm or cold air and are adjustable so that the air flow can be directed against the windscreen in order to keep the windscreen free from condensation and ice.

Operation

Air-conditioning unit

The Hako-Citymaster 1250 (Comfort) is equipped with an air-conditioning unit. The air-conditioning unit is operated as follows:

Rotating valve for heating (Fig. 13/1)

It is used for switching on and off the heating and for controlling the heating.



When the air-conditioning unit is switched on the rotating valve (Fig. 13/1) has to be turned to OFF.

Switch for air-conditioning unit (Fig. 13/2)

This is used for switching the air-conditioning unit on and off.



The air-conditioning unit only works when the rotary switch (Fig. 13/3) is turned from "0" one of the fan levels.

Rotary switch for the fan (Fig. 13/3)

This is used for switching the fan on and off and for setting the fan level.

The fan can be used for blowing fresh air or warm air, when the heating is switched on, or cold air, when the air-conditioning unit is switched on, into the cabin.



The rotary switch (Fig. 13/3) automatically switches the air-conditioning unit down to level 2 if it is set to level 3.



If the windscreen or the door windows are covered in condensation, switch on the air-conditioning unit until the condensation has disappeared.



Only switch the air-conditioning unit on when the doors are closed.



Allow the air-conditioning unit to run once a week for approx. 5 minutes, even in winter.

The air-conditioning unit removes moisture from the cooled air (condensation). For this reason, it is normal for a small puddle to form under the vehicle if it is standing still. Condensation can leak out from under the front bars, the condenser fan behind the cabin and the air-conditioning unit in the engine compartment.

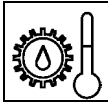
Operation

Control lamp for parking brake (red) (Fig. 13/5)



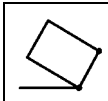
This comes on when the parking brake is applied while the ignition is on. As soon as the parking brake is released, it has to go out.

Control lamp for hydraulic oil temperature (red) (Fig. 13/6)



It comes on when the hydraulic oil reaches an excessive temperature, in addition a warning signal is sounded.

Control lamp for dirt hopper (red) (Fig. 13/7)



This comes on when the dirt hopper is raised. It should go out after lowering it onto the limit switch.

Switch for surface pressure / rapid emptying of the rear spreader (Fig. 13/8)



The switch has three settings:

Position 1:

Adjustment for surface pressure for front attachment device. When pressing key 2 on the key pad (Fig. 11/4) down, the support for the front attachment devices is pushed down at full pressure.

This function is indicated by the control lamp in the switch.

If the optional scrubber system or snow plough are available, in this switch position the surface pressure can be adjusted by means of the rotary switch (Fig. 11/3).

Neutral position:

The surface pressure adjustment for the front attachment device can be reduced.

If the optional scrubber system is available in this switch position the pressure

release can be adjusted by means of the rotary switch (Fig. 11/3).



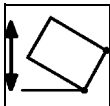
If the work is interrupted, turn the surface pressure adjustment for the front attachment device to zero!

Position 2:

Rapid emptying of the rear spreader. Switches the hydraulic circuit 2 to the maximum flow rate.

Operation

Switch for the lifting and lowering of the dirt hopper (Fig. 13/10)



This is used for lifting and lowering the dirt hopper.

Switch for the dipped beam and the side lamps (Fig. 13/11)



This is used for switching on and off the dipped beam and the side lamps.

The switch has three positions:

Position 1:

Dipped beam/side lamps OFF

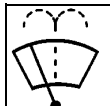
Position 2:

Side lamps ON

Position 3:

Dipped beam/side lamps ON

Switch/button for windscreen washer system (Fig. 13/12)



This switch is used for switching on and off the windscreen wiper and the windscreen washer pump.

The switch has three positions:

Position 1:

Windscreen wiper ON, interval wiper control OFF

Position 2:

Windscreen wiper/windscreen washer pump OFF

Position 3:

By briefly pressing the button, interval operation is started. Pressing once again ends interval operation. Longer pressing switches on the windscreen washer pump and activates the windscreen wiper.



When there is a danger of freezing, pour antifreeze into the water container.

Switch for interior lamp (Fig. 13/13)

This is used for switching on and off the interior lamp.

Operation

2.4.6 Pedal system

- 1 Accelerator pedal, forwards
- 2 Accelerator pedal, reverse
- 3 Service brake
- 4 Differential lock (optional)
- 5 Larger material flap

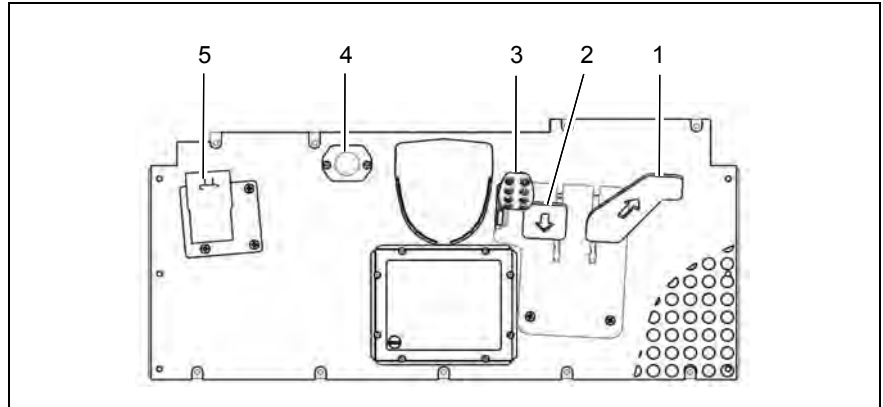


Fig.14

Operation

Accelerator pedal for driving forwards (Fig. 1/1)

This is used for continuously modifying the driving speed when driving forwards. Pressing down the accelerator pedal increases the travel speed. When the pedal is released it returns automatically to the zero position and the machine comes to a standstill.



Drive down slopes with special care and caution.

Always apply the parking brake when leaving the driver's seat.

Accelerator pedal for reversing (Fig. 1/2)

This is used for continuously modifying the driving speed when reversing. Pressing down the accelerator pedal increases the travel speed. When the pedal is released it returns automatically to the zero position and the machine comes to a standstill.

Service brake (Fig. 1/3)

When the accelerator pedal (going forwards or reversing) is released, the vehicle rapidly reaches standstill on

account of the hydrostatic braking effect. If this braking effect is not sufficient, the service brake can be applied in addition.

Differential lock (Fig. 1/4) (optional)

If the surface is unfavorable, the differential lock can be switched on during all-wheel operation. This ensures that the blocked wheel is supplied with the maximum pump pressure.

The differential lock is operated by means of a foot operated button. The foot pressure button has to be kept pressed down in order to make the functionality available. Activating the differential lock is only possible in the work mode.

Larger material flap (Fig. 1/5) (optional)

If coarse dirt is found in front of the sweeping unit, it is possible to lift the larger material flap on the vacuum nozzle by pressing a pedal. The pedal is held up by a stop notch.



This pedal cannot be operated when the vacuum nozzle is raised.

Operation

2.4.7 Sun blind

In order to protect the driver from having his view to the front affected by solar radiation, the Hako-Citymaster 1250 is equipped with a sun blind. For adjusting the blind, it has to be pulled down by its handle (Fig. 15/1) until the optimum position for the driver is reached. The sun blind is then attached to the windscreen by pushing it with the attachment button (Fig. 15/2) onto the windscreen.

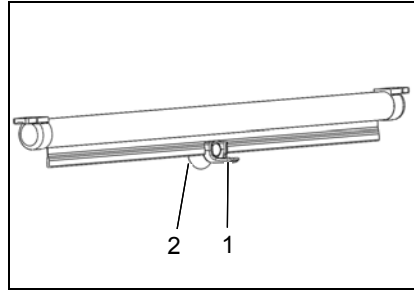


Fig.15

Operation

2.4.8 Auxiliary tool

In the cabin beneath the driver's seat an auxiliary tool is kept (Fig. 16/1). This auxiliary tool has the following functions:

- In the event of function failure of the 'Raise dirt hopper' key, the dirt hopper can be manually raised using the auxiliary tool, see the chapter on maintenance and servicing.
- With the auxiliary tool, coarse dirt can be removed from the vacuum nozzle and vacuum nozzle line.

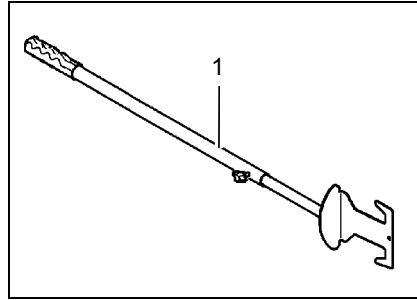


Fig.16

Operation

2.4.9 Driver's seat

- 1 Adjustable armrests
- 2 Rapid weight adjustment
- 3 Lever for longitudinal seat adjustment
- 4 Adjustment for the backrest
- 5 Adjustable lumbar support
- 6 Safety belt
- 7 Adjustable backrest extension

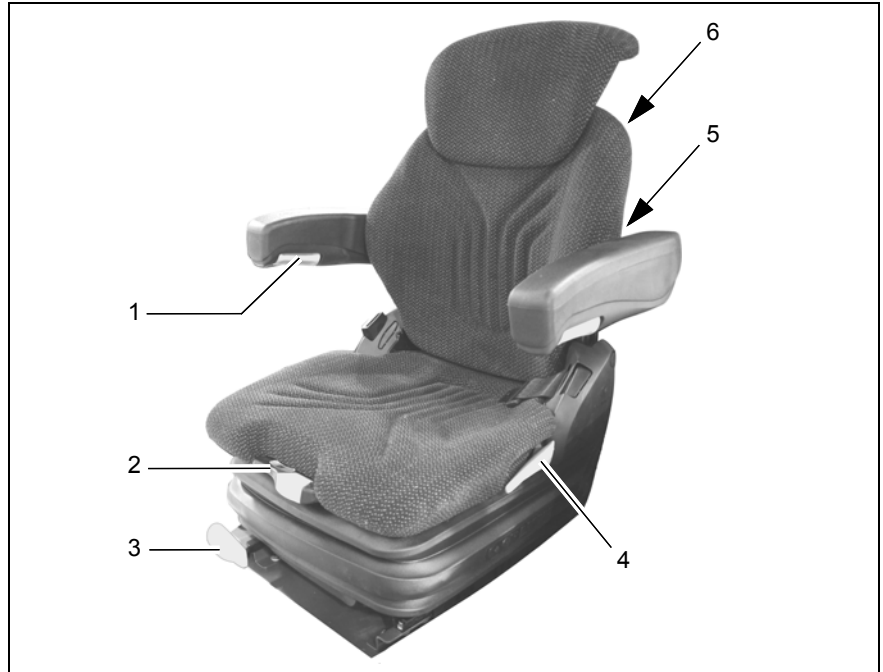


Fig.17

Operation

Adjustable armrests (Fig. 17/1)

The armrests can be folded in and their inclination can be adjusted. By rotating the wheel the inclination can be adjusted.

Rapid weight adjustment (Fig. 17/2)

For optimum suspension, the driver's seat has to be adjusted to the driver's weight.

- Lever up = increase driver weight
- Lever down = decrease driver weight

The suspension is adjusted optimally when the indicator is in the center.



For safety reasons, the driver's seat is equipped with a seat contact switch which must not be bypassed.

Lever for adjusting the seat position (Fig. 17/3)

This is used for changing the position of the seat.

- Pull the lever up = the seat is unlocked. Move the seat forwards or backwards.
- Allow the lever to lock in again after the adjustment is complete.

Adjustment of the backrest (Fig. 17/4)

The lever is used for adjusting the backrest. For making the adjustment, you should sit on the driver's seat.

- Pull the lever upwards with your left hand.
- By leaning the upper body backwards you will adjust the backrest backwards (tilted position).
- If you move your upper body forwards you adjust the backrest forward (vertically).
- Once you have reached the optimum position for the backrest, release the lever. It will then lock to the desired position.



Pay attention that the backrest does not rub against the cabin rear wall!

Adjustable lumbar support (Fig. 17/5)

By turning the wheel on the backrest the lumbar support can be adjusted.

Safety belt (Fig. 17/6)

For optimum effect of the safety belt ensure an upright seating position and

correct belt positioning.

Adjustable backrest extension (Fig. 17/7)

By pressing the button on the rear of the backrest extension the height of the backrest can be precisely fitted to the driver's height.

Operation

2.5 Operating elements on the vehicle

2.5.1 Wing mirror

The wing mirrors serve to observe the rear working area and traffic. Adjust the wing mirror (Fig. 18/1) in such a way that the road and the rear working area can be fully viewed. Heated wing mirrors are optionally available.



Always check the mirror adjustment before starting to drive, if necessary, adjust.

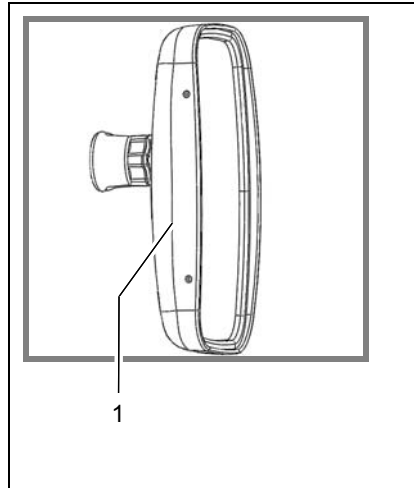


Fig.18

Operation

2.5.2 Fastener at the dirt hopper

Before emptying the dirt hopper the cover with the fasteners (Fig. 19/1) has to be opened.

2.5.3 Safety support

During maintenance work the dirt hopper always has to be raised to its high position and the safety support (Fig. 19/2) has to be inserted at the hydraulic cylinder.

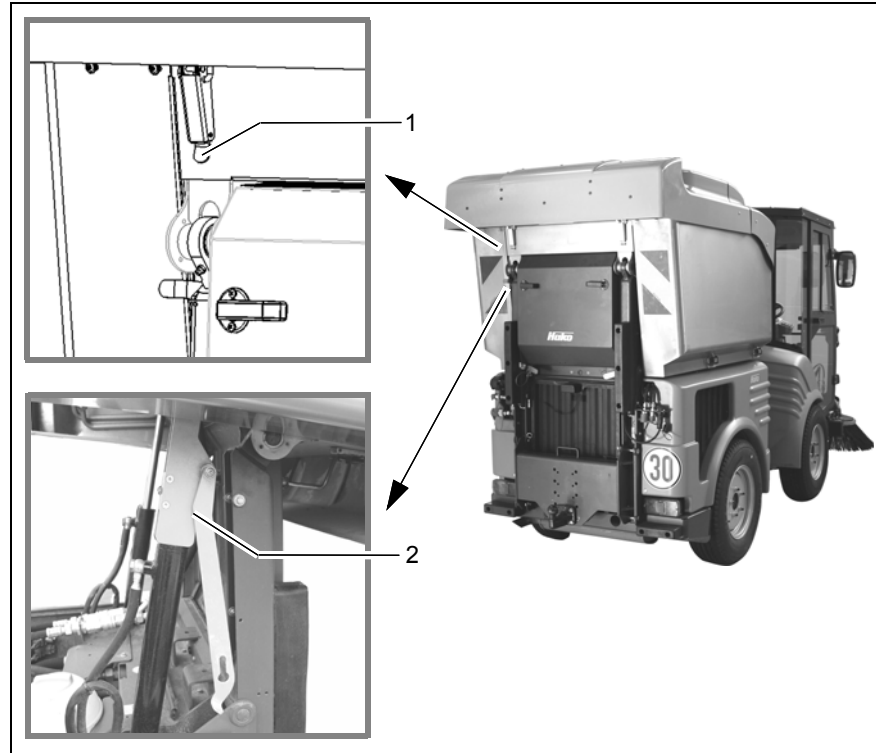


Fig.19

Operation

2.5.4 Water connection for cleaning the suction turbine

The water connection (Fig. 20/1) on the dirt hopper is used for cleaning the suction turbine.

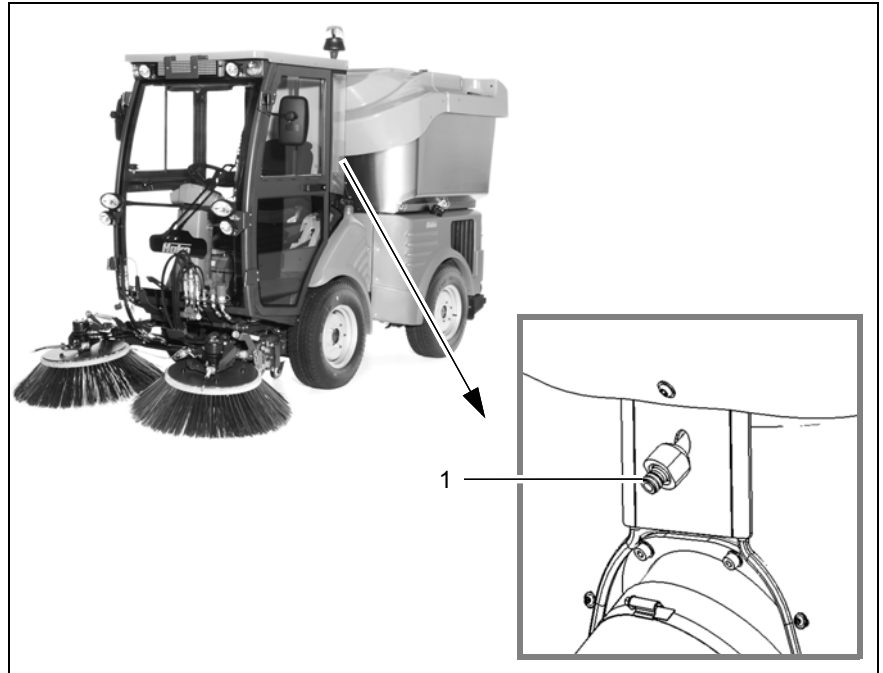


Fig.20

Operation

2.5.5 Opening the floor flap and circulation water hose

The operating elements are underneath the dirt hopper. The dirt hopper must be raised.

To clean the circulating water system, open the circulation water hose and the floor flap.

- Loosen hose fitting (Fig. 21/3) and remove the bayonet fitting (Fig. 21/4).
- Unlock the floor cover using the lever (Fig. 21/2) and open using the lever (Fig. 21/1).

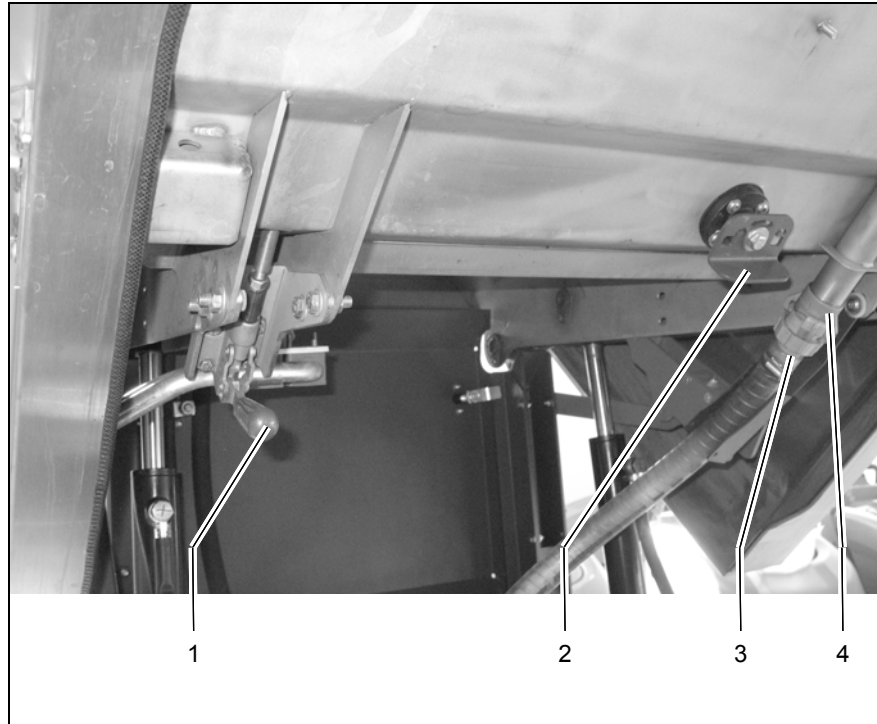


Fig.21

Operation

2.5.6 Hydraulic, water and electrical connections

2.5.7 Connectors at the front

- 1 Sideways movement of front attachment device (forwards/backwards)
- 2 Sideways movement of front attachment device (forwards/backwards)
- 3 12-pole encoding connector X66 (with optional scrubber system)
- 4 7-pole encoding connector X63 (series)

Hydraulic circuit 2 (max. 20 l/min):

- 5 Proportional control supply line
- 6 Proportional control return line
- 7 Lifting the vacuum nozzle
- 8 Water connection for circular brushes

Hydraulic circuit 1 (max. 46 l/min):

- 9 Working pump supply line (e.g. mower)
- 10 Working pump return line (e.g. mower)

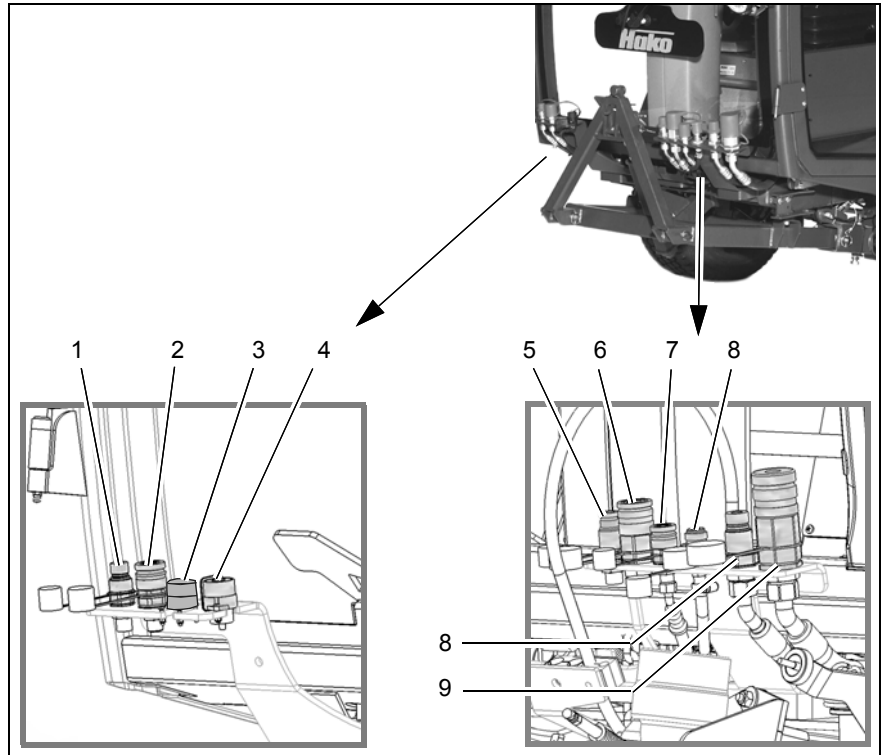


Fig.22

Operation

2.5.8 Rear connections

1 Socket 13-pole connector X60 (e.g. spreader illumination)

Hydraulic oil delivery rate (0-20 l/min):

2 Spreader supply line

3 Spreader return line

Hydraulic actuator:

4 Rear attachment device/trailer, lift

5 Rear attachment device/trailer, lower

6 7-pole encoding connector X64 (for rear attachment device)

7 Socket 7-pole for the trailer operation

Only connectors approved by Hako may be used with attachment devices!
The pin assignment must not be changed for reasons of safety!

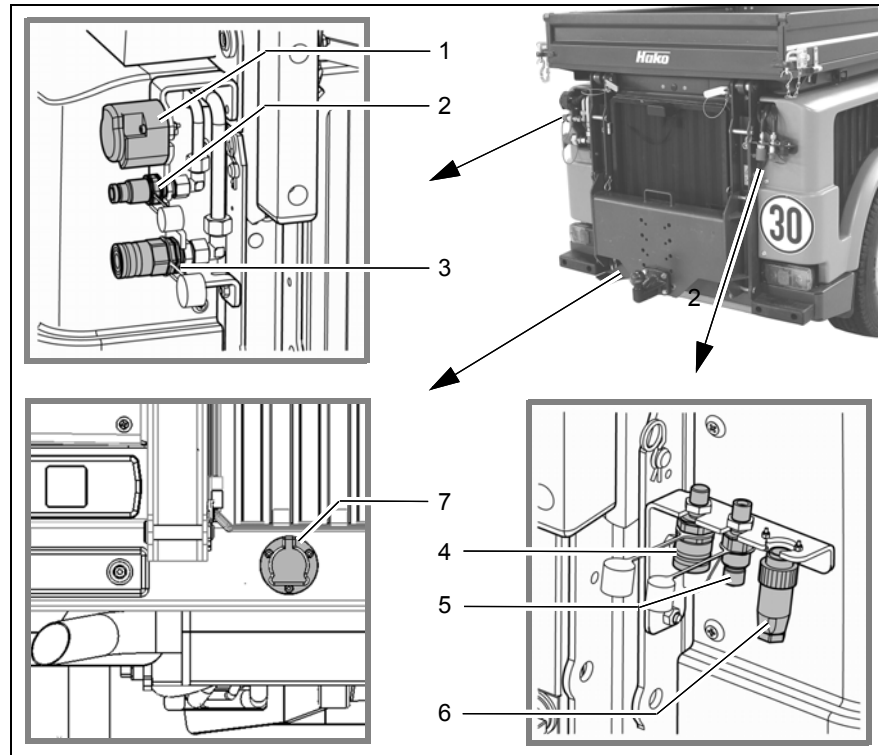


Fig.23

Operation

2.5.9 High pressure washer (optional)

- 1 High pressure washer
- 2 Spray lance
- 3 High pressure hose
- 4 Water filter
- 5 Switch valve
- 6 Speed adjustment for circular brushes
- 7 Rotational speed adjustment lever for engine
- 8 Front attachment button
- 9 Ignition switch
- 10 Pressure controller

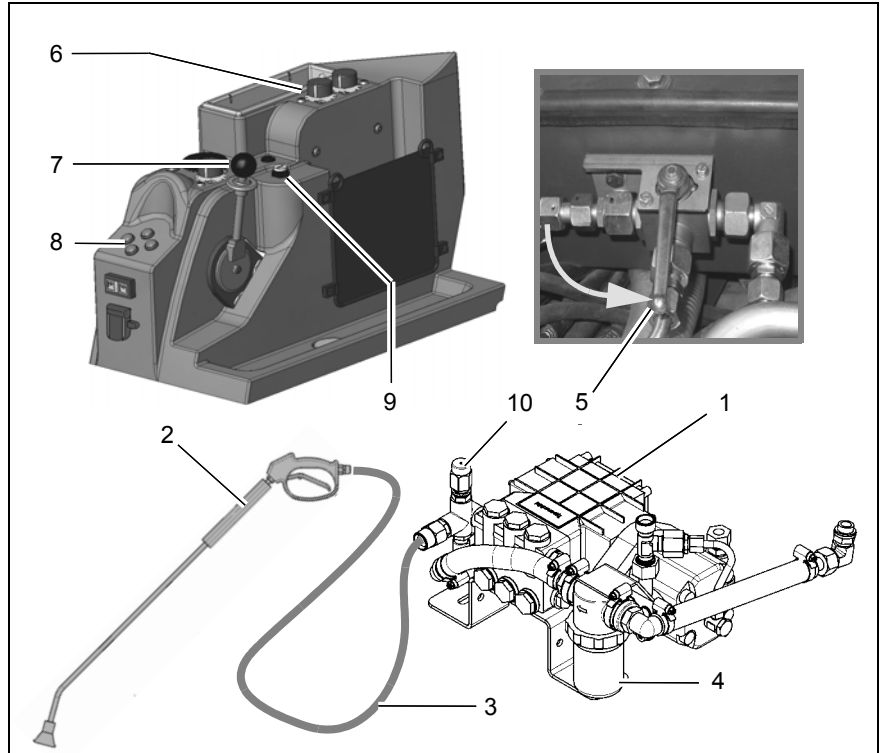


Fig.24

Operation

Before starting up



Turn off the engine before connecting the high pressure washer (Fig. 24/1)!

Before starting up, carry out the following tasks:

- Fill up the solution tank
- Check the water filter (Fig. 24/4)
- Turn the switch valve (Fig. 24/5) at the terminal box to high pressure washer operating mode
- Install the high pressure hose (Fig. 24/3) between the high pressure washer (Fig. 24/1) and the spray lance (Fig. 24/2).

Working with the high pressure washer



High pressure jets can be dangerous if used inappropriately. The jet must never be directed towards people, active electrical equipment or the device itself!

1. Start up the engine with the ignition switch (Fig. 24/9).
2. Turn the adjustment lever (Fig. 24/7) to the preferred engine speed.
3. Adjust the speed of the circular brushes (Fig. 24/6) to the maximum speed.
4. Lower the front attachment by pressing the button (Fig. 24/8) (high pressure washer is switched on).
5. The working pressure can be pre-adjusted with the pressure controller (Fig. 24/10).

3 Operation

3.1 Initial instruction

Instructions to operators are required before putting the machine into service. Only technicians from your local authorized Hako dealer are permitted to give initial instructions on how to use the Hako-Citymaster 1250.

The manufacturing plant will notify the dealer immediately after delivering the machine, and the dealer will contact you to arrange a date.

3.2 Prior to starting up

Carry out the following checks before starting the Hako-Citymaster 1250:

1. Locking strap

Before commissioning, the locking strap has to be detached from the locking bolt and be moved to the working position.



When the locking strap is inserted, the vehicle cannot be steered.

2. Checking the fuel

Check the fuel indicator, if necessary top up the fuel.

3. Checking the engine oil

Check the oil level using the dipstick, if necessary, top up engine oil.

4. Checking hydraulic oil

Check the oil level on the fill level indicator, if necessary, top up the hydraulic oil.

5. Checking the coolant

Check the coolant level in the coolant compensation tank, if necessary, top up the coolant.

6. Check the tire pressure, see Technical Data

7. Brake

In order to check the functioning of the brake pedal, check after about half the pedal travel and when pushing hard whether firm resistance is encountered at the pedal. Test the braking effect while driving slowly. During the braking test watch out for traffic at the rear!

8. Steering

In order to check functioning move the steering wheel back and forth and check whether movement is seen at the articulated steering joint.

9. Illumination

Check the functioning of all lighting elements on the vehicle.

10. Adjusting the wing mirror. If necessary, switch on wing mirror heating.

3.3 Starting up the vehicle



The following safety information has to be observed!

- Operating manual, first-aid kit and advance warning triangle are to be carried in the vehicle at all times.
- The Hako-Citymaster 1250 may only be operated by suitable personnel who have been trained to operate the equipment, have proven their capability to operate the vehicle to the satisfaction of the contractor or person appointed by him, and have been explicitly charged by him to operate the machine.
- It is forbidden to transport people on the vehicle!
- The driving speed must always be adapted to the ambient conditions and load status.
- In the transport mode on public roads, the working lamps are to be switched off.
- Driving behavior and the ability to steer and brake effectively are influenced by the load and the attachment devices. For this reason, ensure that the machine remains adequately steerable and able to be braked.
- When attaching devices, care is to be taken that under no circumstances the permissible load on the front and rear axles and the total weight are exceeded.
- During the coupling process ensure that there are no people within the hazard zone
- It is forbidden to move into the hazard areas of the machine (e.g. near the articulated joint, the attachment devices, below the raised dirt hopper, tractor/trailer combination).
- The vehicle must remain steerable. If in doubt, the vehicle has to be weighed together with the total weight of the attachment device.
- The attachment devices are to be raised into the transport position and secured there.
- The dirt hopper is to be fully lowered.
- The engine can only be started from the driver's seat. When traveling never leave the driver's seat.
- Do not let the engine run in enclosed spaces.
- Ensure adequate visibility.
- At ambient temperatures of -10° C the engine has to be allowed to warm up for approx. 20 minutes. From +10° C, warming up is no longer necessary.

Operation

For driving, the following operating elements are to be operated:

Procedure:

1. All operating levers and switches have to be in the zero position.
2. The vehicle's parking brake must be applied.
3. Adjust the driver's seat.
4. Start up the engine with the ignition key.
5. Pre-select the driving mode. Transport mode (0 to 30 km/h) or work mode (0 to 16 km/h).
6. Release the parking brake.
7. Slowly push the accelerator pedal for the desired direction and speed down; the vehicle will start moving.

Operation

3.4 Working with the sweeping system

- 1 Circular brushes
- 2 Vacuum nozzle
- 3 Solution tank
- 4 Dirt hopper
- 5 Ignition lock
- 6 Speed adjustment lever for engine
- 7 Suction turbine / solution pump
- 8 Lifting/lowering/sideways movement
- 9 Speed adjustment for circular brushes
- 10 Surface pressure from circular brushes (thumb screws)
- 11 Water flow at spray nozzles
- 12 Lever for solution for vacuum nozzle
- 13 Flashing beacon
- 14 Driving lamps
- 15 Accelerator pedal/larger material flap
- 16 Covers for dirt hopper
- 17 Auxiliary tool
- 18 Lever for circulation water system
- 19 Spring pin circular brush

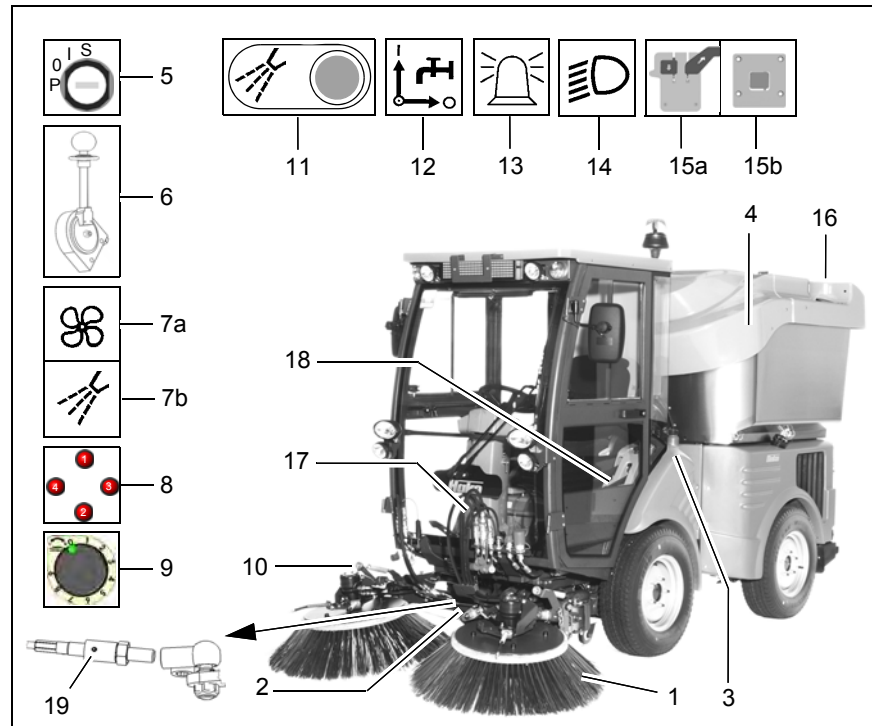


Fig.25

Operation

Check before starting work:

- Check the spray nozzles on the circular brushes (Fig. 25/1) and on the vacuum nozzle (Fig. 25/2).
- Top up the solution tank (Fig. 25/3). The filling volume is approx. 170 liters.
- Check the strainer on the solution tank (Fig. 25/3).
- Top up the dirt hopper (Fig. 25/4) with approx. 100 liters of circulation water (water level approx. 10 cm above floor flap).
- Check whether the circulation water is flowing, if necessary remove any blockages.

Procedure:

1. Start up the vehicle (Fig. 25/5) and drive to the job location.
2. Set the speed adjustment lever (Fig. 25/6) to the preferred speed
3. Switch on the suction turbine (Fig. 25/7a).
4. Lower the sweeping unit (Fig. 25/8).
5. Adjust the circular brush speed on the speed adjuster (Fig. 25/9).
6. Check the circular brush surface pressure using the thumb screws (Fig. 25/10).
7. Open the circulation water system

- (Fig. 25/18).
8. Switch on the solution pump (Fig. 25/7b) and adjust the water flow for the spray nozzles (Fig. 25/11) in such a way that dust formation in the sweeping area is optimally prevented.
9. Open the water valve (Fig. 25/12) for moisturizing the suction pipe when necessary.
10. Switch on the flashing beacon (Fig. 25/13).
11. If necessary, switch on the driving light (Fig. 25/14).
12. Slowly push down the accelerator pedal (Fig. 25/15a) until the vehicle starts moving; the speed is increased if the pressure on the pedal is increased.



Open the circulation water valve:
before opening, switch on the suction turbine.
Close the circulation water valve:
Close the circulation water valve first, then switch off the suction turbine.



Do not exceed the permitted total weight. Check the fill level of the dirt hopper at frequent intervals.

Causes of malfunctioning

The following factors might lead to problems in the suction system:

- The dirt hopper is full.
- Covers (Fig. 25/16) on the dirt hopper for the manual suction hose not correctly put in place.
- Dirt hopper lock not closed.
- If there is a blockage in the vacuum nozzle, use the auxiliary tool (Fig. 25/17) to carefully clean the vacuum nozzle, see paragraph 2.4.8.
- The circular brushes cannot be pivoted in. Check the heavy duty spring pin (Fig. 25/19); change it, if necessary. The heavy duty spring pin is a predetermined breaking point and must not be modified!

Operation

3.5 Working with the sweeping system

- 1 Scrubber unit
- 2 Vacuum nozzle
- 3 Solution tank
- 4 Dirt hopper
- 5 Ignition lock
- 6 Speed adjustment lever for engine
- 7 Suction turbine
- 8 Lifting/lowering/sideways movement
- 9 Speed adjuster for circular scrubbers
- 10 a) Adjustment of surface pressure for circular scrubbers
b) Changeover apply pressure/ release pressure
- 11 Water flow to scrubber unit
- 12 Dirt water/solution
- 13 Flashing beacon
- 14 Driving lamps
- 15 Accelerator pedal/larger material flap
- 16 Covers for dirt hopper
- 17 Auxiliary tool
- 18 Lever for circulation water system
- 19 Recycling system (optional)

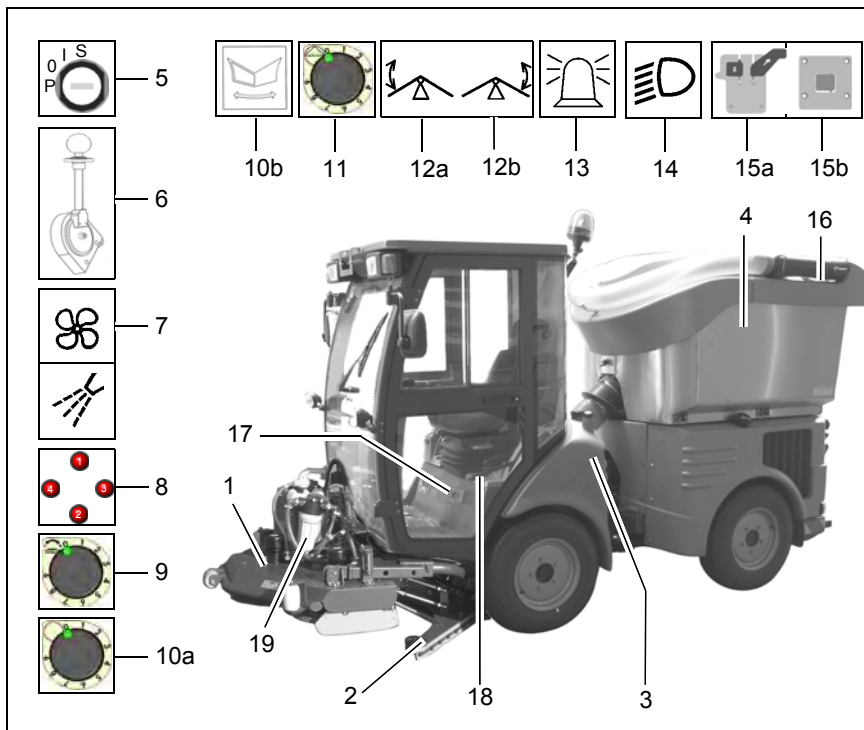


Fig.26

Operation

Check before starting work:

- Check the metering and the filter elements on the recycling system (Fig. 25/19).
- Check the strainer at the solution tank (Fig. 25/3).
- Top up the solution tank (Fig. 25/3). The filling volume is approx. 170 liters.
- Fill the dirt hopper (Fig. 25/4) with approx. 250 liters of circulation water.

Procedure:

1. Start up the vehicle (Fig. 25/5) and drive to the job location.
2. Set the speed adjustment lever (Fig. 25/6) to the preferred speed.
3. Switch on the suction turbine (Fig. 25/7).
4. Lower the scrubber unit (Fig. 25/8).
5. Switch on the water for the scrubber unit using the rotary switch (Fig. 25/11) and adjust the water flow.
6. Adjust the scrubber speed at the speed adjuster (Fig. 25/9).
7. Preselect surface pressure or the relief of the surface pressure exerted by the scrubbers using switch (Fig. 25/10b) and turn it on and ad-

just it using the rotary switch (Fig. 25/10a).

8. Switch on the flashing beacon (Fig. 25/13).
9. Switch on driving lamps if required (Fig. 25/14).
10. Slowly press down the accelerator pedal (Fig. 25/15a) until the vehicle starts moving; the speed increases as the pressure on the pedal is increased.

Switch on the the recycling system (optional)

1. Fill the dirt hopper with a maximum of 200 liters of water.
2. Connect the coupling for the circulation water supply at the dirt hopper to the circulation water coupling for the scrubber unit.
3. Connect the coupling at the solution supply to the solution coupling on the scrubber unit.
4. Using the selection switch (Fig. 25/12) on the left panel, switch from solution operation (Fig. 25/12b) to circulation water operation (Fig. 25/12a).



Do not exceed the permitted total weight. Check the fill level of the dirt hopper at frequent intervals.

Causes of malfunctioning

The following factors might lead to problems in the suction system:

- The dirt hopper is full.
- Cover (Fig. 25/16) on the dirt hopper for the manual hose not properly closed.
- Dirt hopper lock not closed.
- Blockage in the suction system.
- If there is a blockage in the vacuum nozzle, use the auxiliary tool (Fig. 26/17) to carefully clean the vacuum nozzle, see paragraph 2.4.8.

Operation

3.6 Parking the vehicle

3.6.1 Parking after the end of working



Before leaving the vehicle, the driver has to set all operator controls to their zero position, protect the vehicle against unintended rolling away and secure it against unauthorized use. The driver has to ensure that the Hako-Citymaster 1250 is parked on a firm surface. After full load operation, allow the diesel engine to continue idling for 1 - 2 minutes.

1. Allow the accelerator pedal to return to the zero position or take the foot of the pedal. The hydrostatic drive will brake the vehicle until standstill. If this braking effect is not sufficient, the service brake can be applied in addition.
2. Apply the parking brake.
3. Move the speed adjuster to the idling position.
4. Switch the engine off and remove the ignition key.
5. If necessary, lock the driver's cabin.



On slopes protect the Hako-Citymaster 1250 in addition against rolling away; use chocks.



Do not switch the engine off while the attachment device is switched on.

3.6.2 Switching off during breaks

Even during short breaks in his work the driver has to move all operator controls to the zero position before he leaves the vehicle. Apply the parking brake and protect against unauthorized use.

3.6.3 Stoppages on account of malfunctions

If any malfunction occurs, the engine of the Hako-Citymaster 1250 has to be stopped immediately.

A vehicle broken down on a public road has to be made safe by means of the hazard warning lights and the advance warning triangle. If the electrical system has failed, the vehicle has to be made safe by means of the warning lamp.

Operation

3.7 Topping up solution

Remove the cover and top up the solution tank until the fill level indicator shows that the maximum has been reached. The filling volume is approx. 170 liter.



From the public water supply, water from the mains may only be filled via the “D hose connection”!

At temperatures below 0 °C (risk of freezing), the water has to be drained from all water-filled components!

3.8 Topping up the circulation water

In order to allow operation to continue for as long as possible, approx. 200 liters of water should be filled into the dirt hopper.



At temperatures below 0°C degrees (risk of freezing), the water has to be drained from all water-filled components.

Operation

3.9 Emptying the dirt hopper

When the flow rate in the suction system decreases or dirty water is left on the ground, the following steps are to be taken:

1. Close the circulation water supply and switch the suction turbine off.
2. Close the solution supply.
3. Lift the front attachment device.
4. Set the speed adjustment lever to transport mode and drive to the depot.
5. Before emptying the dirt hopper, open the lock on the cover.
6. Reverse to the dumping location.
7. Turn the speed adjustment lever to the zero position and apply the parking brake.
8. Raise and empty the dirt hopper. Open the floor flap and remove the coarse debris.
9. Lower the dirt hopper again and lock the floor flap and the cover.
10. Return to work or clean the vehicle.



When tilting the dirt hopper, ensure the vehicle is standing sufficiently stable.

Operation

3.10 Cleaning the vehicle

The cleaning work described below has to be carried out at least daily or, in the case of major contamination, more often.



Do not use a steam cleaner or high pressure washer. Do not direct the water jet directly against electrical or electronic components.

1. Start up the vehicle and drive to a suitable location for cleaning.
2. Turn the speed adjustment lever to the working mode and switch the suction turbine on.
3. Place a water hose in front of the vacuum nozzle until water is sucked into the dirt hopper.
4. Then connect the water hose to the water connection on the dirt hopper and allow water to be sucked into the suction turbine.
5. Switch off the suction turbine.
6. Open the lock on the dirt hopper and raise the dirt hopper until the stop is reached.



Allow the water sucked in previously to drain first!

7. Clean the inside of the dirt hopper, including the strainer, by means of a water jet.
8. Unlock and open the floor flap. Use the water jet to clean below the floor flap.
9. Open the circulation water hose. Flush the circulation water hose using the water hose.
10. Assemble the circulation water hose, lock the floor flap and lower the dirt hopper.

Operation

3.11 Towing and transportation

3.11.1 Towing the vehicle

When the drive motor is at standstill the wheels are blocked. Should it become necessary to tow the Hako-Citymaster 1250 or to move it you will have to open the bypass valve (Fig. 27/2). The bypass valve is below the rear frame in the articulated joint area on the right-hand side above the steering cylinder and it is easily accessible. It can be opened by means of an open-ended wrench (SW 9) by rotating it in the flow direction (notch on the square end). The towing eyes (Fig. 28/1) are located at the front of the vehicle frame.



When the engine is at standstill the steering only offers an emergency steering function.

The towing speed must not exceed a maximum of 2 km/h, the towing time 30 minutes and the towing distance 1 km.

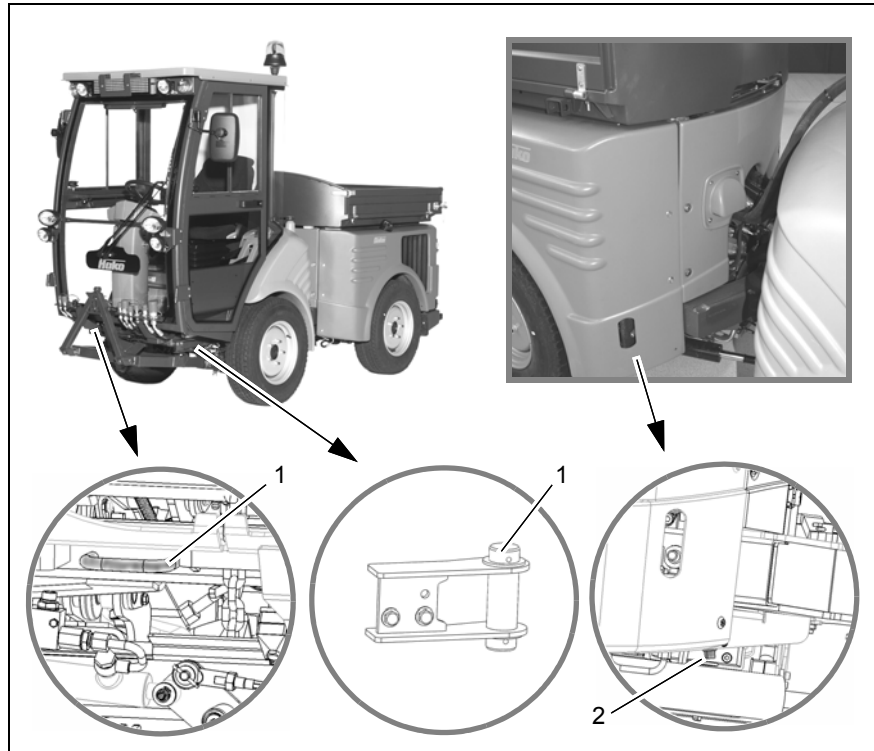


Fig.27

3.11.2 Transportation

When transporting the Hako-Citymaster 1250 on a truck, the parking brake has to be applied and the vehicle has to be secured with straps.

The lashing points are located at the front at the towing eyes (Fig. 27/1), the vehicle frame and at the rear at the lower support points for the connection of the rear unit (Fig. 28/4).

In addition, the locking strap (Fig. 28/3) has to be attached to the locking bolt (Fig. 28/2).

During the transport mode, the sweeping unit has to be secured. Position the lock (Fig. 28/1) for the transportation into position 1.



If the locking strap is inserted (Fig. 28/3) the vehicle cannot be steered!

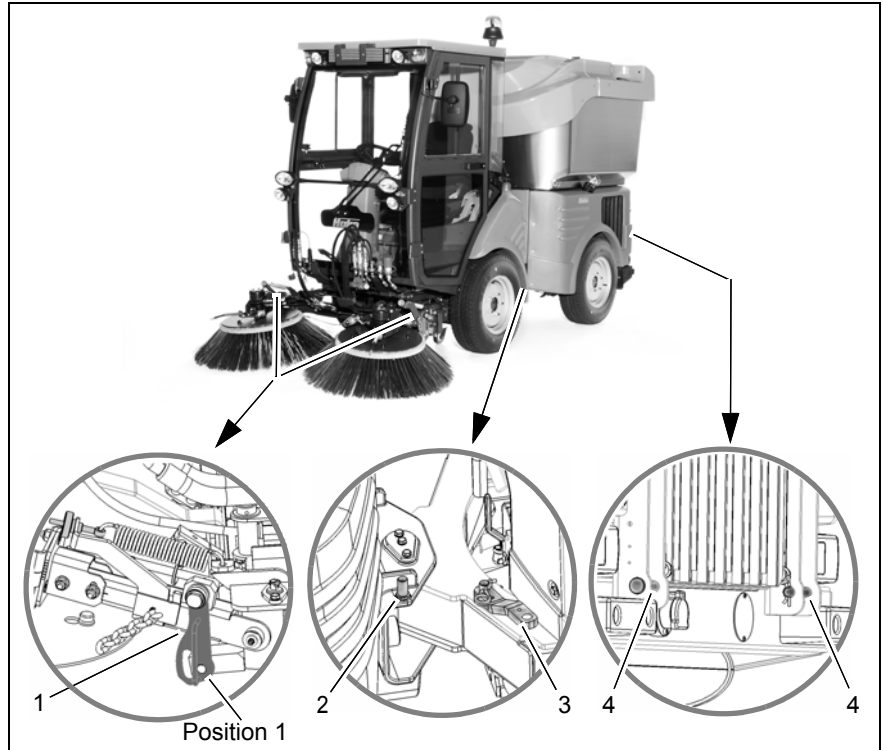


Fig.28

4 Attachment devices

With the attachment devices approved by Hako, if used as intended, the axle load and total weight for the vehicle are not exceeded.

4.1 Structure of the sweeping system

4.1.1 Installing the sweeping unit

For installing the sweeping unit the storage stand (Fig. 29/1) is required.

1. Push the sweeping unit with the storage stand to the vehicle.
2. Insert the supporting arms (Fig. 29/2) into the guides (Fig. 29/3) and secure them with locking bolts and locking pins.

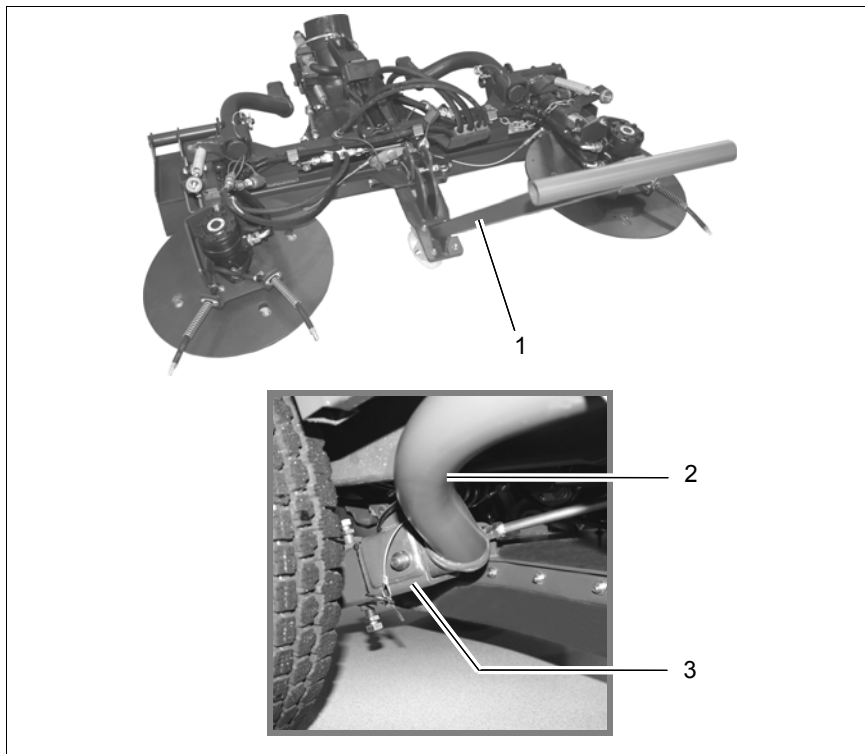


Fig.29

Attachment devices

3. Close the connections.
 - A Sideways movement of the front unit (forwards/reversing)
 - B Sideways movement of the front unit (forwards/reversing)
 - C 7-pole encoding connector (series)
12-pole encoding connector (scrubber system option)
 - D Proportional control of supply line (max. 20 l/min)
 - E Proportional control of return line (max. 20 l/min)
 - F Lifting the vacuum nozzle
 - G Water connection
4. Attach Bowden cable (Fig. 30/1) to the larger material flap (pay attention to the path!).

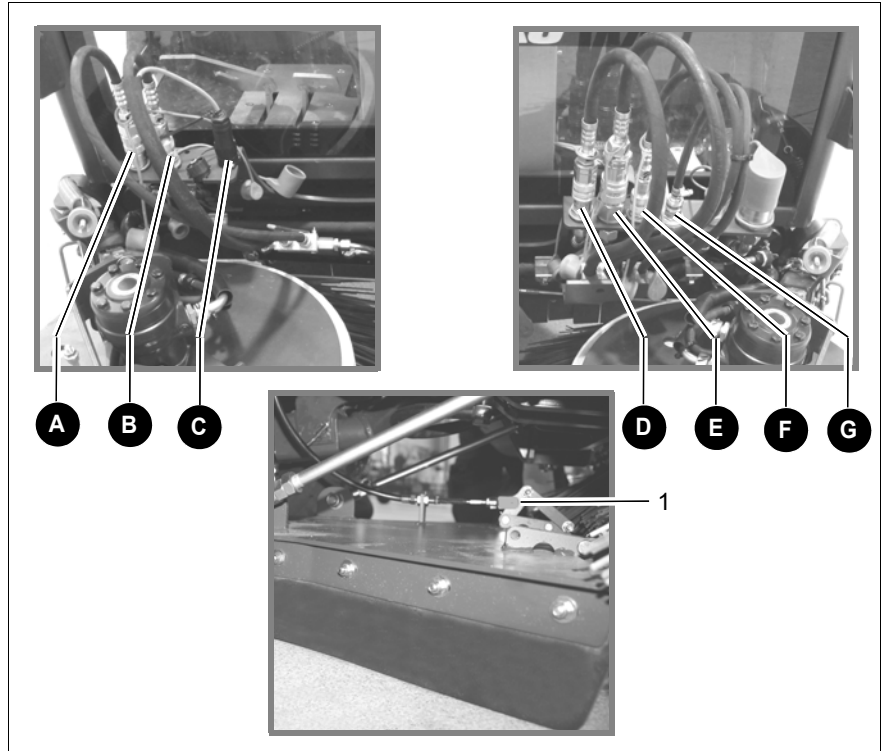


Fig.30

Attachment devices

5. Attach Bbowden cable (Fig. 31/1) for the circulation water system.
6. Attach the water hose (Fig. 31/2) for the circulation water system.
7. Insert the suction hose from above and attach it to the vehicle's rear section (Fig. 31/4).
8. Attach the suction hose at the bottom of the suction nozzle (Fig. 31/3).

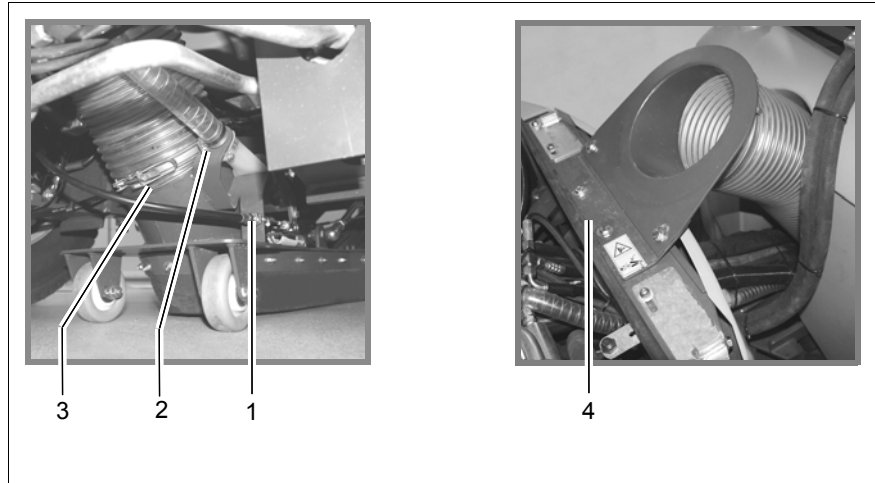


Fig.31

Attachment devices

9. Attach the solution hose (Fig. 32/1).
10. Raise the sweeping unit by pressing the Raise button (on the right-hand operating panel) and attach the attachment chain (Fig. 32/2).



Dismantling is done in reverse order. Pay attention to the following:

Before dismantling the circular brushes have to be moved outwards.

Detach the circular brushes from the sweeping unit.

Position the setting down frame at the centre of the frame (Fig. 32/3).

When setting down the sweeping unit ensure that the seals (Fig. 32/4) on the vacuum nozzle are not kinked.

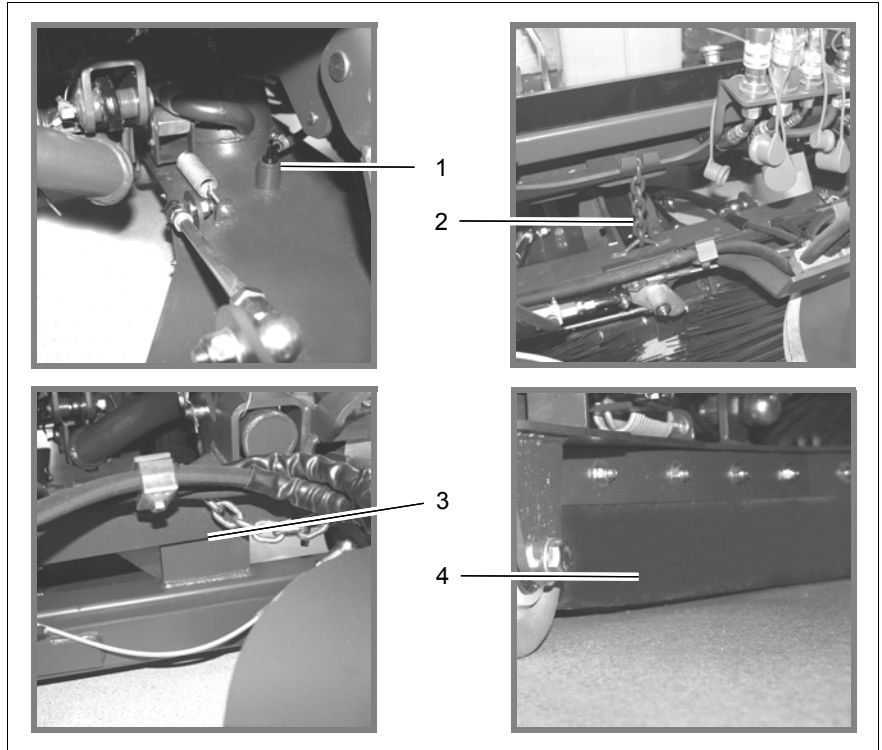


Fig.32

Attachment devices

4.1.2 Installation of the dirt hopper

For the installation of the dirt hopper the storage stand (Fig. 33/4) is needed.

1. Fully retract the lifting cylinder (Fig. 33/1) by pressing the key (Fig. 33/2) and carefully fold backwards.
2. Loosen the attachment screws (Fig. 33/3) for support of the dirt hopper.
3. Push the dirt hopper with the storage stand (Fig. 33/4) over the basic vehicle.
4. Fold up the lifting cylinder (Fig. 33/5) and insert it into the u-shaped recesses in the dirt hopper.

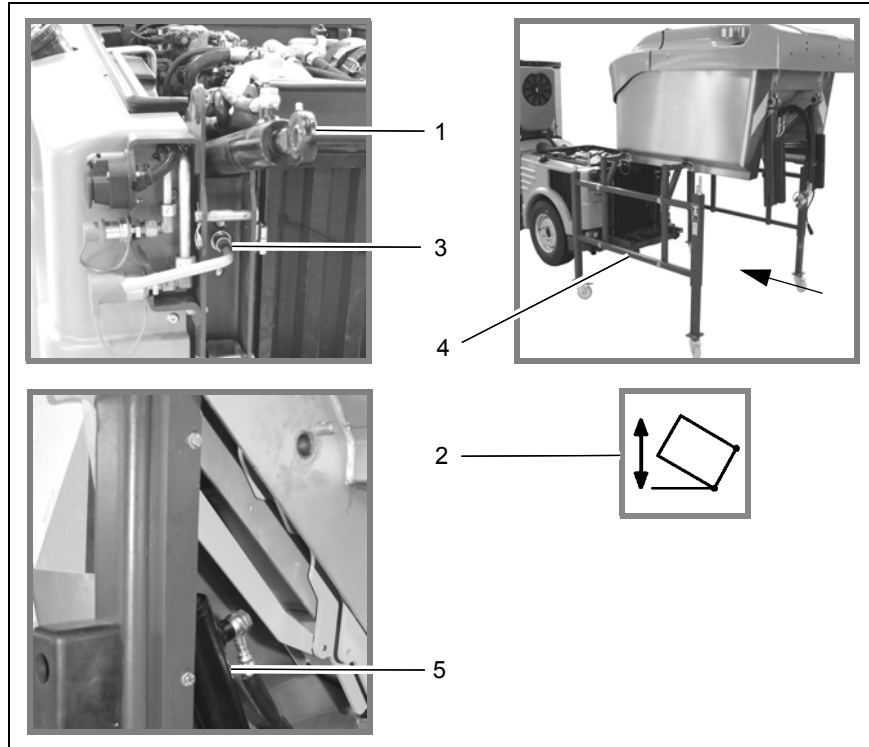


Fig.33

Attachment devices

5. Lower the dirt hopper using the crank (Fig. 34/1) uniformly and in parallel until the holes (Fig. 34/3) for the lifting cylinder (Fig. 34/2) are aligned.
6. Attach the lifting cylinder using locking bolts (Fig. 34/4) and secure with a linchpin (Fig. 34/5).
7. Continue lowering the dirt hopper uniformly with the crank, until the holes (Fig. 34/6) for the locking bolt are aligned.
8. Attach the rear supports for the dirt hopper using locking bolts and secure with the linchpin.

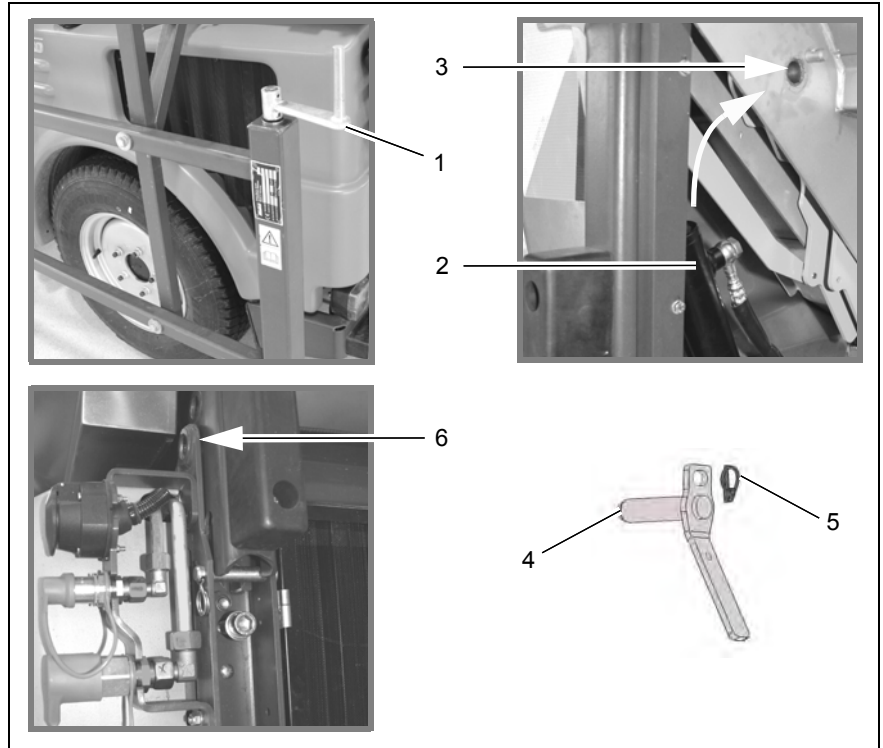


Fig.34

Attachment devices

9. Align the dirt hopper with the two adjustment screws (Fig. 35/6).
By screwing in the right-hand (or left-hand) adjustment screw the dirt hopper with its support blocks is pushed to the left (or the right).
10. Screw the rear support for the dirt hopper to the vehicle's rear section using the attachment screws (Fig. 35/1).
11. Connect the Geka coupling (Fig. 35/2) for the circulation water system.
12. Connect the hydraulic couplings (Fig. 35/3).
13. Raise the dirt hopper using the lever (Fig. 35/4).
14. In the upper dirt hopper position once again re-tighten the two attachment screws (Fig. 35/1)!
15. Check the position of the circulation water hose (Fig. 35/5)!

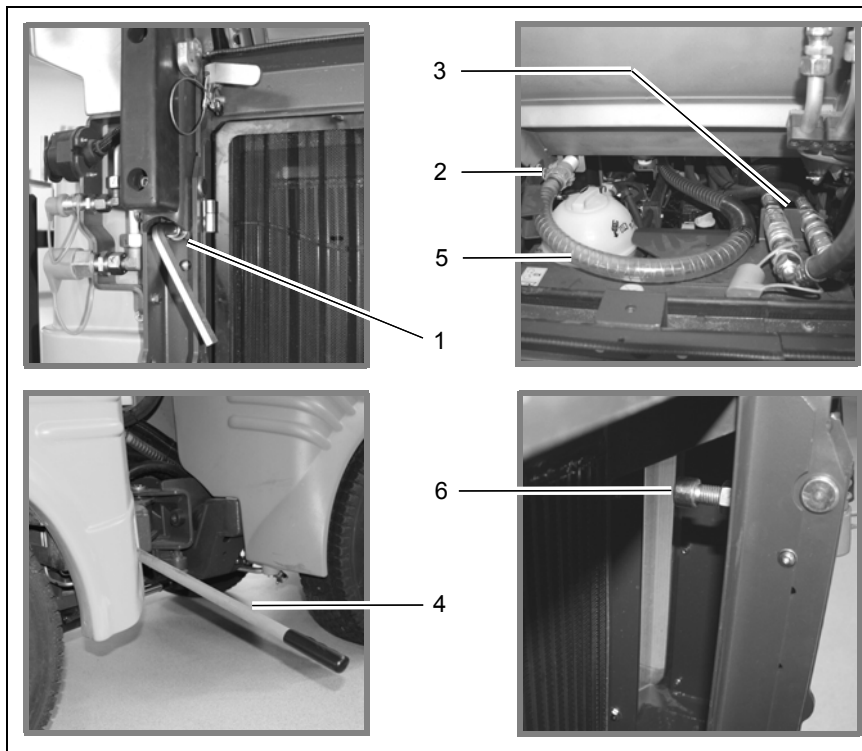


Fig.35

Attachment devices

16. Mount the rear door and close the locks (Fig. 36/1).

17. Remove the storage stand (Fig. 33/4).



Dismantling the dirt hopper is carried out in the reverse order. Ensure that the circulation water hose (Fig. 36/2) and the hydraulic hoses (Fig. 36/3) are laid carefully!

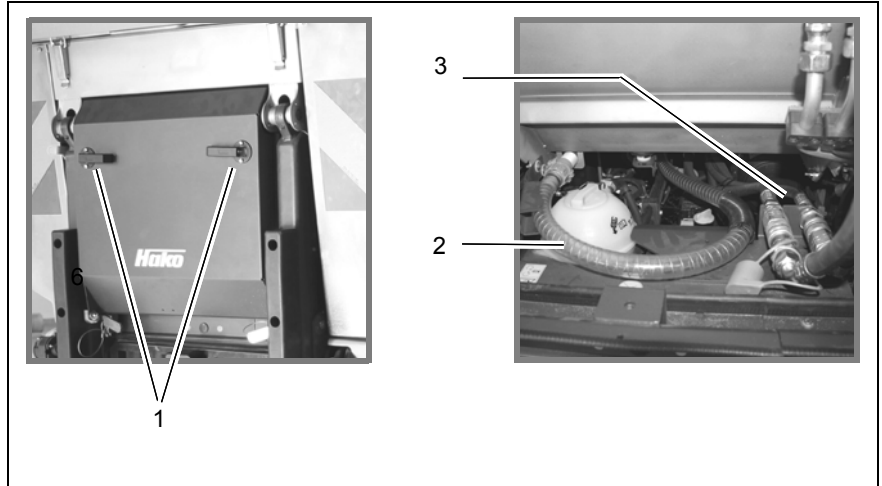


Fig.36

Attachment devices

4.2 Scrubber system construction

4.2.1 Installation of the scrubber unit

1. Assemble the supporting arms (Fig. 37/1) on the Hako Citymaster and secure using bolts and linchpins.
2. Secure the holder (Fig. 37/2) on the Hako Citymaster for the squeegee. After the initial installation the stand may remain attached to the device!
3. Guide the squeegee of the Citycleaner with the trolley (Fig. 37/3) into the holder (Fig. 37/2) and latch it in.
4. Fix the suction hose of the Citymaster to the suction pipe (Fig. 37/4).
5. Push Citycleaner with trolley (Fig. 37/5) on the supporting arms and secure using bolts and locking pins (Fig. 37/6).

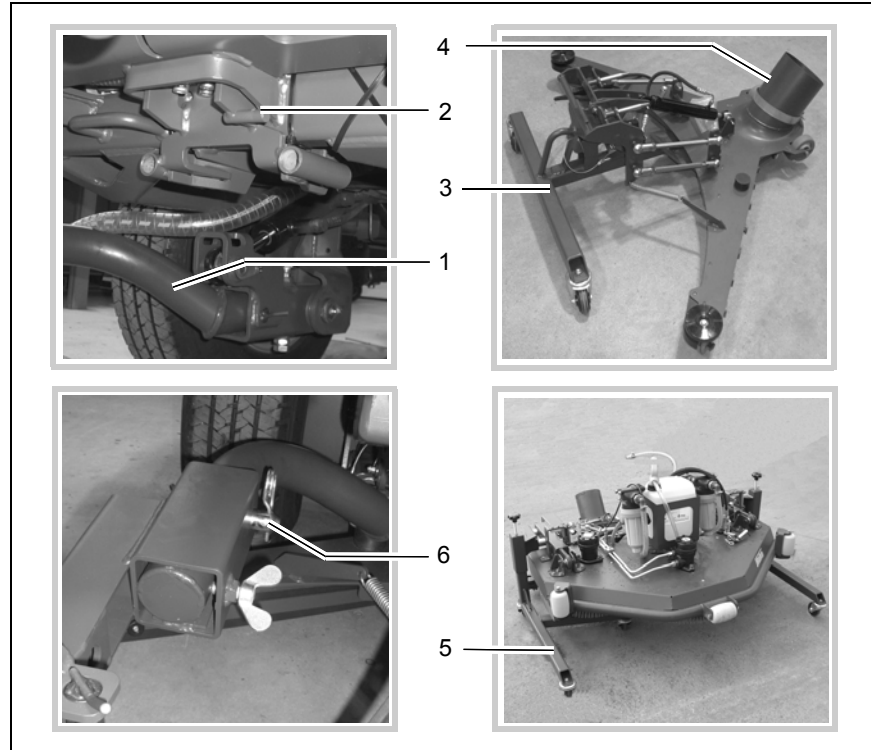


Fig.37

Attachment devices

- Close the connections, see schema.
- Assemble the brushes (Hako snap-fit system).



Dismantle the scrubber system in the reverse order.

Schema Scrubber system

I = Scrubber system without option

II = Scrubber system with option

III = Hydraulic schema

1 Nozzle

2 Distributor

3 Hose 850 mm

4 Dosage system (option)

5 Water recycling system (option)

M9 = Water pump

Y21 = Valve for Solution/Circulation water

A = Solution

B = Circulation water

C = Flow brush motors

D = Return brush motors

E = Hydraulics for squeegee

X66 = Encoding connector

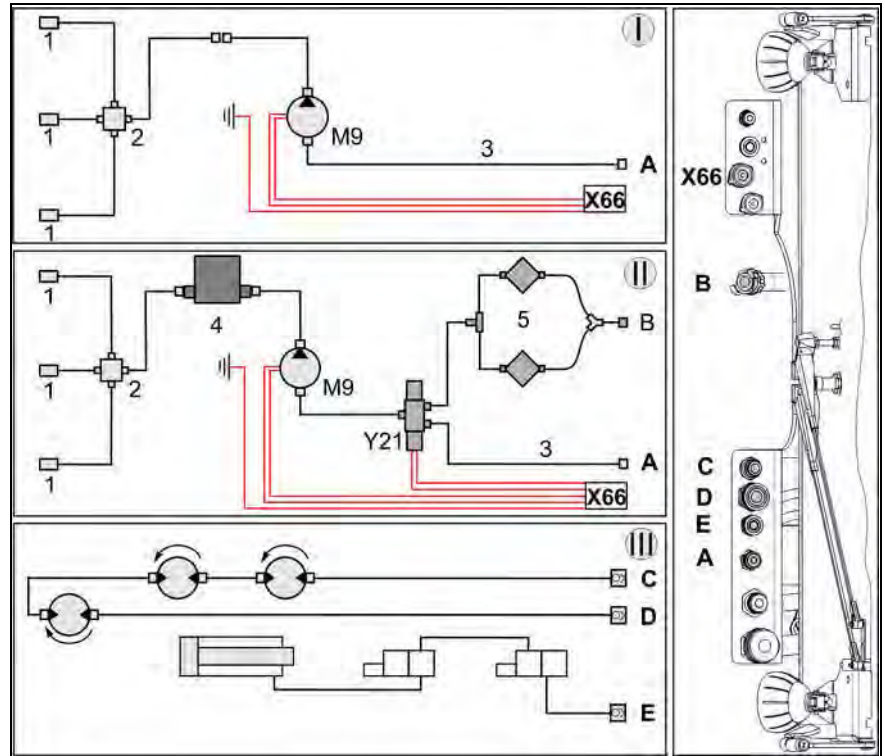


Fig.38

Attachment devices

4.3 Structure of the loading platform and the front coupling triangle

4.3.1 Installation of the loading platform

Before installation it may be necessary to dismantle the optional high pressure washer!

1. Fold the lifting cylinder (Fig. 39/1) backwards and extend it by pressing the button (Fig. 39/2).
2. Carefully place the lifting cylinder (Fig. 39/2) onto the vehicle's rear section.
3. Push the loading platform with the storage stand (Fig. 39/3) over the basic vehicle.
4. Using the cranks (Fig. 39/4) lower the loading platform uniformly and in parallel.

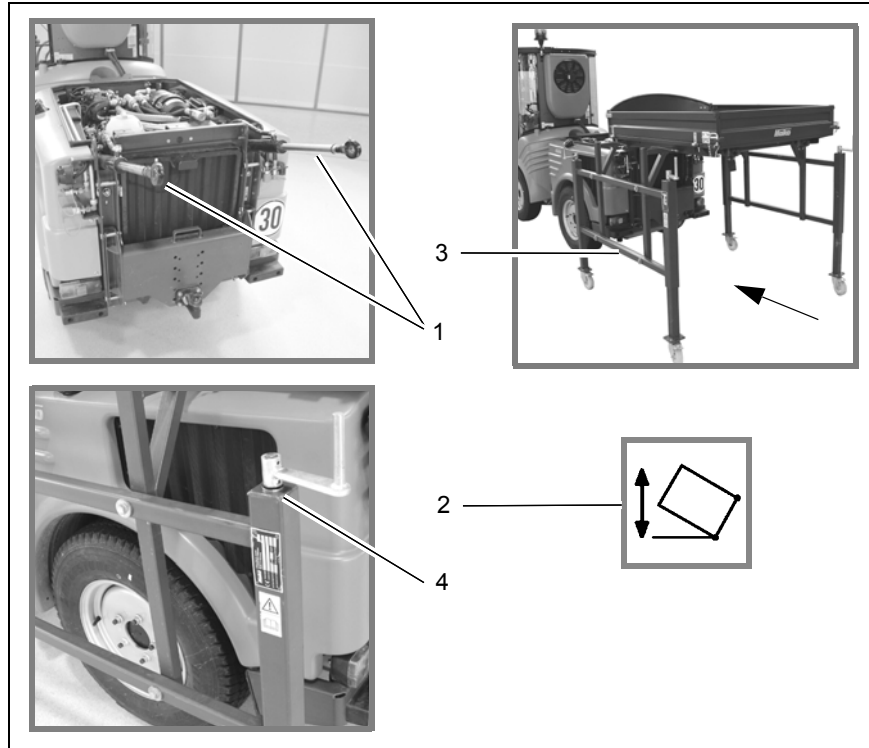


Fig.39

Attachment devices

- Using the cranks continue lowering the loading platform until the holes (Fig. 40/1) for the locking bolts are aligned.
- Secure the loading platform with the locking bolts and spring locks. For this the bush (Fig. 40/2) (see enclosed package) has to be installed in such a way that the loading platform is aligned uniformly.
- Manually fold open the loading platform and for safety insert the right lifting cylinder into the brace (Fig. 40/4).
- Insert both locking bolts (Fig. 40/3) between the loading platform and the lifting cylinder and secure it with a linchpin.



Dismantling the loading platform is done in the reverse order.

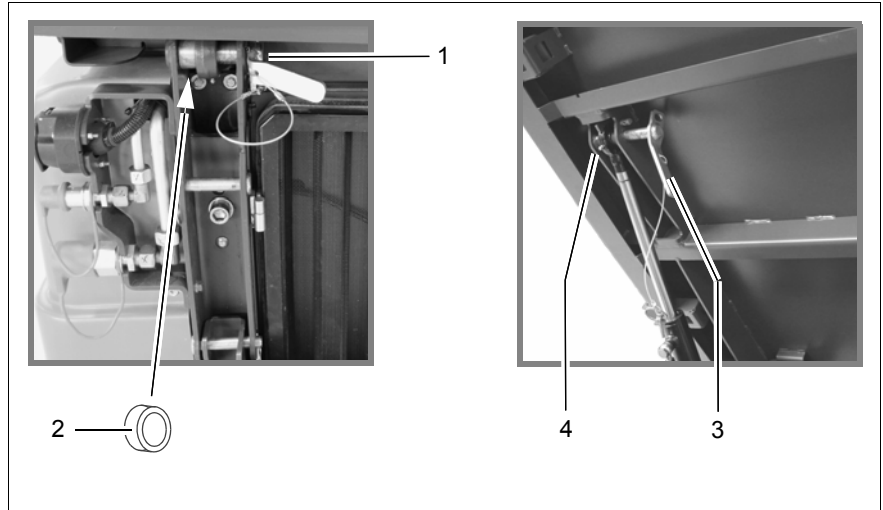


Fig.40

Attachment devices

4.3.2 Installation of the front coupling triangle

- Attach the upper link (Fig. 41/1) into the vehicle frame and secure it with locking bolt and linchpin.
- Insert the frame (Fig. 41/2) of the front coupling triangle in the adapters (Fig. 41/3) and secure them with locking bolts and linchpins.
- Insert the upper link in the front coupling triangle (Fig. 41/4) and secure it with a locking bolt and linchpin.



It is dismantled in the reverse order.

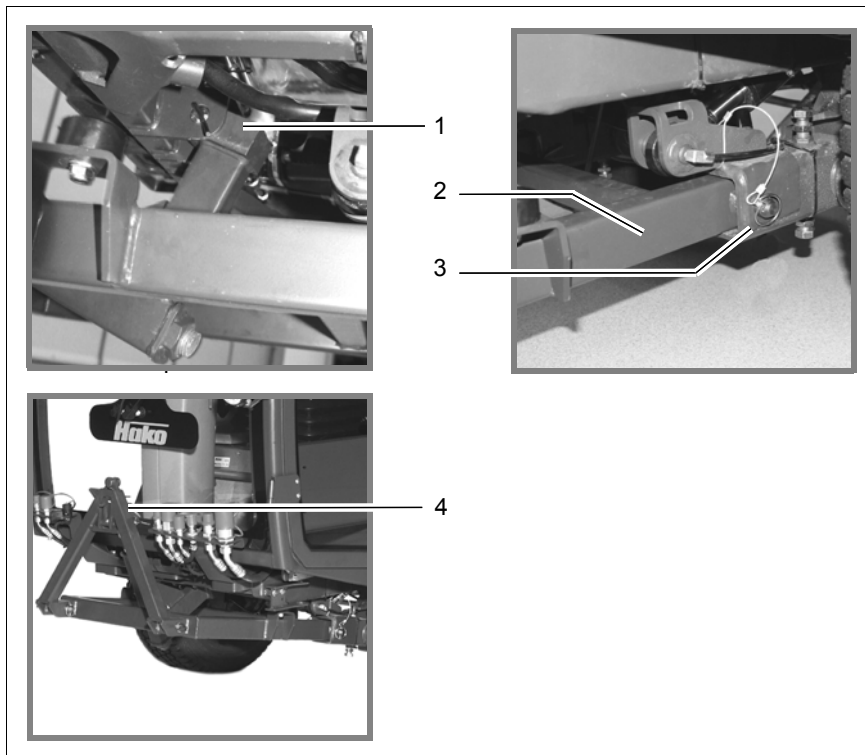


Fig.41

Attachment devices

4.4 Ballast

For the installation of other devices not approved by Hako it has to be checked in detail, whether the axle load and total weights are not exceeded.



The installation of front-mounted and rear attachment devices must not lead to the permitted total weight, the axle loads or the tire load capacity to be exceeded. The front and rear axles of the working machine must at all times be loaded with a minimum of 20% of the dead weight. Before purchasing an attachment, check that this condition is fulfilled by weighing the machine/attachment combination.

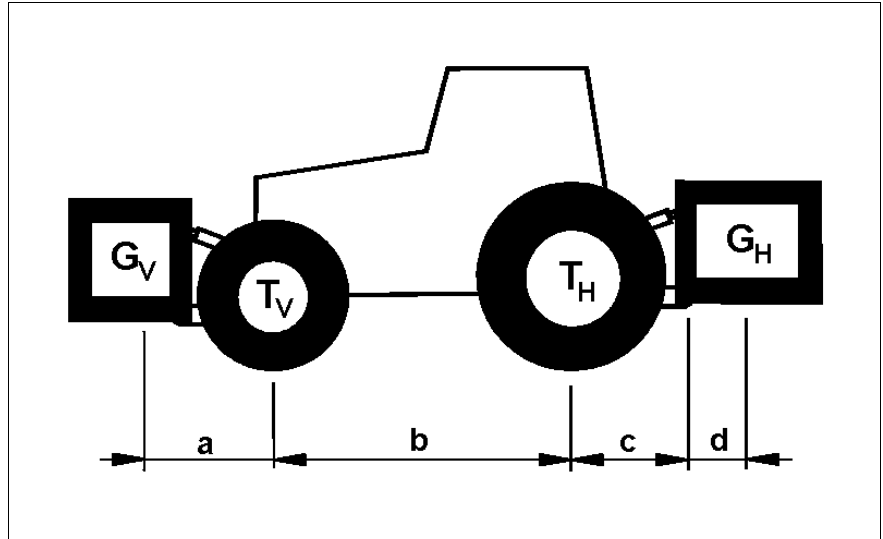


Fig.42

Attachment devices

4.4.1 Calculation of the ballast

For determining the total weight, the axle load and the tire load capacity, as well of the minimum ballast you will need the following data:



All weights information is given in (kg).

All dimensions are given in (m)

- **T_L** (kg) = dead weight of the vehicle(1)
- **T_V** (kg) = front axle load of the unladen vehicle (1)
- **T_H** (kg) = rear axle load of the unladen vehicle (1)
- **G_H** (kg) = total weight for rear attachment device/rear ballast max. 400 kg (2)
- **G_V** (kg) = total weight for front attachment device/front ballast max. 230 kg (2)

- **a** (m) = distance between the center of gravity of the front attachment device / front ballast and centre of front axles max = 1.6 m (2 and 3)
- **b** (m) = vehicle wheel base (1 and 3)
- **c** (m) = distance = 0.665 m (1 and 3)
- **d** (m) = distance between the center of the installation point between and the center of gravity of rear attachment device / rear ballast max. 0.18 m (2)

- 1 See vehicle operating manual
- 2 See price list and / or vehicle operating manual
- 3 Measure this value

Attachment devices

1. Calculation of the minimum ballast at the front for rear attachment devices.

$$G_{V \min} = \frac{G_H \times (c+d) - T_V \times b + 0,2 \times T_L \times b}{a+b}$$

Enter the result in the table.

2. Calculation of the minimum ballast at the rear for front attachment devices.

$$G_{H \min} = \frac{G_V \times a - T_H \times b + x \times T_L \times b}{b+c+d}$$

(For value “x” see manufacturer information, if no other information is available, x = 0.45)

Enter the result in the table.

3. Calculation of the actual front axle load $T_V \text{ act}$

If with the front attachment device (GV) the necessary minimum ballast at the front ($G_{V \min}$) is not reached, the weight of the front attachment device has to be increased until the minimum ballast at the front is reached!

$$T_{V \text{ tat}} = \frac{G_V \times (a+b) + T_V \times b - G_H \times (c+d)}{b}$$

Enter the calculated actual front-axle load and the load given in the operating manual for the working machine in the table.

4. Calculation of the actual total weight.

(If with the rear attachment device (GV) the necessary minimum ballast at the rear ($G_{V \min}$) is not reached, the weight of the rear-mounted attachment device has to be increased until the minimum ballast at the rear is reached!

$$G_{\text{tat}} = G_V + T_L + G_H$$

Enter the calculated actual total weight and the total permitted weight given in the operating manual for the working machine in the table.

5) Calculation of the actual rear axle load.

$$T_{H \text{ tat}} = G_{\text{tat}} - T_{V \text{ tat}}$$

Enter the calculated actual rear axle load and the total permitted rear axle load given in the operating manual for the working machine in the table.

6) Tire load capacity

Enter the double value (two tires) of the permitted tire load capacity (see e.g. documentation of the tire manufacturer) in the table.

Attachment devices

Ballast table

The calculated values have to be smaller than or equal to the permitted values!

	Actual value according to calculation		Permitted value according to operating manual		
Minimum ballast at front / rear	kg				
Total weight	kg	≤	kg		
Front axle load	kg	≤	kg	≤	kg
Rear axle load	kg	≤	kg	≤	kg

The minimum ballast has to be attached to the vehicle either in the form of an attachment device or a ballast weight!

5 Technical Data

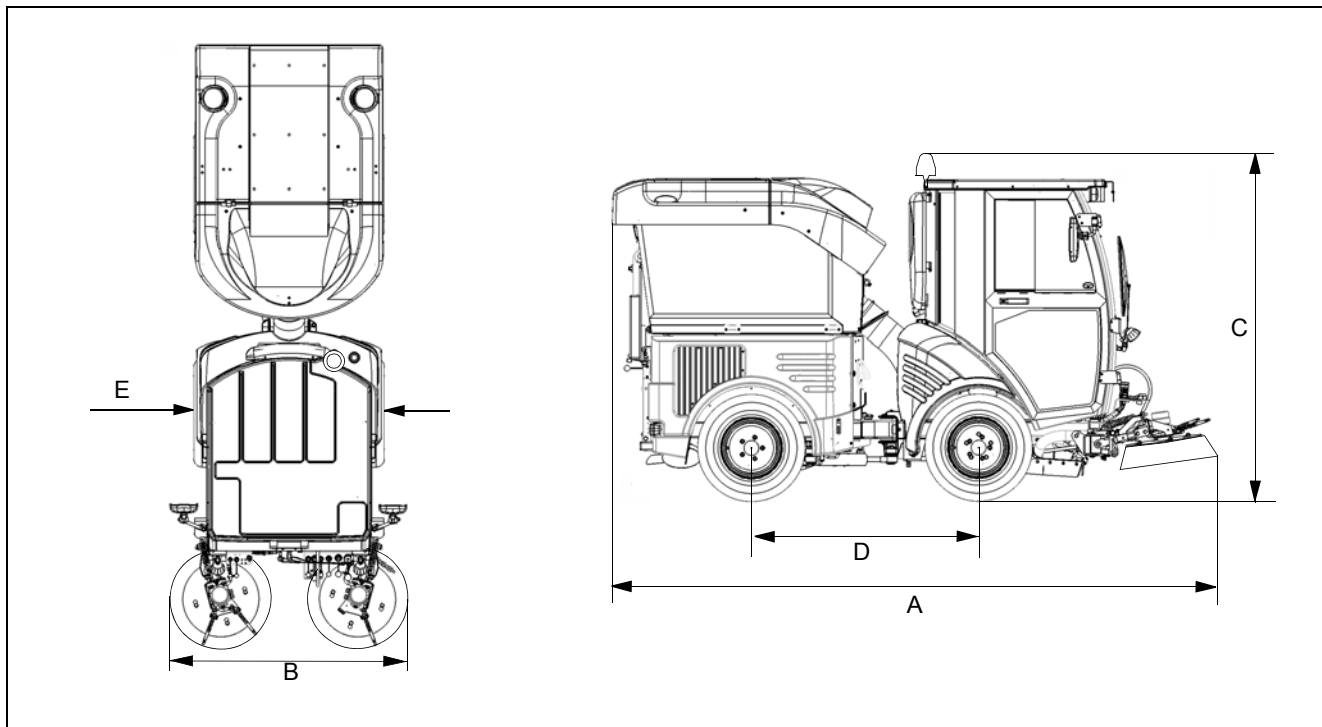


Fig.43

Technical Data

Dimensions		Basic unit with loading platform	Basic vehicle with sweeping system	Basic vehicle with scrubber system
Length (A) (depending on configuration)	mm	3255-3355	3969	4000
Width (B) (depending on configuration)	mm	1188-1318	1250-1318	1370
Height (C) (depending on configuration)	mm	1995-2202	1995-2202	1995-2202
Wheel base (D)	mm	1430	1430	1430
Gauge (E) (with tires 195R14C)	mm	984	984	984
Turning circle (external)	mm	2625	2850	2900
Weights				
Dead weight (depending on configuration)	kg	1600-1700	1980-2080	1950-2050
Gross total weight	kg	2600	2600	2600
Axle loads				
Permitted front axle load	kg	1500	1500	1500
Permitted rear axle load	kg	1600	1600	1600
Trailer weight 1)				
Permitted weight for unbraked trailers	kg	750	750	750
Permitted weight for braked trailers	kg	1750	1400	1400
Total weight of tractor/trailer combination and Climbing capacity				
Total weight for unbraked tractor/trailer combination	kg	3100	3100	3100
Total weight for braked tractor/trailer combination	kg	3500	3500	3500
Climbing capacity (Total weight)	%	12	12	12

1) depending on the loading of the basic machine
max. permitted weight of tractor/trailer combin.

Technical Data

Engine		
Manufacturer		Yanmar Co. Ltd.
Type		4 TNV 88-BMHW
Procedure		4 stroke Diesel engine
Power (at 2600 1/min)	kW/ECE-R24	33
Torque, max	Nm / 1/min	143 / 1560
Cylinder/stroke	mm	88/90
Cubic capacity	cm ³	2190
Compression ratio		19, 1:1
Number of cylinders		4 cylinders row
Engine oil from Mobiloil (or similar)		Delvac MX 15W-40
Engine oil volume with/without filter change	liter	8.2/8.6
Engine oil filter, screw-in cartridge	order no.	114-032
Idling speed	rpm	1100 +/- 50
Preferred engine speed / max. engine speed	rpm	2450 / 2750 +/- 25
Cooling mode: thermostat-controlled liquid cooling,		
Air filter: filter insert / safety cartridge	order no.	114-347 / 114-348
Coolant (coolant additive: Glaceelf Auto Supra) coolant additive percentage: min 40%, max 60%	liter	approx. 7.5

Technical Data

Vertical loads on couplings and slopes		
Permitted vertical load on the coupling point of the bar coupling	kg	max. 250
Permitted vertical load on the coupling point of the ball head coupling	kg	max. 150
Fuel system		
Fuel		Diesel fuel
Tank volume	liter	approx. 60
Filter, fuel	order no.	114-033
Driving speeds		
Transport mode (automotive)	km/h	0-30
Work mode (all-wheel)	km/h	0-16
Reversing	km/h	0-12
Hydraulic system/traction drive		
Hydraulic circuit 1 at 195 bar	l/min	46
Hydraulic circuit 2 at 195 bar	l/min	4-20
Driving operation at 295 bar	l/min	0-120
Hydraulic oil (e.g.: Mobiloil)		DTE 15M
Hydraulic oil filter		
- Suction return-line filter	order no.	109-279
- Ventilation filter	order no.	108-260
Hydraulic oil filling volume	Liter	45

Technical Data

Brake system		SAE J 1703
Tank volume	liter	0,5
Tire pressure		
Standard tires: 195R14C - Rim: 6J14H2 - M = 160Nm	bar	3.5
Standard tires: 215/65R14C - Rim: 6J14H2 - M = 120Nm	bar	2.9
Wide base tire: 26x12.00-12 TL8PR - Rim: 6J14H2 - M = 160Nm	bar	1.5
Sweeping system		
Speed of suction turbine	rpm	2200 - 2600
Suction pipe diameter	mm	180
Brushes (number / diameter)	piece / mm	2 / 900
Brush speed	rpm	0 - 200
Scrubber system		
Speed of suction turbine	rpm	2200 - 2600
Suction pipe diameter	mm	180
Brushes (number / diameter)	piece / mm	2 / 900
Brush speed	rpm	0 - 200
7 cbtUJbYf		
Dirt hopper capacity	m ³	1.0
Solution tank	liter	170
Dirt hopper circulation water system	liter	100/250

Technical Data

Electrical system		
Type of current		DC
Rating	V	12
Starter battery	V / Ah	12/74
Alternator	V/A	14.4/80
Noise emission at the preferred engine speed Basic vehicle with loading platform		
The driving noise in accordance with 2009/63/EC Annex VI:	dB (A)	79
The standing noise in accordance with 2009/63/EC Annex VI:	dB (A)	82
The noise at the driver's ear in accordance with 2009/76/EC:	dB (A)	81
The noise emission value at the preferred engine speed Basic vehicle with sweeping system / scrubber system		
The sound power level measured in accordance with DIN EN ISO 3744 under the maximum deployment conditions (at the workplace) (LwAd) is:	dB (A)	108
With noise insulation package (optional)	dB (A)	99
The sound power level measured in accordance with DIN EN ISO 11201 under the usual deployment conditions (at the workplace) (LpA) is:	dB (A)	79
The measurement uncertainty (KpA) is:	dB (A)	3.5
Vibration values		
The weighted, effective value of the vibration, established in accordance with ISO 1032, to which the body (feet and seat area) are exposed under normal working conditions is no more than	m/s ²	0.5

6 Maintenance and Servicing

signs on the machine.

General information



It is essential to pay attention to the information in the Chapter "Safety Information" before completing any servicing or maintenance work!

By adhering to the maintenance work recommended by us, you can be sure that the vehicle is always ready to be put into operation. Maintenance and repair work necessary on a daily and weekly basis can be carried out by a driver trained to complete the work; all other Hako system maintenance may only be completed by personnel who are appropriately qualified and trained. In case of doubt, please contact your nearest Hako service center or authorized Hako dealer. Failure to observe this annuls any rights to claims under the terms of guarantee in respect of resulting damage or consequential damage.

If you have any queries, or for ordering replacement parts, always quote the serial number, see the chapter about

Maintenance and Servicing

6.1 Hako system maintenance schedule

Hako system maintenance schedule:

- ensures the Hako machines are always ready for operation (preventive maintenance),
- minimizes operating costs, maintenance and repair costs,
- ensures the vehicle has a long service life.

The Hako system maintenance schedule describes the specific technical work necessary for the individual modules and defines the intervals for the maintenance work. Individual parts which must be replaced during maintenance work are defined and stipulated in the spare parts kits.

Hako system maintenance schedule, customer:

Work to be carried out by the customer according to the servicing and maintenance instructions in the operating manual (daily and weekly). The driver/operator receives detailed instructions when the vehicle is delivered.

Hako system maintenance schedule, one-off

(after 50 hours of operation)

Applies to all machines with internal

combustion engine drives, 1st oil change, filter change etc. to be carried out by a specialist at an authorized Hako service station.

Hako system maintenance schedule I:

(Every 250 operating hours)
Must be completed by a skilled technician in an authorized Hako service center according to the vehicle-specific system maintenance schedule using a spare parts kit.

Hako system maintenance schedule II:

(Every 500 operating hours)
Must be completed by a skilled technician in an authorized Hako service center according to the vehicle-specific system maintenance schedule using a spare parts kit.

Hako system maintenance schedule III/S:

(Every 1000 operating hours, safety check)
Must be completed by a skilled technician in an authorized Hako service center according to the vehicle-specific system maintenance schedule using a spare parts kit. All the legally prescribed

safety-relevant tests must be completed in accordance with UVV-BGV-TÜV-VDE.

Maintenance and Servicing

6.2 Maintenance report

<p>Handover</p> <p>Upgrading Test drive Handover to customer Instruction completed on: at _____ operating hours</p>	<p>Hako System Maintenance I 50 operating hours, one-off Workshop Stamp</p> <p>completed on: at _____ operating hours</p>	<p>Hako System Maintenance I 250 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>	<p>Hako System Maintenance II 500 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>
<p>Hako System Maintenance I 750 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>	<p>Hako System Maintenance III/S 1000 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>	<p>Hako System Maintenance I 1250 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>	<p>Hako System Maintenance II 1500 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>
<p>Hako System Maintenance I 1750 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>	<p>Hako System Maintenance III/S 2000 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>	<p>Hako System Maintenance I 2250 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>	<p>Hako System Maintenance II 2500 operating hours Workshop Stamp</p> <p>completed on: at _____ operating hours</p>

Maintenance and Servicing

6.3 Maintenance plan Hako system maintenance schedule, customer

Intervals stipulated.

The following maintenance work must be completed by the customer at the in-

Activity	Interval	
	Daily	Weekly
Cleaning of the machine as required	o	o
Check the engine oil level, if necessary top up	o	o
Check the coolant level in the compensation tank, if necessary top up	o	o
Check the the fuel level, if necessary top it up	o	o
Check the solution nozzle on the vacuum nozzle, if necessary clean it	o	o
Check the maintenance indicator for the air filter, if necessary clean it	o	o
Check the combined cooler for the engine, if necessary clean it	o	o
Check the the level for the windscreen washer fluid, if necessary top up	o	o
Empty the water separator		o
Check the cabin air filter, if necessary clean it		o
Grease the lubrication points as described in the lubrication schedule		o
Check the hydraulic oil level; refill as necessary		o
Check the lighting system		o
Check the air pressure in the tires		o

Maintenance and Servicing

Hako system maintenance schedule, customer

The following maintenance work must be completed by the customer at the intervals stipulated.

Activity	Interval	
	Daily	Weekly
Check sweeping unit / scrubber unit for wear and damage Check sweeping pattern, adjust if necessary Check the spray nozzles, spray nozzle filters and strainers in the water system, if necessary clean them		o
Check vacuum nozzle for wear and damage Check the vacuum nozzle adjustment, if necessary adjust it Check the suction hose for wear and proper installation Check the seal between the suction hose and the dirt hopper Check the solution nozzle and the circulation water system on the vacuum nozzle Check the vacuum nozzle flap		o
Test drive with braking test		o

Maintenance and Servicing

Hako system maintenance schedule - one-off

The following maintenance work must be completed by an authorized Hako service center.

Activity	Interval
	After 50 operating hours (one-off)
Engine Change the engine oil Change engine oil filter Change the fuel filter Empty the water separator Check the idling, preferred and operating engine speeds Check the v-belts for the generator and the air conditioning system Check the cooler and the coolant hoses Check the combined cooler and radiator grille	○ ○ ○ ○ ○ ○ ○ ○
Brakes Check the service brake and parking brake, if necessary readjust them Check the the Bowden cables on the parking brake for signs of rubbing Check the brake fluid for the service brake, if necessary top up	○ ○ ○
Wheels Check the bolts for proper tightness (also after every wheel change) Check the tire air pressure	○ ○

Maintenance and Servicing

Activity	Interval
	After 50 operating hours (one-off)
Hydraulics Exchange the return line filter Check the oil level Check functioning and check for leaks Raise the dirt hopper using the manual pump	 o o o o
Steering Check the functioning and easy running Check the ball heads and steering cylinders	 o o
Bowden cables Check the functioning, easy operation and zero point	 o
Sweeping unit / scrubber unit Check for wear and damage Check sweeping pattern, adjust if necessary Check the spray nozzles, spray nozzle filters and strainers in the water system, if necessary clean them	 o o o
Vacuum nozzle Check for wear and damage Check the vacuum nozzle adjustment, if necessary adjust it Check the suction hose for wear and proper installation Check the seal between the suction hose and the dirt hopper Check the solution nozzle and the circulation water system on the vacuum nozzle Check the vacuum nozzle flap	 o o o o o o

Maintenance and Servicing

Activity	Interval
	After 50 operating hours (one-off)
Dirt hopper Check for signs of soiling Check the flap in the sump Check the speed of the suction turbine and check for contamination Check the hydraulic lines for the suction turbine drive for leaks Check the baffle plate for wear Check the seals on the container cover for leaks and damage Check the waste air side of the container cover for contamination	 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
Electrics Check the horn, lighting and work functions Check the cabling for signs of rubbing and wear Check the state of charge of the battery Clean and grease the battery poles	 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
Cab Clean the cabin air filter Check the functioning of the heating Check the functioning of the air conditioning system Check the windscreen washer fluid	 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Maintenance and Servicing

Activity	Interval
	After 50 operating hours (one-off)
Lubrication service	
Front unit - lifting cylinders above and below and on left-hand and right-hand sides (4x) for removing front attachment	o
Front unit - mechanism on left-hand and right-hand sides (4x) mechanism for removing front attachment	o
Sweeping system - circular brushes tilting joints left-hand/right-hand sides (4x)	o
Sweeping system - mechanism for removing vacuum nozzle (3x)	o
Sweeping system - circular brushes levers for sideways movement (2x)	o
Circulation water lever (1x)	o
Accelerator pedal (1x)	o
Brake pedal (1x)	o
Larger material flap (1x)	o
Greasing support (2x) (not for the Easy Grease option)	o
Wing mirrors on left-hand/right-hand sides (2x)	o
Lifting cylinders for dirt hopper on left-hand/right-hand sides (4x)	o
Articulated joint (2x)	o
Ball-and-socket joint for rear support (2x)	
Easy Grease (optional)	
Miscellaneous	
Check the appearance of the vehicle	o
Test drive	o
If necessary clean the vehicle	o

Maintenance and Servicing

Hako system maintenance schedule

I

The following maintenance work must be completed by an authorized Hako service center.

Activity	Interval
	Every 250 operating hours
Engine	
Change the engine oil	o
Change the engine oil filter	o
Check the fuel filter	o
Empty the water separator	o
Check the filter insert for the air filter	o
Check the v-belts for the generator and the air conditioning system	o
Check the cooler and the coolant hoses	o
Check the combined cooler and radiator grille	o
Brakes	
Check the service brake and parking brake, if necessary readjust them	o
Check the Bowden cables on the parking brake for signs of rubbing	o
Check the brake fluid for the service brake, if necessary top up	o
Wheels	
Check the wheel bolts for proper tightness (also after any wheel change)	o
Check the tire air pressure	o

Maintenance and Servicing

Activity	Interval
	Every 250 operating hours
Hydraulics Check the oil level Check functioning and check for leaks Raise the dirt hopper using the manual pump	○ ○ ○
Steering Check the functioning and easy running Check the ball heads and steering cylinders	○ ○
Bowden cables Check the functioning, easy operation and zero point	○
Sweeping unit / scrubber unit Check for wear and damage Check sweeping pattern, adjust if necessary Check the spray nozzles, spray nozzle filters and strainers in the water system, if necessary clean them	○ ○ ○
Vacuum nozzle Check for wear and damage Check the vacuum nozzle adjustment, if necessary adjust it Check the suction hose for wear and proper installation Check the seal between the suction hose and the dirt hopper Check the solution nozzle and the circulation water system at the vacuum nozzle Check the vacuum nozzle flap	○ ○ ○ ○ ○ ○

Maintenance and Servicing

Activity	Interval
	Every 250 operating hours
Dirt hopper	
Check for signs of soiling	o
Check the flap in the sump	o
Check the speed of the suction turbine and check for contamination	o
Check the bearing for the suction turbine (anti-vibration buffer)	o
Check the anti-vibration buffer for the intake sieve in the dirt hopper	o
Check the hydraulic lines for the suction turbine drive for leaks	o
Check the baffle plate for wear	o
Check the seals on the container cover for leaks and damage	o
Check the joints and bearings for the container cover	o
Check the waste air side of the container cover for contamination	o
Electrics	
Check the horn, lighting and work functions	o
Check the cabling for signs of rubbing and wear	o
Check the state of charge of the battery	o
Clean and grease the battery poles	o
Cab	
Clean the cabin air filter	o
Check the functioning of the heating	o
Check the functioning of the air conditioning system	o
Check the windscreen washer fluid	o

Maintenance and Servicing

Activity	Interval
	Every 250 operating hours
Lubrication service	
Front unit - lifting cylinders above and below and on left-hand and right-hand sides (4x) for removing front attachment	o
Front unit - mechanism for removing front attachment on left-hand and right-hand sides (4x)	o
Sweeping system - circular brushes tilting joints left-hand/right-hand sides (4x)	o
Sweeping system - vacuum nozzle lifting mechanism (3x)	o
Sweeping system - circular brushes, lever for sideways movement (2x)	o
Circulation water lever (1x)	o
Accelerator pedal (1x)	o
Brake pedal (1x)	o
Larger material flap (1x)	o
Greasing support (2x) (not for the Easy Grease option)	o
Wing mirrors on left-hand/right-hand sides (2x)	o
Cylinders for removal of dirt hopper on left-hand/right-hand sides (4x)	o
Articulated joint (2x)	o
Ball-and-socket joint for rear support (2x)	
Easy Grease (optional)	
Miscellaneous	
Check the appearance of the vehicle	o
Test drive	o
If necessary clean the vehicle	o

Maintenance and Servicing

Hako system maintenance schedule

II

The following maintenance work must be completed by an authorized Hako service center.

Activity	Interval
	Every 500 operating hours
All maintenance work as described in Hako system maintenance schedule I The following activities in addition:	o
Engine Change the fuel filter Exchange the air filter insert Check the exhaust for damage	o o o
Hydraulics Exchange the return line filter	o

Maintenance and Servicing

Hako system maintenance schedule III/S

The following maintenance work must be completed by an authorized Hako service center.

Activity	Interval
	Every 1000 operating hours
All maintenance work as described in Hako system maintenance schedule I and II The following activities in addition:	o
Engine Exchange air filter safety cartridges Check the idling, preferred and operating engine speeds Check the valve play when the engine is cold, if necessary adjust it Exchange the membrane in the valve cover for the engine ventilation Exchange the coolant - at the latest after 2 years (pay attention to antifreeze during winter operation!)	o o o o o
Brakes Check the brake pads, if necessary exchange them Exchange the brake fluid for the service brake - at the latest after two years	o o
Hydraulics Change the hydraulic oil	o
Bowden cables Exchange the Bowden cable for the engine Exchange the Bowden cables for the travel pump	o o

Maintenance and Servicing

Activity	Interval
	Every 1000 operating hours
Accelerator Check the functioning and easy movement, if necessary replace defective parts Exchange the stop disc and torsion spring on the accelerator pedal Exchange the accelerator pedal (after 2000 hours of operation)	 <input type="radio"/> <input type="radio"/> <input type="radio"/>
Articulated joint Check the rubber buffer is free of play	<input type="radio"/>
Dirt hopper Exchange the bearing for the suction turbine (anti-vibration buffer)	<input type="radio"/>
Cab Exchange the cabin air filter	<input type="radio"/>
Miscellaneous Check the notices on the machine, if necessary replace them Test all of the components relevant for functioning and safety Check the attachment devices Test drive Log according to UVV-BGV-TÜV-VDE, certification plate and inspection logbook	 <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Maintenance and Servicing

6.4 Engine

- 1 Oil filler cap
- 2 Dipstick
- 3 Engine oil filter
- 4 Drain plug for engine oil
- 5 Membrane on the valve cover



The safety information below has to be observed:

Caution with hot engine oil when the engine was running earlier.

Catch drained engine oil and dispose of with consideration for the environment.

Pay attention to cleanliness when filling with oil.

Use only the operating fluids given in the table, refer to Section 6.4.

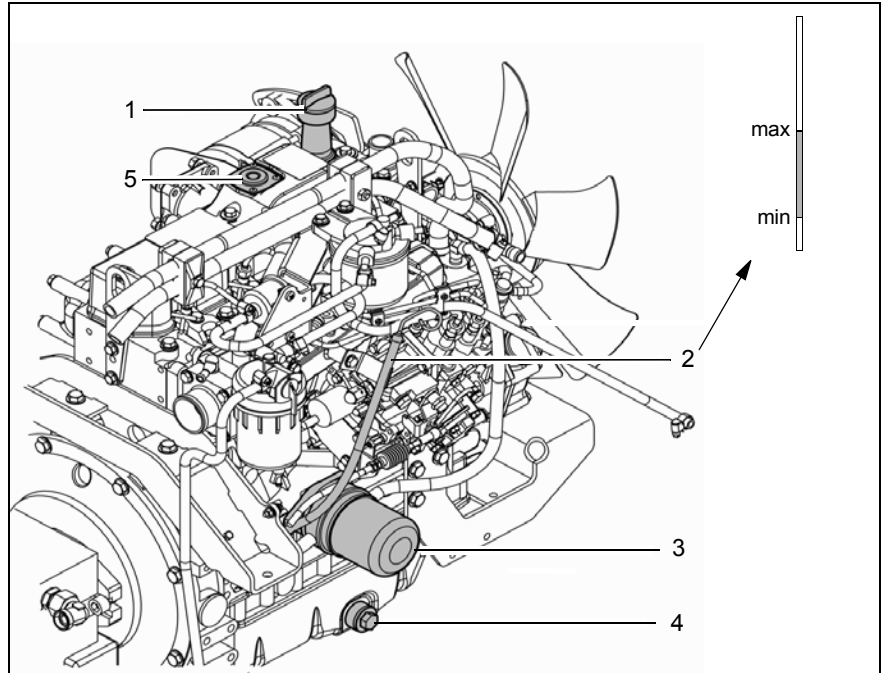


Fig.44

Maintenance and Servicing

6.4.1 Checking the engine oil level

Check the engine oil level every day and top up if required. If the control lamp for the engine oil pressure comes on: determine the cause and top up engine oil if necessary.

1. Ensure that the vehicle is standing horizontally and apply the parking brake.
2. Switch the engine off when the normal operating temperature has been reached.



The engine oil in the circulation system will need a few minutes to flow back into the oil sump.

3. Check the engine oil level with the oil dipstick (Fig. 44/2).
4. The engine oil level should be between the max./min. marks on the oil dipstick and must never drop below the min. mark.

5. If required, top up the engine oil and check the engine oil level once again. Information on engine oil, refer to Section 6.4



The engine oil level must not be above the max. mark.

6. Re-insert the oil dipstick.

Maintenance and Servicing

6.4.2 Changing the engine oil and the engine oil filter

Change the engine oil for the first time after 50 hours of operation, and subsequently every 250 hours of operation. Drain the engine oil when the engine is at operating temperature.

1. Ensure that the vehicle is standing horizontally, then apply the parking brake and switch off the engine.



The engine oil in the circulation system will need a few minutes to return to the oil sump.

2. Place a suitable container below the drainage plug (Fig. 44/4).
3. Remove the oil filler cap (Fig. 44/1) for venting the system.
4. Unscrew the drainage plug and completely drain the engine oil.
5. Changing the engine oil filter (Fig. 44/3). Ensure that the sealing surfaces are kept clean and insert a new sealing ring.
6. Re-insert the drainage plug with a new sealing ring.
7. Fill with engine oil.
Engine oil: Mobiloil DELVCAC MX 15W-40 or similar.
Filling quantity with engine oil filter: 8.6 liter
Filling quantity without engine oil filter: 8.2 liter.



Collect the drained engine oil and dispose of with consideration for the environment.

8. Start up the engine and allow to run for a short time at a low speed. The control lamp for the engine oil pressure has to go out after a short time.
9. Turn the engine off, check for leaks and check the engine oil level once again.
10. Return the oil filler cap and the oil filler cap to their locations.

Maintenance and Servicing

6.5 Fuel system

- 1 Water separator
- 2 Drain plug
- 3 Filter, fuel
- 4 Tank cap

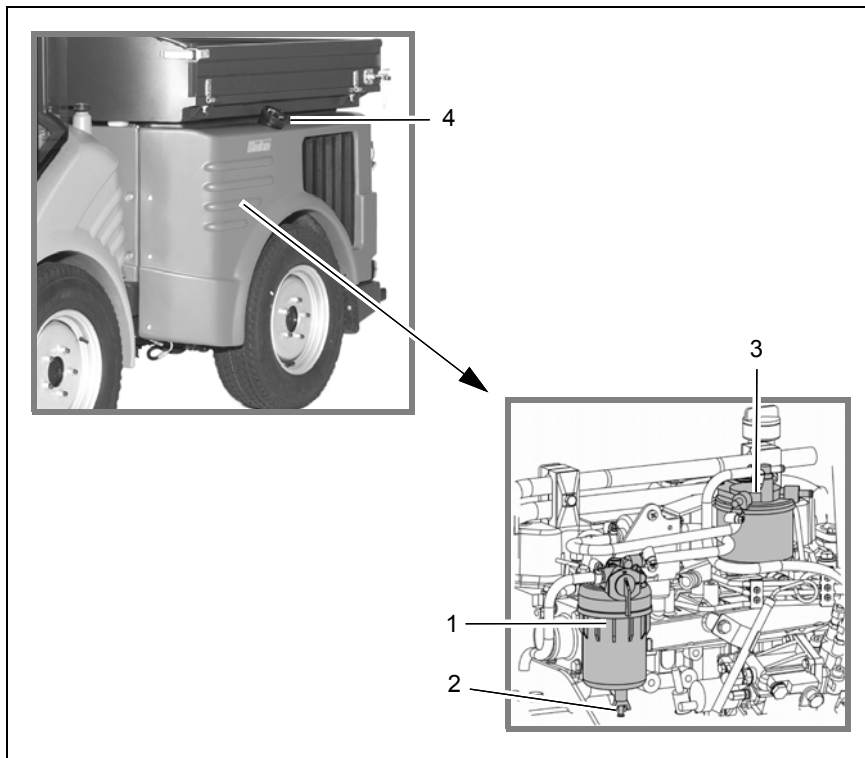


Fig.45

Maintenance and Servicing

6.5.1 Fuelling the vehicle

The fuel tank is located on the left-hand side of the vehicle on the rear section. Open the tank cap (Fig. 45/4) and fill with diesel corresponding to DIN 51601. Tank contents: approx. 60 liter.



The following safety information has to be observed:

Before fueling, switch the engine off and remove the key from the ignition switch. Do not fill with fuel in enclosed spaces.

Smoking and handling fire is forbidden while filling fuel containers and working with or close to containing fuel components.



Do not allow any fuel to flow next to the fuel tank opening. Collect any spilled fuel and dispose of it with consideration for the environment.

6.5.2 Checking the water separator

Check the water separator every week and, if necessary drain the condensation from the water separator (Fig. 45/1).

1. Ensure that the vehicle is standing horizontally, then apply the parking brake and switch off the engine.
2. Place a suitable container below the water separator.
3. Open the drainage screw (Fig. 45/2), and collect the condensation water.
4. Close the drainage screw again.

6.5.3 Changing the fuel filter

The fuel filter (Fig. 45/3) has to be changed after every 500 hours of operation.

1. Ensure that the vehicle is standing horizontally, then apply the parking brake and switch off the engine.
2. Unscrew the fuel filter (Fig. 45/3) and hold together with the fuel in a suitable container.
3. Install a new fuel filter.
4. Replace the drainage screw.

Maintenance and Servicing

6.6 Air filter

- 1 Air filter
- 2 Maintenance indicator
- 3 Screen
- 4 Clamps
- 5 Dust removal valve
- 6 Filter insert
- 7 Safety cartridges

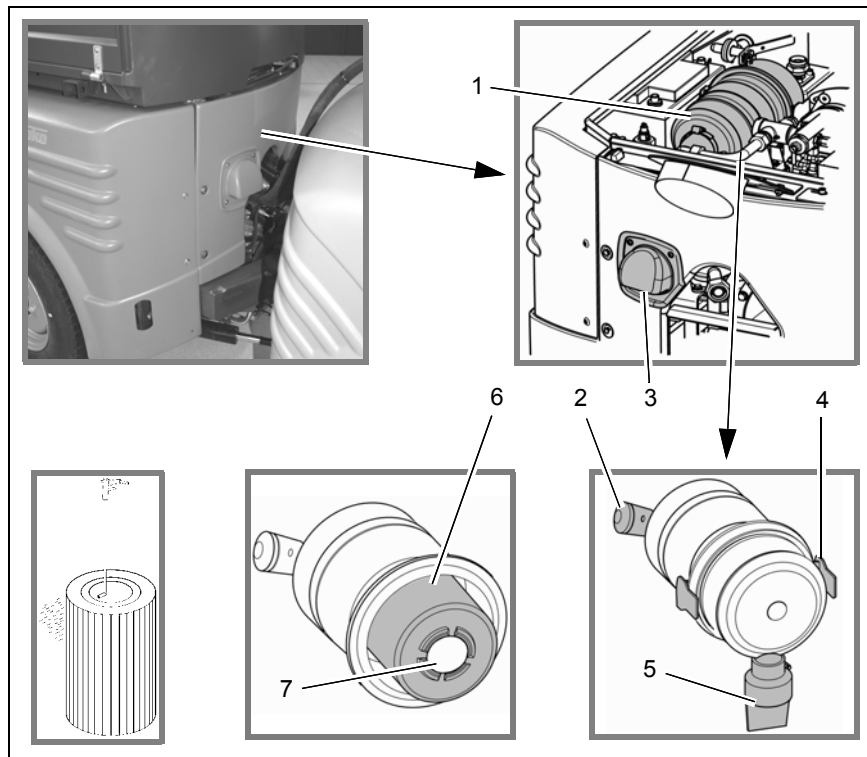


Fig.46

Maintenance and Servicing

6.6.1 Maintenance indicator

The contamination of the air filter has to be checked every day. The maintenance indicator (Fig. 46/2) indicates the degree of contamination.

6.6.2 Cleaning the filter insert

The filter insert (Fig. 46/6) has to be checked according to the maintenance indicator (Fig. 46/2) and be cleaned when necessary. At the latest after every 500 hours of operation, the filter insert has to be exchanged.



We cannot accept liability for cleaned filter inserts. Never allow the engine to run without a filter insert!

1. Ensure that the vehicle is standing horizontally, then apply the parking brake and switch off the engine.
2. Remove the filter insert and carefully clean by blowing from the inside with dry compressed air (max. 3 bar) and moving the compressed air nozzle up and down.
3. Immediately replace a contaminated or damaged filter insert.
4. Clean the inside of the filter housing.
5. Re-install the filter insert.

6.6.3 Changing the safety cartridge



Do not clean the safety cartridge! Never allow the engine to run without a filter insert!

In the centre of the filter insert is a safety cartridge (Fig. 46/7). It is the purpose of this safety cartridge to prevent dirt from getting into the air inlet during the filter cleaning or filter exchange. The safety cartridge has to be exchanged at the latest after every 1000 hours of operation whenever the filter is exchanged.

6.6.4 Pre-separator and dust discharge valve

The air filter contains a pre-separator (Fig. 46/5) which is integrated into the filter housing. This considerably lengthens the service life of the filter insert. The dust particle separated off in the filter housing are discharged through the dust discharge valve (Fig. 46/5).

Maintenance and Servicing

6.7 Cooling system

- 1 Rear door
- 2 Screens
- 3 Cover plate
- 4 Combination cooler
- 5 Drainage valve
- 6 Cap
- 7 Level mark
- 8 Compensation container

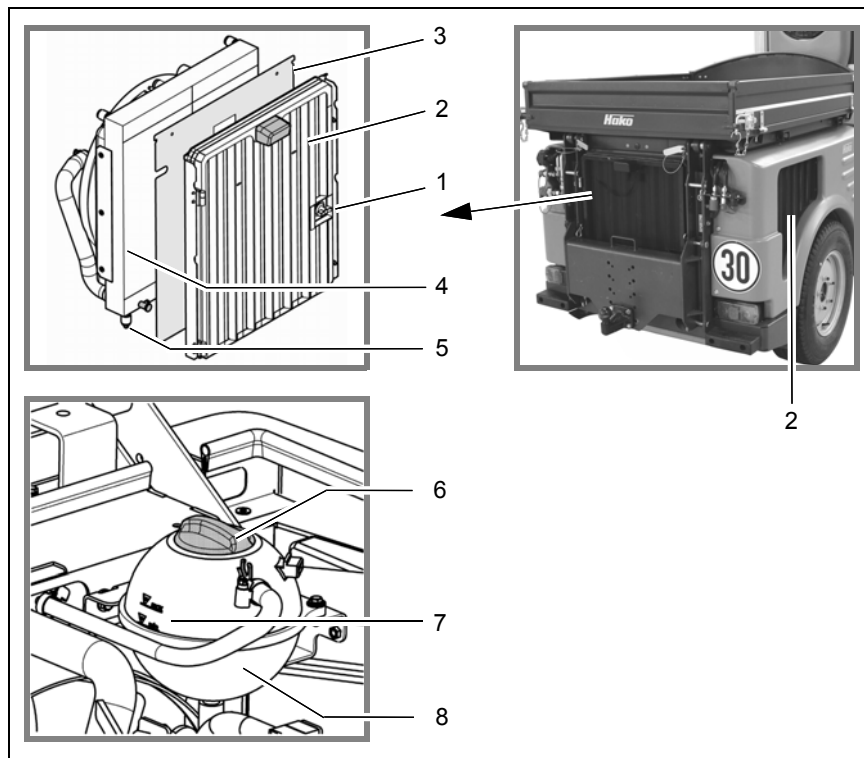


Fig.47

Maintenance and Servicing

6.7.1 Cleaning the cooling system

The combination cooler cools both the cooling water for the diesel engine and the hydraulic oil for the operating hydraulics. The cooling air is sucked in by a fan through the screens (Fig. 47/2) in the vehicle's rear section on the left-hand and the right-hand sides and in the rear door (Fig. 47/1) and is supplied to the combination cooler. Check the screens and the combination cooler (Fig. 47/4) every day and clean if necessary.



Do not use a steam cleaner or a high pressure washer. Do not direct the water jet directly at electrical and electronic components.

The cooling ribs are very thin and they can easily become damaged.

1. Ensure that the vehicle is standing horizontally, then apply the parking brake and switch off the engine.
2. Open the rear door (Fig. 47/1).
3. Check the screens (Fig. 47/2) and the combination cooler (Fig. 47/4) for contamination and if necessary

clean with compressed air or a water jet.

6.7.2 Cover plate for winter operation



If the vehicle has been fitted with a salt and sand spreader for winter operation, the cover plate has to be installed for the protection of the combination cooler (Fig. 47/3).

Maintenance and Servicing

6.7.3 Topping up the coolant

Check the coolant level in the compensation container (Fig. 47/8) every day and top up if necessary.



Collect any spilled coolant and dispose of with consideration for the environment.



Risk of scalding! Do not open the cover when the engine is hot. The cooling system is pressurized!

1. Ensure that the vehicle is standing horizontally and apply the parking brake.
2. Raise the dirt hopper until the stop is reached.
3. Turn off the engine and remove the ignition key. Allow the engine to cool down.
4. Check the coolant level.
When the engine is cold, the coolant level has to be between the level marks (Fig. 47/7).
5. Unscrew the cover (Fig. 47/6) from the compensation container.
6. Refill coolant.
Coolant: Glaceelf Auto Supra
The coolant content has to be at

least 40 % and at most 60 %. Never drive without any coolant!

7. Check the filling level and if necessary top up once again.
8. Close the cover (Fig. 47/6) again.

Maintenance and Servicing

6.7.4 Changing the coolant

The coolant has to be changed after every 1000 hours of operation.



Danger of scalding! Do not open the drainage valve when the engine is hot. The cooling system is pressurized!

1. Ensure that the vehicle is standing horizontally and apply the parking brake.
2. Raise the dirt hopper until the stop is reached.
3. Turn off the engine and remove the ignition key. Allow the engine to cool down.
4. Place a container (capacity min. 10 liter) under the drainage valve (Fig. 47/5).
5. Open the rear door (Fig. 47/1) and remove the cover plate (Fig. 47/3).
6. Open the drainage valve (Fig. 47/5) and drain the coolant.
7. Close the drainage valve and unscrew the cover cap (Fig. 47/6).
8. Topping up the coolant.
Coolant: Glaceelf Auto Supra
The coolant content has to be at least 40% and at most 60%. Never drive without any coolant!
9. Close the cover cap. Allow the engine to run briefly in order to warm up and then turn it off again.
10. Check the coolant level, if necessary top up again. The filling volume for the cooling system including heating is approx. 7.5 liter.

Maintenance and Servicing

6.8 Hydraulic system

- 1 Fill level indicator
- 2 Suction return-line filter
- 3 Cap
- 4 Hydraulic oil tank
- 5 Pipe

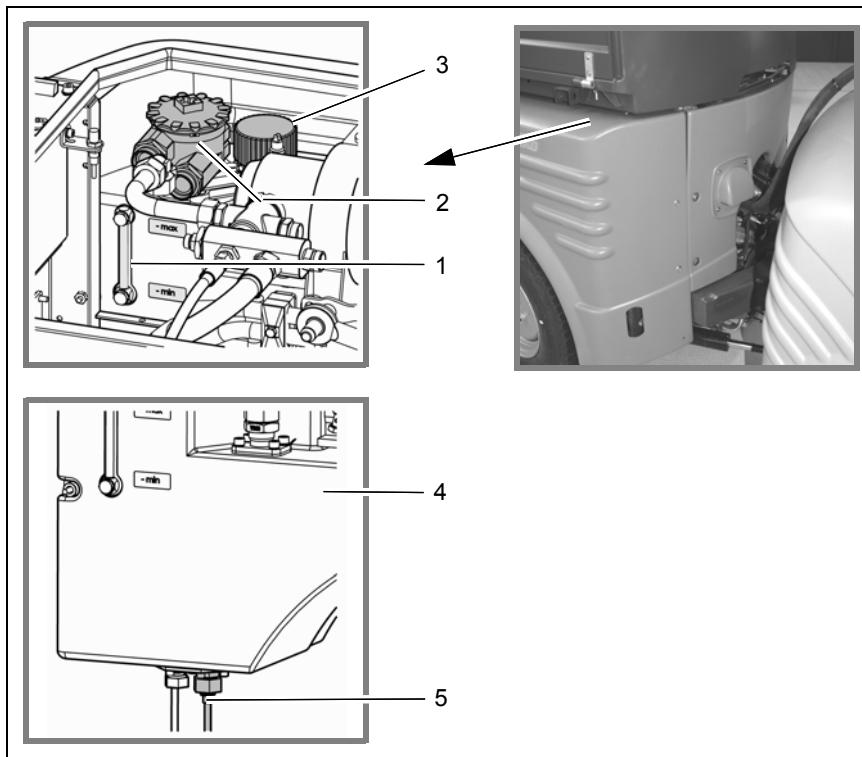


Fig.48

Maintenance and Servicing

6.8.1 Topping up the hydraulic oil

Check the hydraulic oil level on the fill level indicator (Fig. 48/1) every week and top up if necessary.

Only use hydraulic oil approved by the manufacturer (HVLP 46) e.g. Mobiloil DTE 15 M.



Collect drained or spilled hydraulic oil in a suitable container and dispose of with consideration for the environment.

1. Ensure that the vehicle is standing horizontally and apply the parking brake.
2. Raise the dirt hopper until the stop is reached.
3. Turn off the engine and remove the ignition key. Allow the engine to cool down.
4. Unscrew the cover cap (Fig. 48/3) and top up the hydraulic oil.
5. The hydraulic oil level should be between the min. and the max. marks.
Quantity: approx. 5 liter
6. Re-fit the cover cap.

6.8.2 Exchanging the suction return-line filter

The suction return-line filter has to be exchanged after the first 50 hours of operation and then after every 500 hours of operation.

1. Ensure that the vehicle is standing horizontally and apply the parking brake.
2. Raise the dirt hopper until the stop is reached.
3. Turn off the engine and remove the ignition key. Allow the engine to cool down.
4. Remove the suction return-line filter (Fig. 48/2).
5. Install a new suction return-line filter.

Maintenance and Servicing

6.8.3 Exchanging the hydraulic oil and ventilation filter

The hydraulic oil and ventilation filter are to be exchanged after every 1000 hours of operation. Only use hydraulic oil approved by the manufacturer (HV-LP 46) e.g. Mobiloil DTE 15 M. Volume to be filled in the hydraulic system approx. 45 Liter.



Collect drained or spilled hydraulic oil in a suitable container and dispose of with consideration for the environment.

1. Ensure that the vehicle is standing horizontally and apply the parking brake.
2. Raise the dirt hopper until the stop is reached.
3. Turn off the engine and remove the ignition key. Allow the engine to cool down.
4. Place a container (capacity min. 50 liter) below the hydraulic oil tank.
5. Unscrew the cover cap (Fig. 48/3).
6. Loosen the pipe (Fig. 48/5) below the hydraulic oil tank (Fig. 48/4) and drain the hydraulic oil.
7. Re-fit the pipe (Fig. 48/5) and pour in hydraulic oil.
8. The hydraulic oil level should be between the min. and the max. marks.
9. Check the level and, if required, top up the hydraulic oil.
10. Re-fit the cover cap.

Maintenance and Servicing

6.9 Solutionsystem

- 1 Spray nozzle filter
- 2 Spray jets
- 3 Solution tank
- 4 Cap
- 5 Drain plug
- 6 Fill level indicator
- 7 Sieving filter

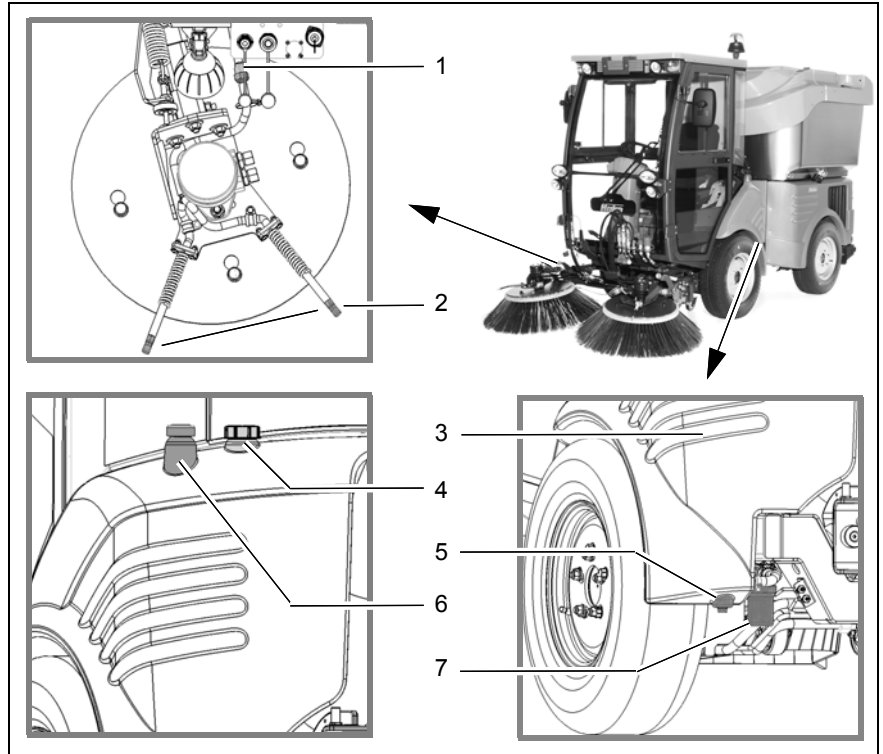


Fig.49

Maintenance and Servicing

6.9.1 Topping up the solution tank

Remove the cover cap (Fig. 49/4) and top up the solution tank (Fig. 49/3) until the fill level indicator (Fig. 49/6) indicates that the maximum has been reached. The capacity is approx. 180 liter.



From the public water connection, water from the water main may only be taken via the "D hose connection"!

At temperatures below 0 degrees (danger of freezing), the water has to be drained from all water-containing components!

6.9.2 Clean the strainer

Check the strainer (Fig. 49/7) weekly for contamination and clean if required.

6.9.3 Draining the solution

Drain the solution tank (Fig. 49/3) via the drainage plugs (Fig. 49/5). For draining the hose lines, briefly switch on the water pump.

6.9.4 Cleaning the spray nozzles

Check the spray nozzles (Fig. 49/2) and the spray nozzle filters (Fig. 49/1) weekly for contamination and clean if necessary.

Check the solution nozzle on the vacuum nozzle (Fig. 50/9) daily, if necessary clean it.

Maintenance and Servicing

6.10 Sweeping system

- 1 Adjustment screws for the sweeping pattern
- 2 Adjustment screws for the surface pressure of the circular brushes
- 3 Locking device for the surface pressure for the circular brushes and transport position
- 4 Circular brushes
- 5 Sealing strip on the vacuum nozzle
- 6 Rollers
- 7 Threaded rods
- 8 Larger material flap
- 9 Spray jet on the vacuum nozzle
- 10 Spring pin
- 11 Bowden cable

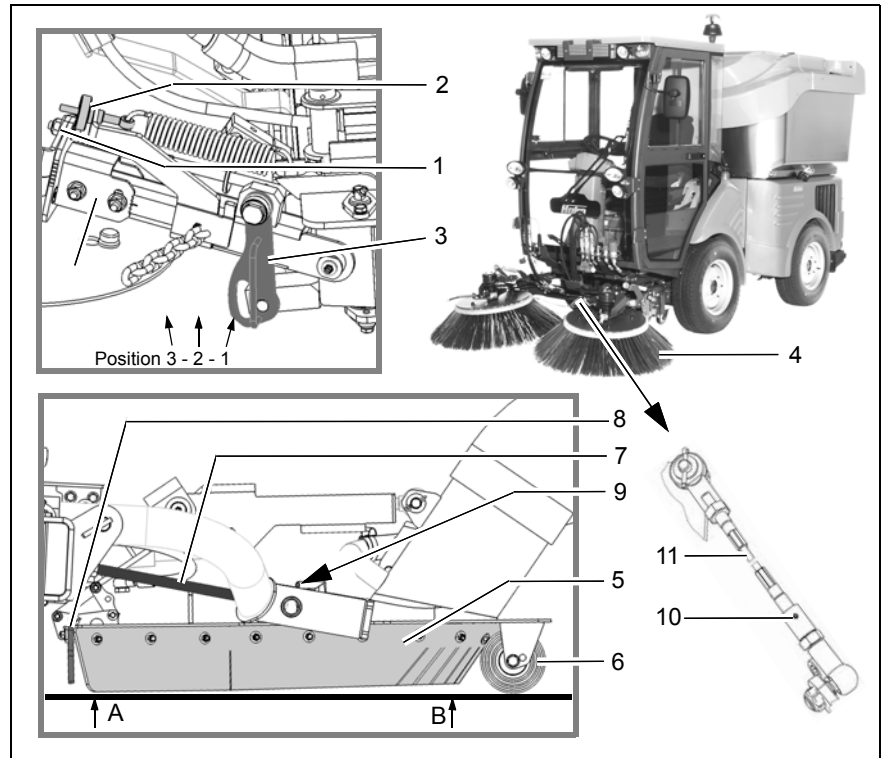


Fig.50

6.10.1 Setting the sweeping pattern

The contact surface of the circular brushes (Fig. 50/4) on the floor (sweeping pattern) as well as the lifting arms have been adjusted by the manufacturer using the adjustment screws (Fig. 50/1). Check the sweeping pattern after every 250 hours of operation and adjust if necessary.

The sweeping pattern must show the following contact with the ground when the sweeping unit is lowered:

Circular brushes on right-hand side:

- from 10 o'clock to 4 o'clock

Circular brushes on left-hand side:

- from 8 o'clock to 2 o'clock

Change the bowden cable

The circular brushes cannot be pivoted in. Check the heavy duty spring pin (Fig. 50/10); change it, if necessary.

The heavy duty spring pin is a predetermined breaking point and must not be modified

6.10.2 Adjusting surface pressure for the circular brushes

The surface pressure from the circular brushes is adjusted using the adjustment screws (Fig. 50/2). With increasing wear, the sweeping pattern has to

be re-adjusted.

6.10.3 Adjustment of the vacuum nozzle

The gap between the sealing strip and the floor in the front area (A) has to be approx. 3+2 mm. In the rear area (B) the gap must be 8+2 mm. The adjustment is made by means of threaded rods (Fig. 50/7). When the sealing strip wears, set the rollers (Fig. 50/6) in a hole higher up. Defective seals, including those on the larger material flap (Fig. 50/8), are to be replaced immediately because they reduce the suction.

6.10.4 Adjusting the locking device

During travel operation the sweeping unit has to be secured with the transportation locking device (Fig. 50/3)! Positions for the locking device:

- Transportation = position 1
- Circular brushes new = position 2
- Circular brushes 50% worn = position 3.

Check the spring pin and the bowden cable



The heavy duty spring pin is a predetermined breaking point and must not be modified.

The circular brushes cannot be pivoted in. Check the heavy duty spring pin (Fig. 50/10) and the bowden cable (Fig. 50/11); change it, if necessary.

Maintenance and Servicing

6.11 Scrubber system

6.11.1 Changing the brushes

The brushes on the scrubber unit can be changed rapidly and without the need for a tool thanks to the Hako click system. The brushes are locked into place by means of two levers (Fig. 51/1).

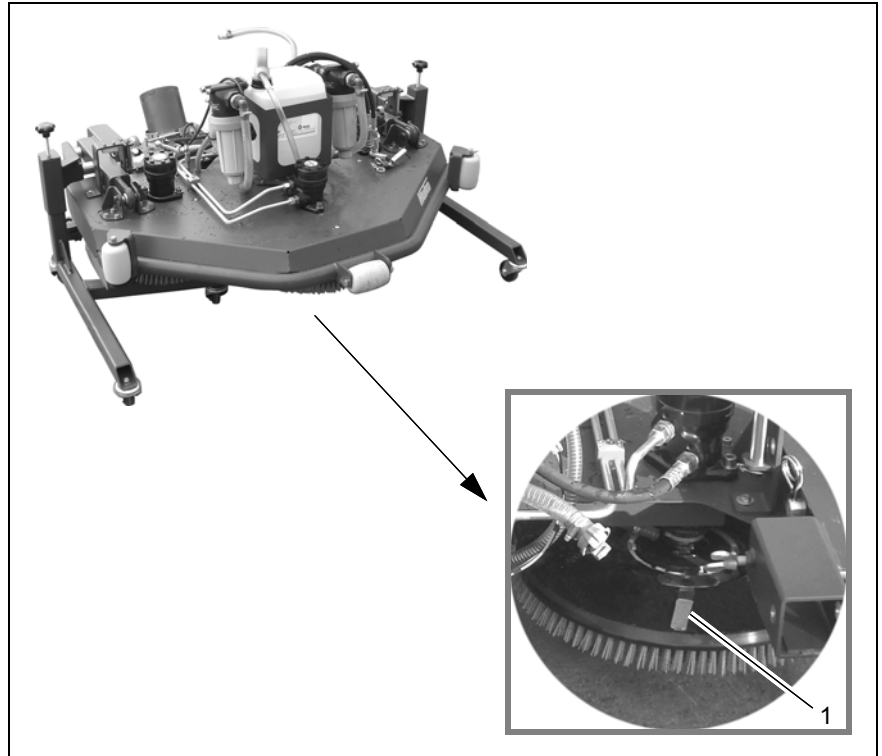


Fig.51

6.11.2 Adjusting the sealing strips

At the vacuum nozzle there are three sealing strips. The two sealing strips (Fig. 52/1) on the side can be exchanged and the rear sealing strip (Fig. 52/2) on the vacuum nozzle is not subject to wear provided it is properly adjusted.

Check the correct adjustment after every 250 hours of operation and readjust if necessary. The complete vacuum nozzle is adjusted with respect to the ground using the threaded rods (Fig. 52/3).

In the front area (A), the gap between the sealing strip and the ground has to be approx. 5 mm. In the rear area (B) the gap has to be 0 mm.

6.11.3 Changing the sealing strips

The sealing strips (Fig. 52/1) on the sides are designed in such a way that they can be turned around once when they are worn.

When both sides are worn, the sealing strips have to be replaced.

Loosen the thumb screws and the clamping strips.

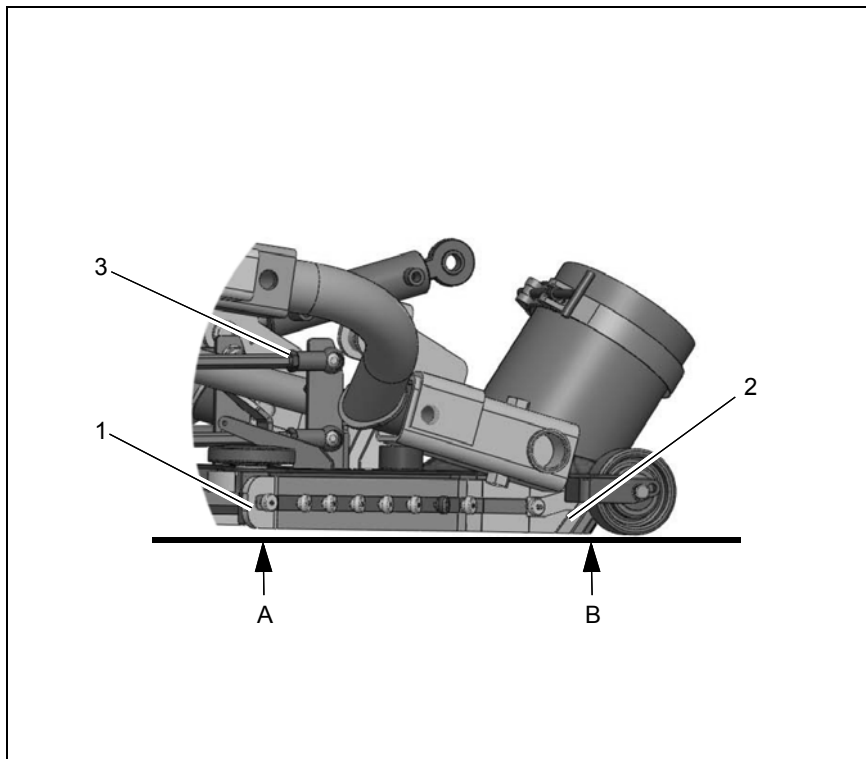


Fig.52

Maintenance and Servicing

6.11.4 Cleaning the filters

The two filter inserts (Fig. 53/1) for the recycling system (optional) have to be cleaned after each deployment.

Simple flushing: loosen the cover cap (Fig. 53/2) and allow the dirty water to flow for approx. 5 seconds.

Thorough cleaning: unscrew the filter, remove the filter insert and clean thoroughly.

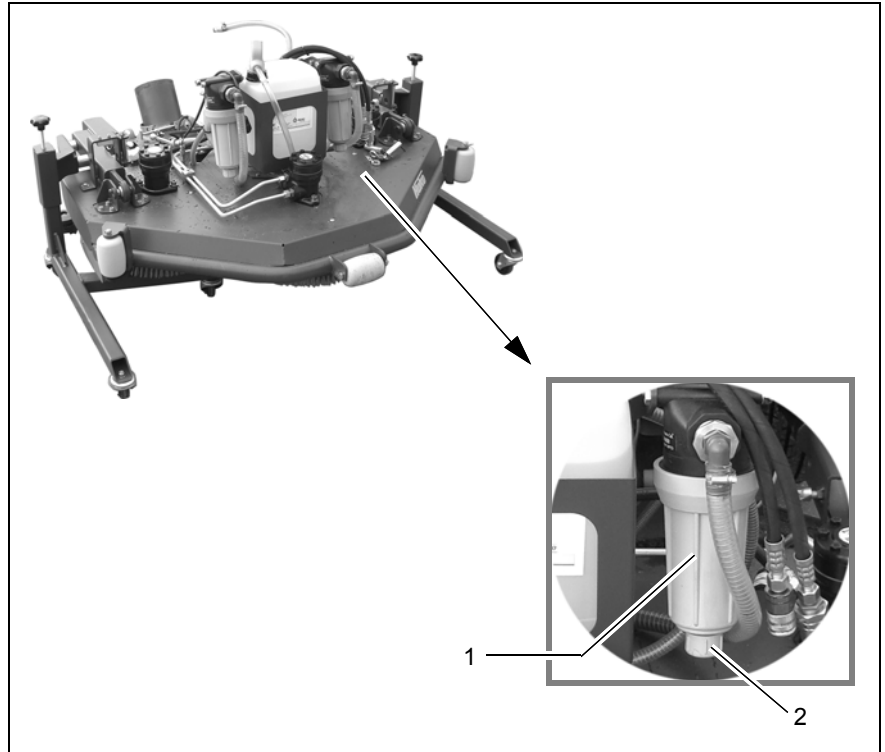


Fig.53

Maintenance and Servicing

6.11.5 Adjusting the dosing

Separate the couplings (Fig. 54/2) and (Fig. 54/3). Connect the coupling (Fig. 54/2) to connection (A) for the chemicals dosing unit (optional). Connect the coupling (Fig. 54/3) to the connection (B) for the chemicals dosing unit.

In the intake hose for the chemicals container there is a nozzle (Fig. 54/1). The mixing ratio for the cleaning liquid is adjusted by selecting the nozzle. The various nozzles are found enclosed in a separate package.

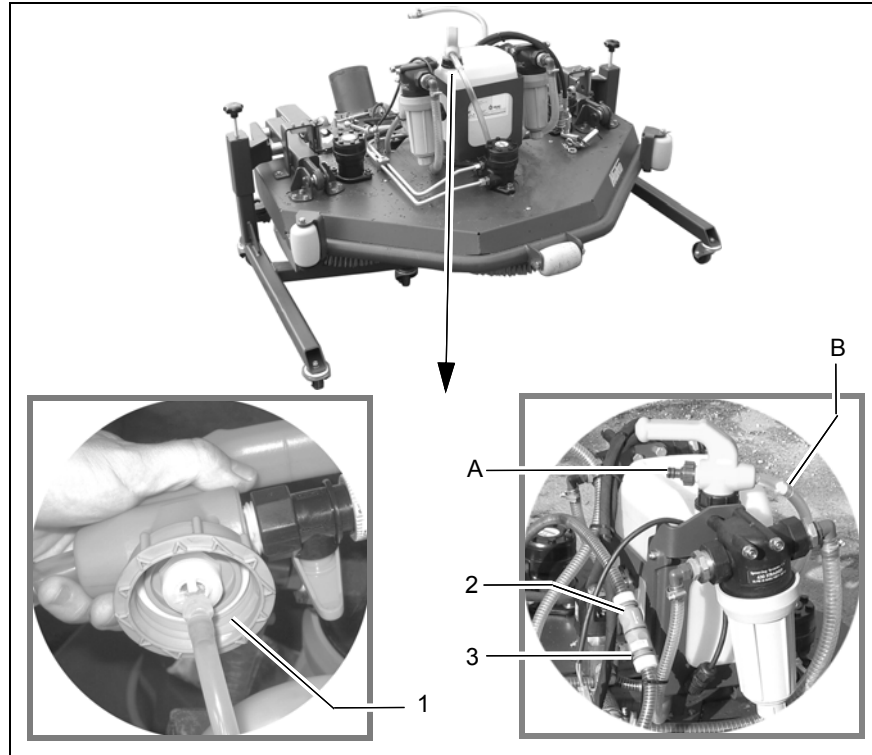


Fig.54

Maintenance and Servicing

6.12 Dirt hopper

- 1 Operating lever for manual pump
- 2 Manual pump valve
- 3 Water connection
- 4 Strainers
- 5 Floor flap
- 6 Rear door seal
- 7 Safety support

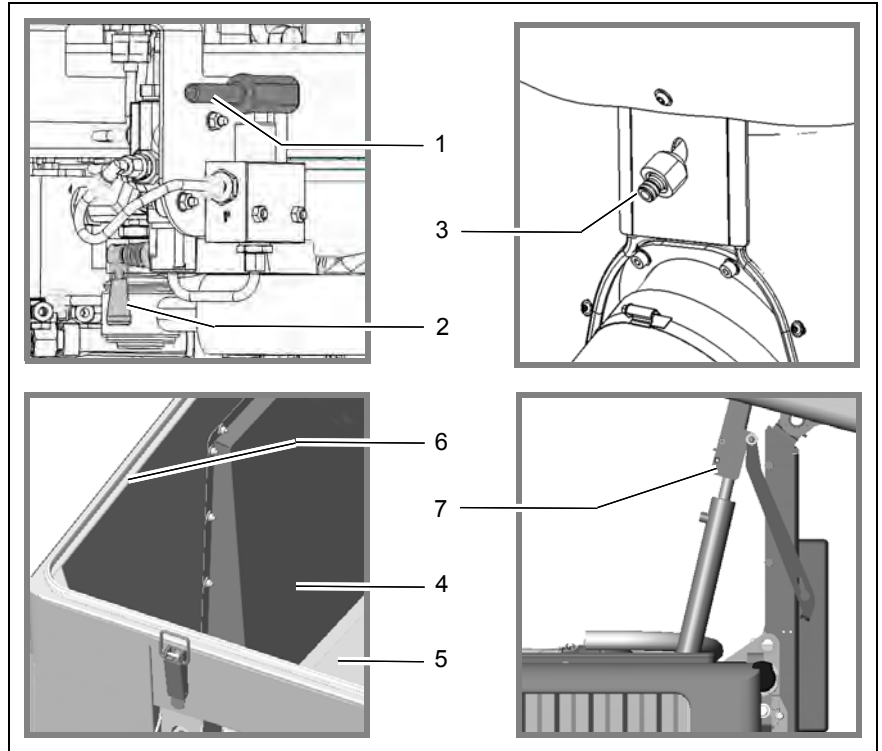


Fig.55

6.12.1 Safety support



During maintenance work, the dirt hopper always has to be raised to its high position and the safety support (Fig. 55/7) has to be inserted.

6.12.2 Checking the rear door seal

Check the rear door seal (Fig. 55/6) on the dirt hopper after every 250 hours of operation and replace if necessary.

6.12.3 Cleaning the strainer

Every time the hopper is emptied clean the strainers (Fig. 55/4), the floor flap (Fig. 55/5) and the sump below.

6.12.4 Cleaning the suction turbine

Check the suction turbine in the dirt hopper after every 250 hours of operation for contamination and, if necessary, clean it. For cleaning the suction turbine there is a water connection (Fig. 55/3) on the front of the dirt hopper.

6.12.5 Topping up the circulation water

In order to allow operation for as long as possible, approx. 200 liters of water should be filled into the dirt hopper.



At temperatures below 0 degrees (danger of freezing), the water has to be drained from all of the water-containing components.

6.12.6 Raise the dirt hopper using the manual pump

Check the hydraulic cylinder every 250 hours by means of a manual pump. If the 'Raise dirt hopper' key does not function, the dirt hopper can be lifted by means of the auxiliary tool from the cabin and the manual pump as follows:

1. Fit the auxiliary tool onto the operating lever (Fig. 55/1) on the manual pump and open valve (Fig. 55/2).
2. Using the auxiliary tool, pump the manual pump until the dirt hopper has reached its limiting position.

Maintenance and Servicing

6.13 Air-conditioning unit

- 1 Air-conditioning unit
- 2 Fan belts
- 3 Condenser fan
- 4 Cover
- 5 Protective screen
- 6 Cabin air filter
- 7 Punched plate

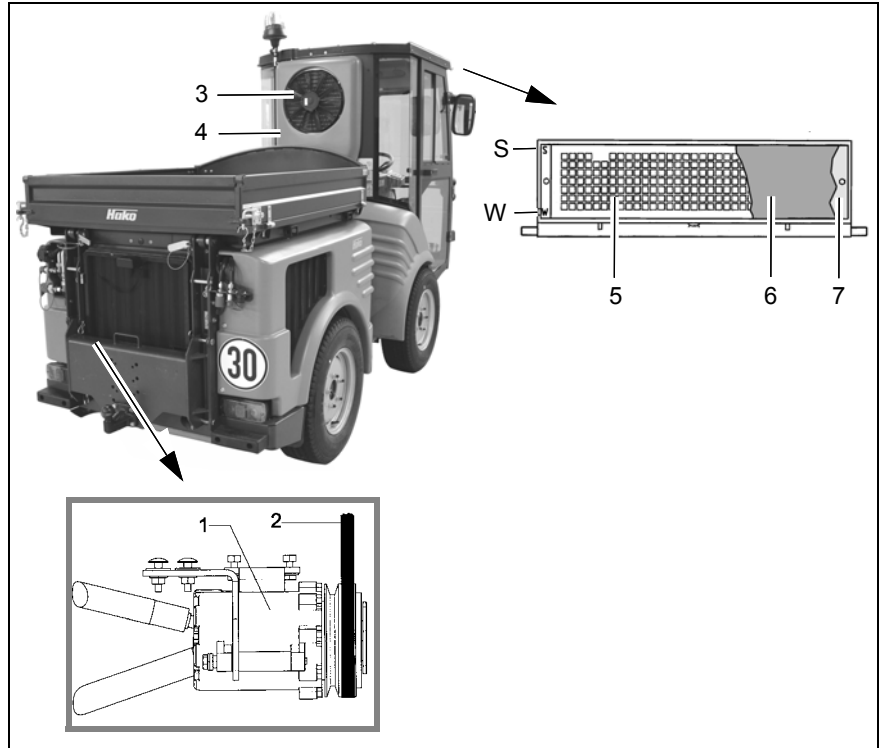


Fig.56

6.13.1 Exchanging the cabin air filter

Check the cabin air filter (Fig. 56/6) every week for contamination, or more often after dusty deployments. The filter is dismantled as follows:

1. Park the vehicle on a level surface and apply the parking brake.
2. Turn off the engine and remove the ignition key.
3. Loosen the four attachment screws for the protective screen (Fig. 56/5) and remove it.
4. Remove the cabin air filter (Fig. 56/6) and clean it or, if necessary, replace it.

6.13.2 Topping up the refrigerant



The refrigerant may only be poured in by a trained technician and in accordance with the rules for the corresponding filling system.

The filling cover is found below the condenser.

Filling volume: approx. 850 gram

Refrigerant: R134 a

Summer operation

Insert the punched plate (Fig. 56/7) behind the filter mat (Fig. 56/6) in such a way that the mark points to the “S”.

Winter operation

Insert the punched plate (Fig. 56/7) behind the filter mat (Fig. 56/6) in such a way that the mark points to the “W”.

Maintenance and Servicing

6.13.3 Condenser fan

Check the condenser (Fig. 56/3) for the air-conditioning system after every 250 hours of operation for contamination and clean it, if necessary.

1. Park the vehicle on a level surface.
2. Apply the parking brake.
3. Turn off the engine and remove the ignition key.
4. Loosen the attachment screws for the cover (Fig. 56/4) at the top and the bottom.
5. If required, clean the contaminated components with a soft brush or a gentle water jet (do not use a high pressure washer!).



Caution with hot parts if the equipment had been running earlier.

6.13.4 Air-conditioning unit

Check the v-belt for the air-conditioning unit (Fig. 56/1) after every 250 hours of operation as described below

1. Park the vehicle on a level surface and apply the parking brake.
2. Turn off the engine and remove the ignition key.
3. Raise the dirt hopper until the stop is reached.
4. Check the v-belt (Fig. 56/2) for condition and tension and, if necessary, retighten or replace.

Maintenance and Servicing

6.14 Wheels and braking system

- 1 Front jacking point
- 2 Rear jacking point
- 3 Brake fluid reservoir
- 4 Cover plate

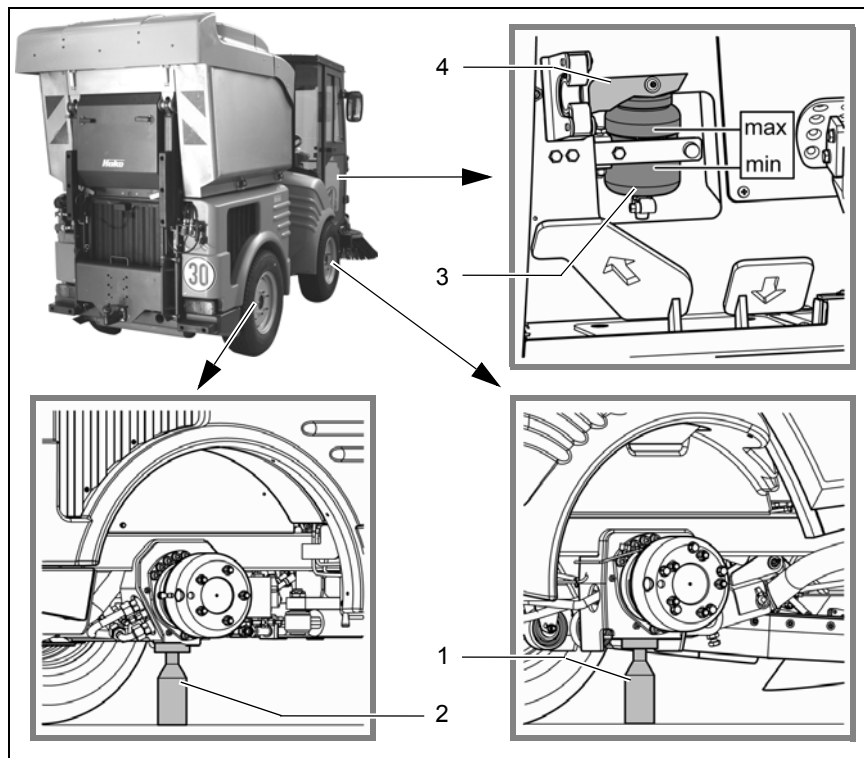


Fig.57

Maintenance and Servicing

6.14.1 Wheel exchange



Repairs on tires and wheels have to be carried out by authorized workshops!

When changing wheels and rims, special care has to be taken that the jack is applied only to the jacking points provided.

Dismantling

1. Park the vehicle on an even surface and secure against rolling away.
2. Turn off the engine and remove the ignition key.
3. Apply the jack safely to the jacking point (Fig. 57/1) or (Fig. 57/2).
4. Lift the corresponding side of the axle and once again check that the vehicle is standing securely.
5. Remove the wheel screws and take the wheel off.

Assembly

1. Fit the wheel onto the centering collar and lightly tighten all of the wheel screws.
2. Lower the lifted axle side.
3. Tighten the wheel screws crosswise with a torque wrench.



The wheel screws are to be tightened to a torque of 130 Nm.

4. After approx. 50 hours of operation the wheel screws have to be re-tightened as described above.

6.14.2 Checking the tire pressure

Check the tire pressure after every 250 hours of operation.

The permitted tire type and correct tire pressure is found in Chapter 5, Technical Data.

Maintenance and Servicing

6.14.3 Topping up the brake fluid

The operator has to check the effectiveness of the braking system every day before using the equipment. Check the level in the braking fluid reservoir (Fig. 57/2) after every 250 hours of operation and, if necessary, top up. The brake fluid reservoir is located below the driver seat.

1. Remove the cover plate (Fig. 57/3) below the driver's seat.
2. Unscrew the cover cap for the brake fluid container and check the level.
3. Top original brake fluid up to the max mark.
4. Screw on the cover cap. Ensure that there are no leaks!



Repairs to the braking system have to be carried out by authorized specialist workshops!



Pay attention to cleanliness! Contaminated brake fluid can cause the braking system to fail.



A major fall in brake fluid level can indicate worn brake pads!



Collect drained brake fluid and dispose of with consideration for the environment.

Maintenance and Servicing

6.15 Windscreen wiper system

6.15.1 Topping up water

The level has to be checked every day. Open the cover cap on the container (Fig. 58/1) and pour in the windscreen washing water.



At temperatures below 0 degrees (danger of freezing), anti-freeze has to be added to the windscreen washing water. Ensure the correct mixing ratio!



If required, a suitable windscreen cleaning agent may be added. Ensure the correct mixing ratio!

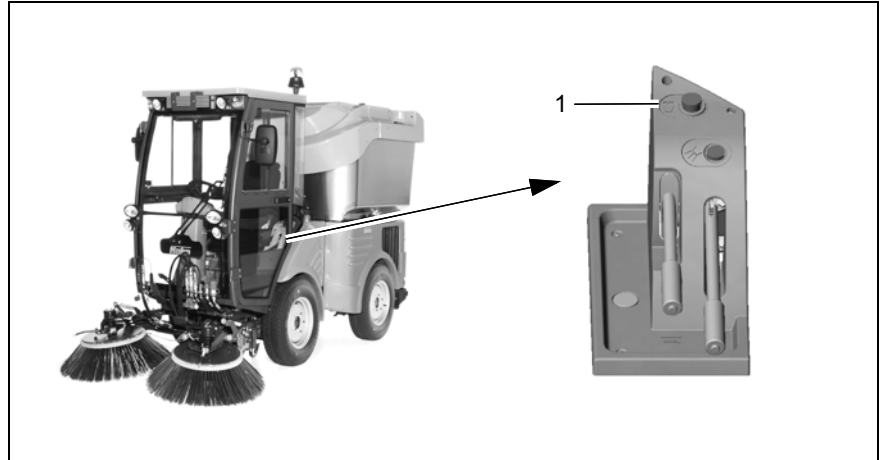


Fig.58

Maintenance and Servicing

6.16 Electrical system

6.16.1 Fuses for the circuit board

- F1 Fuse for parking light and tail light on the right-hand side 5A
- F2 Fuse for parking light and tail light on the left-hand side 5A
- F3 Fuse RKL 7.5A
- F4 Series fuse 30A
- F5 Series fuse 30A
- F6 Series fuse 30A
- F7 Fuse for seat contact 3A
- F8 Fuse for air condit. system 20A
- F9 Fuse socket 10A
- F10 Fuse for heating fan 15A
- F11 Fuse (Y6) 3A
- F12 Fuse for brake lamp, horn 10A
- F13 Fuse for hydraulic valves, driver's seat 10A
- F14 Fuse (Y13) 5A
- F15 Fuse for fuel valve 25A
- F16 Fuse for driving lamps 15A
- F17 Fuse for windscreen wiper 10A
- F18 Fuse for working lamps 15A
- F19 Fuse for control lamp, engine 7.5A
- F20 Fuse for indicators 10A
- F21 Fuse for hydraulics (Y9, Y10) radio 7.5A
- F22 Fuse for hydraulics (Y4) 7.5A
- F23 Fuse for water pump 10A
- F24 Fuse for fuel valve 25A

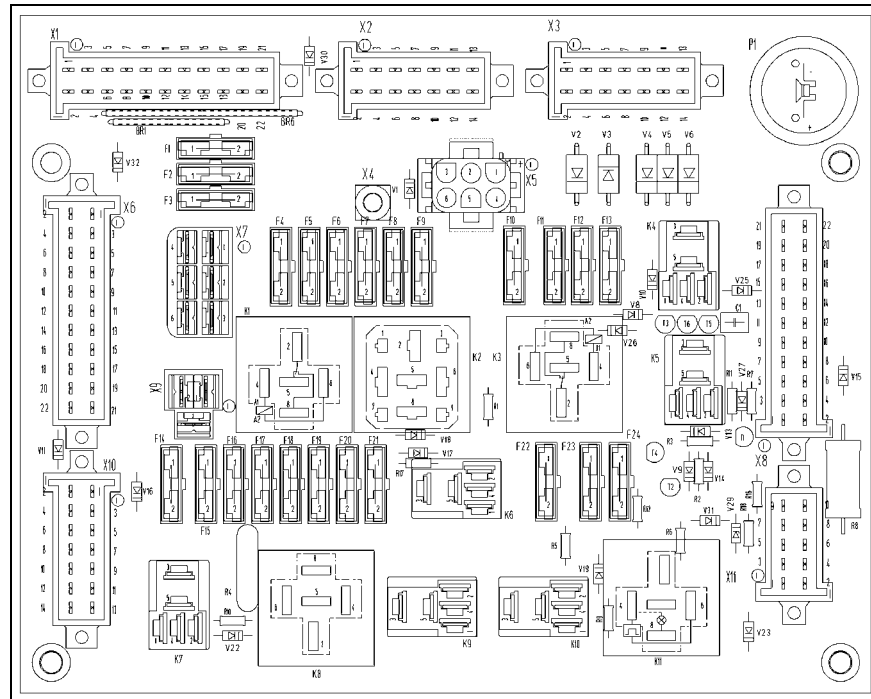


Fig.59

Maintenance and Servicing

6.16.2 Relay for circuit board

- K1 Relay for 40/20A
- K2 Control unit for seat contact
- K3 Relay for air conditioning unit
- K4 Relay for floating position of device support
- K5 Relay for proportional valve
- K6 Relay for work and travel operation
- K7 Relay for restart protection Fan/mower
- K8 Interval relay for windscreen wiper (optional)
- K9 Relay for mower release
- K10 Relay for mower on/off
- K11 Indicator relay

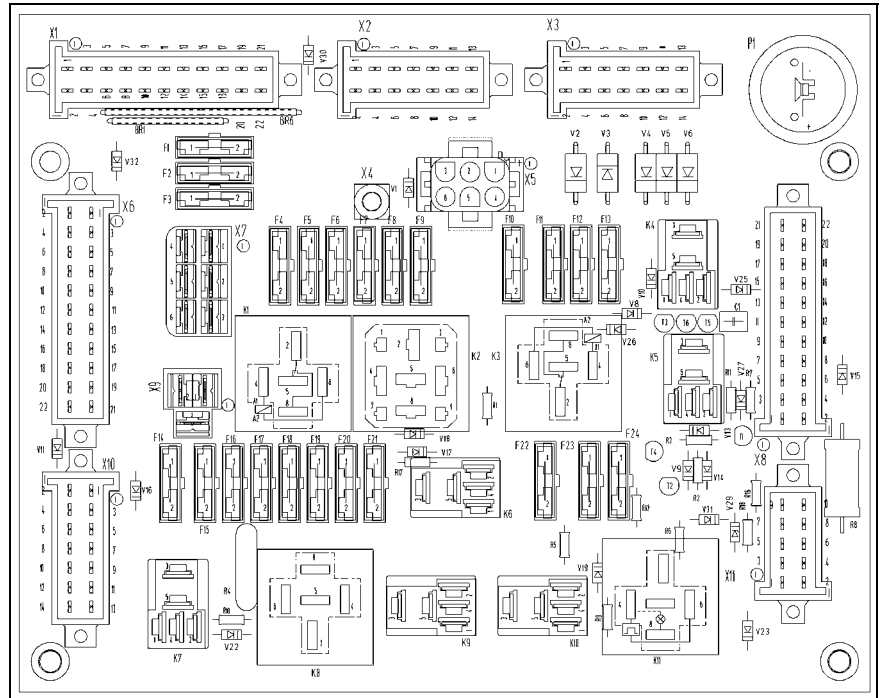


Fig.60

Maintenance and Servicing

- 6.16.3 Fuses in the switch cabinet**
- F30 Main fuse 80A
- F31 Fuse for reversing signal (optional) 5A
- F32 Fuse for battery separation switch (optional) 3A
- F34 Fuse preheating 40A
- 6.16.4 Relay in the terminal box**
- K12 Control unit for pre-heating
- K14 Control unit for cooling water level
- K18 Timer for fuel valve
- K17 Relay for fuel valve
- K19 Relay 12V / 20/10A
- K20 Relay for reversing signal (optional)
- K23 Relay 12V / 20/10A
- K24 Relay 12V / 20/10A

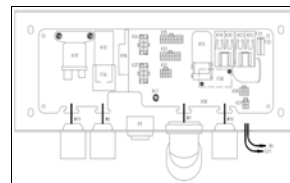


Fig.61

Maintenance and Servicing

6.16.5 Fuses for proportional valve control

F25 Fuse for wing mirror heating (optional)

F33 Fuse scrubber system (optional)

15A

6.16.6 Relay for proportional valve control

K13 Control unit for wing mirror heating (optional)

K15 Control unit for windscreen wiper

K25 Relay for increasing surface pressure

K26 Relay for increasing surface pressure

K27 Relay Scrubber system (optional)

K28 Relay Scrubber system (optional)

K29 Relay for load display (optional)

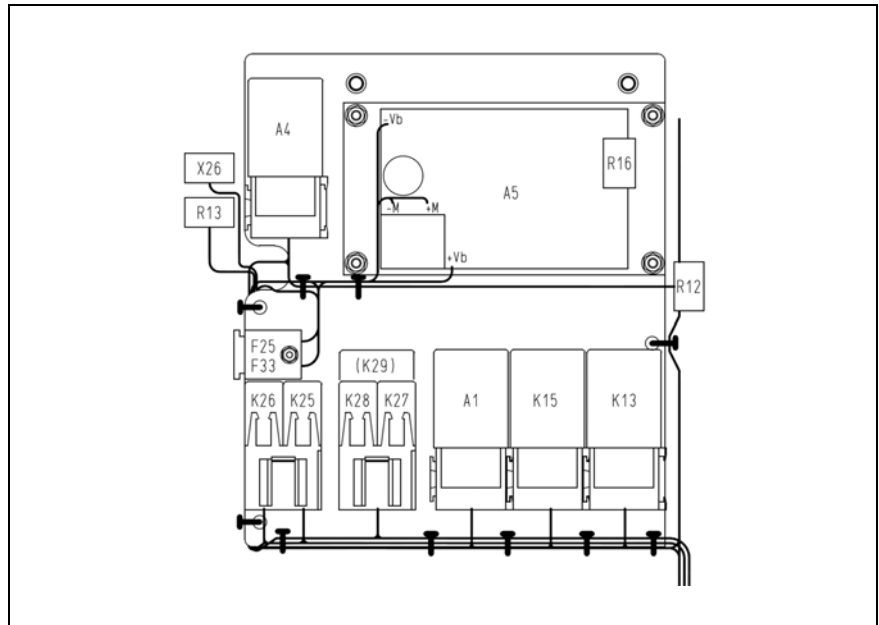


Fig.62

Maintenance and Servicing

6.17 Lubrication plan

The values given in brackets give the number of lubrication points on the components.

The lubrication points listed below are to be greased weekly irrespective of the hours of operation.

- 1 Front unit - front lifting point lift cylinder top and bottom and left-hand/right-hand side (4x)
- 2 Front unit - front lifting point left-hand/right-hand side (4x)
- 3 Sweeping system - circular brushes tilting joints left-hand/right-hand side (4x)
- 4 Sweeping system - vacuum nozzle lifting point (3x)
- 5 Sweeping system - circular brushes lever for sideways movement (2x)

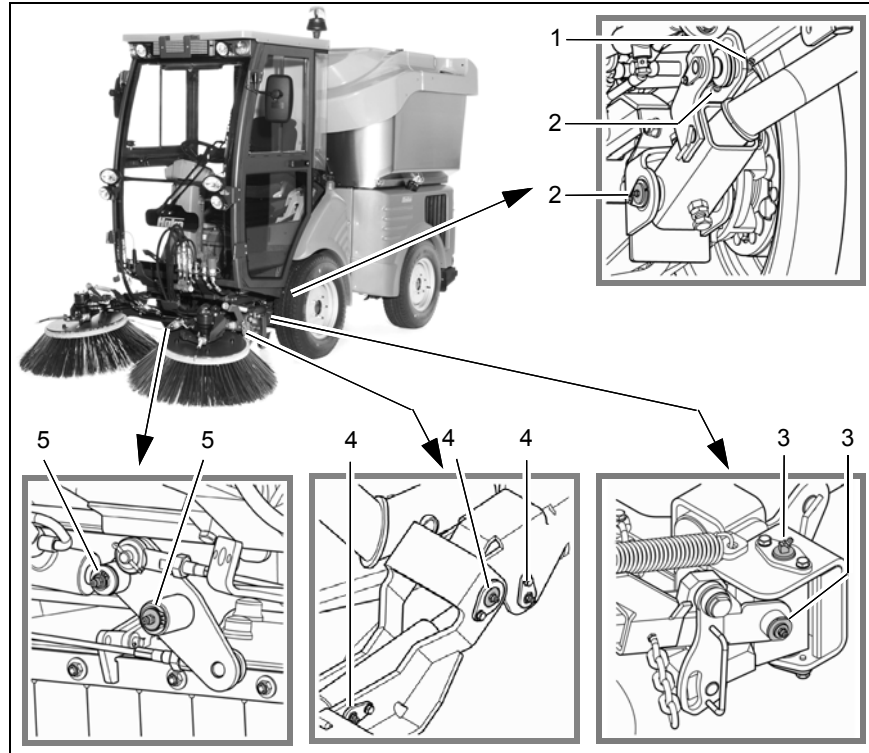


Fig.63

Maintenance and Servicing

- 6 Circulation water lever (1x)
- 7 Accelerator pedal (1x)
- 8 Brake pedal (1x)
- 9 Larger material flap (1x)
- 10 Greasing support (2x) (not for the Easy Grease option)
- 11 Wing mirror left-hand/right-hand side (2x)

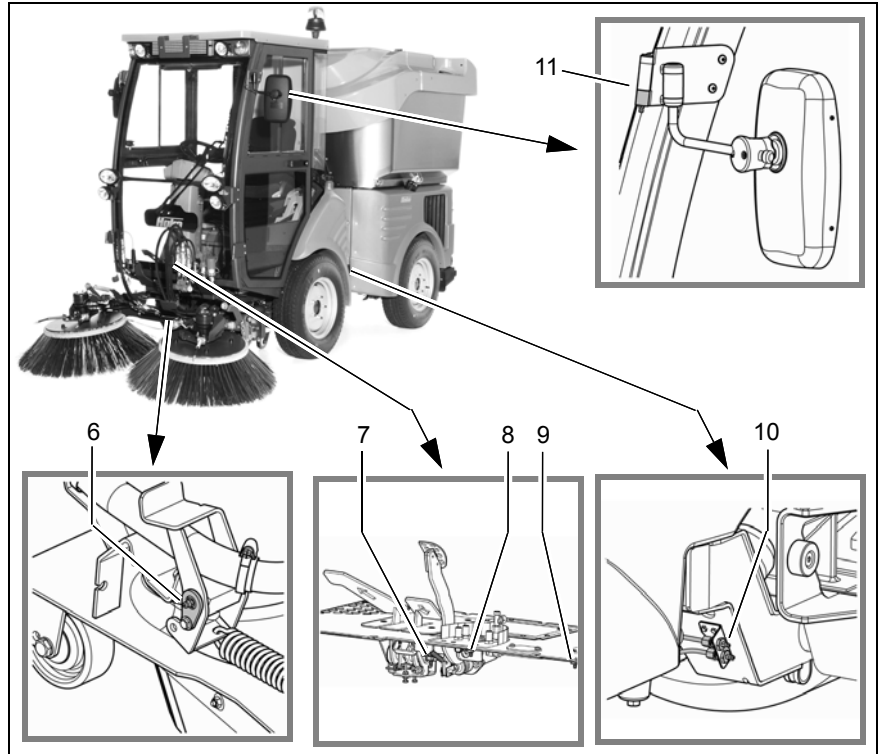


Fig.64

Maintenance and Servicing

- 12 Lifting point cylinder for dirt hopper left-hand/right-hand side (4x)
- 13 Articulated joint (2x)
- 14 Easy grease (optional) for:
 - Articulated joint (2x)
 - Front unit - front lifting point lift cylinder top and bottom and left-hand/right-hand side (4x)
 - Front unit - front lifting point left-hand/right-hand side (2x)
- 15 Ball-and-socket joint for rear support (2x)

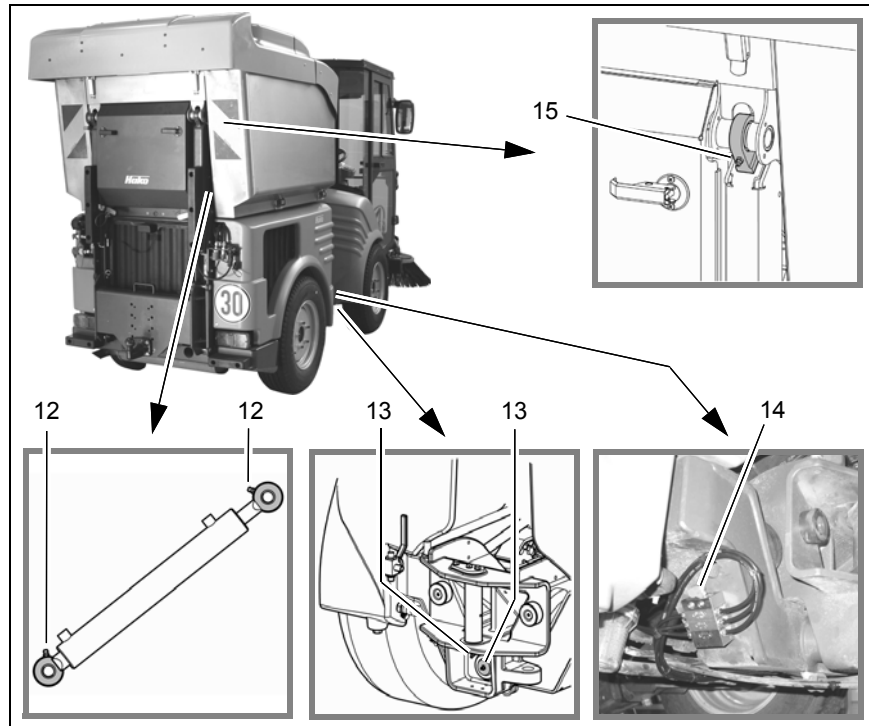


Fig.65

Maintenance and Servicing

EC Declaration of Conformity(in accordance with EC Directive 2006/42/EC)

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

bears sole responsibility for declaring
that the products

Hako-Citymaster 1250
Typ: 1433

to which this declaration relates, conform to the relevant provisions of the safety and health requirements stipulated in the 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 Directives:

EN ISO 13019

Bad Oldesloe, 19.03.2012



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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