



PowerBoss[®]

Instruction Manual

Apex 58 G / D (6300.13 / 6300.23)

Introduction

Preface

Dear customer, It is our desire that the good characteristics of the Apex 58 should justify the confidence you demonstrated by making this purchase. Prior to the first drive, carefully read the chapter "Safety Information" as well, in order to ensure you a safe working with the machine.

Your own safety, as well as the safety of others, depends to a great extent on how the vehicle is moved and operated. Therefore, carefully read and understand this operation and maintenance manual prior to the first drive.

The manual provides valuable information about operation, service and maintenance. The warning symbols as used in this manual identifies items relevant to safety. Please observe the safety provisions (see chapter "Safety Information").

Your authorised PowerBoss dealer will be pleased to answer further questions regarding the vehicle or the operation and maintenance manual.

Please be advised explicitly that we cannot accept any legal issues out of the contents of this manual. If repair work has to be performed make sure that only genuine spare parts are used; only genuine spare parts may guarantee a dependable machine. We reserve the right for technical improvement..

Valid as of: June 2007

PowerBoss Inc.
175 Anderson Street
NC 28315 U.S.A.
Telephone: (910) 944-2105
Fax: (910) 944-740

Proper use

The Apex 58 sweeper has been exclusively designed for collecting dry and moist matter from floor surfaces in e.g. factories, storage buildings, parking grounds and pedestrian areas. Using the machine beyond this scope of application will be deemed improper use; The manufacturer cannot be held liable for consequential damages; the user alone bears the risk. The Apex 58 is not suitable for collecting toxic, combustible or other matters which are hazardous to health. The term of proper use also includes operation, maintenance and repair work to be performed in compliance with the manufacturer's specifications. The Apex 58 may be used by persons only that are familiar with the machine and aware of possible hazards involved. The applicable Accident Prevention Regulations and further regulations in vigour concerning aspects of safety and working medicine will have to be complied with. If modifications to the machine are made in absence of the manufacturer's prior consent, the latter cannot be held liable for damage resulting from such unauthorized modification.

Introduction

Notes on warranty

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

The following is excluded from warranty: fuses, natural wear, damages caused by overload, inexpert handling and unauthorized modification of the machine. Moreover, any claim for warranty cannot be accepted if damages of the machine are caused by fitting parts or accessories without PowerBoss's prior and explicit consent or by non-compliance with the maintenance instructions.

Acceptance of the machine

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

PowerBoss Inc.
175 Anderson Street
NC 28315 U.S.A.
Telephone: (910) 944-2105
Fax: (910) 944-740

Regulations for Approval

According to §18 of the German Motor-Vehicle Construction and Use Regulations (StVZO), the Apex 58 is an automotive machine. The manufacturer supplies the expertise required for type approval. On the base of this expertise, the local approval authority submits the valid type approval.

Unnecessary is a registration number. According to §29 of the German Motor Vehicle Construction and Use Regulations (StVZO) is a general inspection unnecessary too, as the type definite maximum speed is minor 20km/h.

According to the German Motor Vehicle Construction and Use Regulations (StVZO), the machine has to be equipped with first aid kit, warning triangle and the type approval certificate when being used on public roads, paths and places.

Any modification carried out at the Apex 58 and having an influence on the type approval specifications and are not indicated there will render the type approval invalid. Before receiving a new type approval, the machine has to be presented to an authorized expert for issue of new expertise. This expertise turns type approval after being stamped by approval authority..

Driving Licence

According to the Driving Licence Act, any person who is driving a vehicle running at a construction-defined maximum speed of 6 km/h or more on, public roads, paths and places has to hold a valid driving licence. A driving licence of the class L is required for driving the Apex 58 (automotive machine up to a speed of 25km/h).

Table of Content




Introduction	2	3	Operation	19	Broom Compartment	48		
Preface	2	3.1	Working Procedure	19	5.7	Replace Side Broom	48	
Proper use	2	3.1.1	Sweeper Roller	20	5.8	Dismount Plate Filter	49	
Notes of warranty	3	3.1.2	Side Broom	20	5.9	Basic Cleaning of Plate Filter	50	
Acceptance of the machine	3	3.1.3	Steering	20	5.10	Engine	51	
Driving Licence	3	3.1.4	Filter System		5.10.1	Check Engine Oil Level	51	
			Dust Evacuation	21	5.10.2	Change Engine Oil	52	
1	Safety information	5	3.1.5	Shaking System	21	5.10.3	Change Engine Oil Filter	
1.1	Safety and Warning Symbols	5	3.1.6	Brake	22	Apex 58 (6300.13)	53	
1.2	General Provisions	6	3.1.7	Travel Drive Assembly	22	5.10.4	Change Engine Oil Filter	
1.3	Provisions for Operation	6	3.1.8	Hydraulic System	22	Apex 58 (6300.23)	54	
1.4	Maintenance instructions	7	3.2	Operating Elements	23	5.10.5	Air Cleaner	55
1.5	Specific Hazards	9	3.2.1	Control Panel		5.11	Hydraulic System	56
1.6	Information for Protection of Environment	10		Apex 58	25	5.11.1	Check Hydraulic	
1.7	Labels at the Machine	11	3.2.2	Emptying of the Dirt Hopper	30	Fluid Level	56	
			4	Technical Data	32	5.11.2	Refill Hydraulic Fluid	57
2	First Operation	15	5	Maintenance and Care	37	5.11.3	Change Hydraulic Filter	57
2.1	Instruction	15	5.1	PowerBoss		5.11.4	Change Hydraulic Fluid	58
2.2	Initial charging procedure	15		System Maintenance	37	5.12	V-Belt Drive	
2.3	Before Taking into Operation	15	5.2	Maintenance document	38	Apex 58	59	
2.4	Start Machine	15	5.3	Maintenance Schedule	39	5.13	Electric System	
2.5	Operation	16	5.4	Mount/Dismount		Apex 58	60	
2.6	Machine			Sweeper Roller	46	5.14	Special Equipment and	
	stopping and parking	16	5.5	Adjust Sweeping Track	47	Spare Parts	62	
2.7	After work	16	5.6	Sealing Strips for				
2.8	Transport rides and Towing	17						

Safety information

1 Safety information

1.1 Safety and Warning Symbols

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

Symbol	Hazardous for ...	Description
Safety Provisions 	persons and goods	Safety Provisions in dangerous situation caused by misuse inaccurate adherence of instructions or prescribed work routine.
CAUTION 	the machine	important information on handling the machine in order to maintain operability.
Ecological hazard 	the environment	due to use of substances representing an inherent danger to health of environment

Safety information

1.2 General Provisions

- Apart from the provisions contained in this instruction manual, the general safety provisions and the accident prevention regulations as imposed by law have to be complied with.
- Before taking your machine into operation, carefully read the instruction manual and comply with all points mentioned there during work.
- Persons being trained by qualified PowerBoss technicians only are authorised to operate, service and repair the machine.
- You are advised to thoroughly study the safety instructions since precise knowledge only helps avoiding errors during operation of the machine and thus guarantee faultless usage of the machine.
- The operating instructions have to be at hand at the place of use of the machine, and therefore have to be kept readily available at the machine.
- When selling or letting the machine for rent, hand out these documents to the new owner/operator and have the transfer certified!

- The warning and instruction plates attached to the machine contain valuable advice about safe operation. Immediately replace incomplete or illegible labels.
- As far as safety standards are concerned, spare have to equal genuine spare parts!
- Keep clear of hazard zone of the Apex 58.
- Only use a mobile phone when the machine standing still.
- Passenger transport is not admitted.

1.3 Provisions for Operation

- Before taking into operation, check the machine for operational safety! Immediately remedy malfunctions!
- It is indispensable for the operator to get acquainted with all attached implements and controls as well as with their function before operation begins. Once you have started to work, no time will be left to do so!
- When working with the machine use firm and skid proof shoes.
- The machine may be used only on such surfaces clearly specified by the owner or his authorised representative.
- When working with the machine take notice of third persons, especially children.
- The machine is not designed for collecting hazardous, inflammable or explosive dusts or substances.
- This machine must not be used as dust-evacuating machine with dust filter insert (separator) to collect dusts which are hazardous to health.
- Usage of the machine in explosive areas is prohibited.
- Pull the ignition key to avoid unauthorized use of the machine.
- Before commencing work, the operator has to make sure that the machine and its accessories are in proper and safe condition. Machines with known defects must not be used.
- Before operation of the machine, adjust driver's seat such that complete visibility of the riding track and the rear working area is given!
- For safety reasons, the driver's seat is equipped with a seat contact switch. Function of this contact switch must not be bypassed!
- Disengage all drive systems before cranking the engine.

Safety information

- The machine may be started, run and stopped by a person seated only.
 - Never let the engine run in indoor areas! Intoxication hazard!
 - Provide for sufficient ventilation when sweeping indoors (dust and combustion gas). Intoxication hazard!
 - Always adapt the driving speed to the ambient conditions and the loading state.
Compared to four-wheeled vehicles, driving stability of three-wheeled vehicles is reduced, therefor: Abrupt steering manoeuvres at higher speed or negotiating curves at high speed may cause tipping of the articulated vehicle.
Do not turn at slopes but on level ground only
Ride up- and downhill straight.
Avoid taking sudden curves when riding up- or downhill or across to the slope.
In slope there is tilting danger.
 - The machine may be used only for operation on areas with a maximum inclination of up to 18 %.
 - Do not exceed the admissible total weight and the admissible axle load limits. Check the dirt hopper filling level frequently.
 - Before lifting or lowering the dirt hopper make sure that no persons, animals or other obstacle are in the area of operation.
 - Pinching and shearing hazard. Provide for required safe distance before lifting or lowering the dirt hopper.
 - It's only allowed to lift up the dirt hopper in immediately nearness of the container.
Emptying the dirt hopper on level and solid ground.
 - Do not sweeping when the dirt hopper is lifted.
 - By emptying the dirt hopper pay attention to bystanders.
 - Proceed to filter shaking only if the dirt hopper is in closed position.
 - Pay attention to hot parts for example cooling water, tubes of the exhaust etc..
- ### 1.4 Maintenance instructions
- The daily and weekly maintenance and repair task must be performed by a qualified operator. For any maintenance and repair work beyond please contact your local PowerBoss service centre.
 - Observe the maintenance activities and intervals set out in the instruction manual.
 - Maintenance and repair work may be carried out only by means of appropriate tools.
 - Have the machine checked for safe condition in the sense of the Accident Prevention Regulation by an expert at regular intervals (recommendation: at least once yearly) as well as after modifications or repair.
 - Spare parts have to equal the technical requirements as specified by the manufacturer! Genuine spare parts guarantee compliance with these requirements.
 - Use of other than the sweeper rollers and side brooms approved by the manufacturer is not admitted (see technical data) since use of other sweeper rollers and side brooms may affect your safety.
 - Use of other than the air- and oilfilters approved by the manufacturer is not admitted (see technical data) since use of other air- and oilfilters

Safety information

- may affect your safety.
- Stop engine before proceeding to inspection and maintenance work. Pull the key.
- Proceed to cleaning of the dirt hopper in regular intervals to preclude formation of bacterial deposits.
- The machine is splash-proof (IPX3). Cleaning the machine by means of high-pressure cleaning equipment or by vapour jet is prohibited.
- Shut the motor down before transporting the machine.
- After having jacked the Apex 58 by means of a car lifter, additionally support the machine adequately.
- No person is allowed to be in the jacked or lifted-up Apex 58.
- Before changing wheels protect the machine against rolling by placing wedges.
Proceed to wheel changing when the machine is on level and solid ground.
- Do not remove, install or repair a tire on the rim. Contact a tire workshop for works at tires and rims. Such workshops have qualified personnel as well as special safety tools at disposal.
- Do not proceed to welding, boring, sewing or grinding at the vehicle's frame. Only PowerBoss-workshops are authorized to replace damaged parts.
- Use genuine fuses only. Use of higher-level fuses may damage the electric system. Risk of fire.
- When working at the electric system disconnect the negative pole of the battery.
- Do not keep batteries discharged for a longer period, always recharge them as soon as possible.
- Top with distilled water only. Never refill battery acid in battery cells of perfect condition.
- Keep batteries dry and clean and clear of soiling such e.g. metallic dust to avoid leakage current.
- Battery acid is highly caustic (keep clear of children).
When checking the battery acid level, wear safety glasses. If acid splashes get into the eyes rinse with clear water for 15 minutes and contact a doctor immediately.
Use appropriate protective means (e.g. protective gloves or finger-stalls) when handling battery acid. Do not use open flames (explosion hazard).
- Pinching and shearing hazard by fitting, removal and change of the battery.
- All liquids escaping under high pressure (such as e.g. fuel oil or hydraulic liquid) may penetrate the skin and cause heavy injuries. Contact a doctor immediately in order to avoid infections. Take all precautions before draining boiling oil - burning hazard.
- Inspect the braking system at regular intervals. PowerBoss-workshops or approved brake service centres only are authorized to proceed to adjustment or repair work of the brake system.
- Inspect the hydraulic system at regular intervals. PowerBoss-workshops only are authorized to proceed to adjustment or repair work of the hydraulic system.
- Check hydraulic hoses and lines for leakage or damages in regular intervals. Replace defective hoses and lines immediately.
- Check regularly the zero-alignment of the driving pump, see maintenance schedule in chapter maintenance/service.

Safety information

1.5 Specific Hazards

Safety equipment

- Do not operate the Apex 58 without safety equipment being installed (all cover parts of the machine).

Refill fuel oil

- The utmost caution is advised when handling fuel oil - fire hazard! Never refuel in the vicinity of open flames or ignitable sparks! Do not smoke while fuelling! Turn engine off, pull ignition key and engage parking brake before fuelling. Never refill fuel oil in closed rooms! Wipe away spilled fuel oil!

Elektric system

- Only use genuine fuses with prescribed connecting load.
- In case of malfunction of the electric system, immediately shutdown machine and remedy.
- Qualified personnel only is authorised to proceed to works at the electrical equipment and only according to electro-technical rules.
- Inspect/check the electrical equipment of the machine at regular intervals. Immediately remedy defects such e.g. loose connections or scorched cables.

- Respect the operating instructions of the battery manufacturer.
- Never place metal objects or tools on batteries - short-circuit hazard!
- Provide for sufficient ventilation of areas where batteries are charged. – Explosion hazard!
Open seat hood by loading the batteries.

Safety information

1.6 Information for Protection of Environment

- For safe use of substances inheriting a danger to health and environment specific knowledge is required.
- During maintenance and repair, all operating media have to be collected in adequate receptacles. Provide for disposal in compliance with the legal provisions according to the Waste Disposal Act and the Used Oil Act.
- Do not let leaking oil, diesel oil, lubricants or other substance penetrate the soil. Danger of ground water soiling. Wipe away spilled fluids and provide for disposal according to the regulations.
- Depending on the filtered substances, used filter inserts are considered special waste in most cases and have to be disposed of accordingly.
- Batteries contain highly caustic sulphuric acid. Batteries have to be handled with utmost caution. Old batteries are considered special waste and have to be disposed of accordingly.
- Used batteries labelled as recyclable

contain reusable economic goods. According to the crossed dustbin label these batteries must not be added to the normal waste. Provide for agreement with the Hako contract dealer on return and disposal according to § 8 BattV.

Safety information

1.7 Labels at the Machine

The following safety and information labels are legibly attached to the vehicle. Replace missing or illegible labels immediately.

PowerBoss nameplate front (Fig. 1/1) and rear (Fig. 2/1)

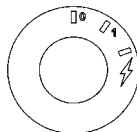
PowerBoss®

Vehicle identification number (Fig. 1/2)

Instruction manual (Fig. 1/3)



Ignition lock (Fig. 1/4)



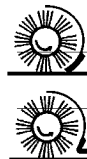
Brake (Fig. 1/5)



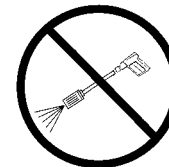
Parking brake (Fig. 1/6)



Folding apron (Fig. 1/7)



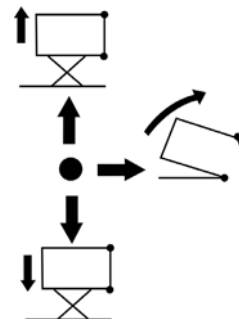
High-pressure cleaner
Steam cleaner (Fig. 1/8)



Inflation pressure (Fig. 1/9)

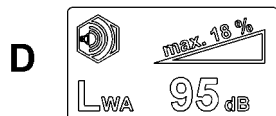
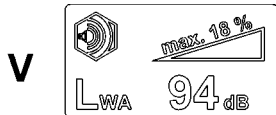
6 bar

Lifted-up disposal function (Fig. 1/10)



Safety information

Sound power
Rise (Fig. 1/11)



Adjust sweeping track side broom
(Fig. 1/12)



Maximum speed (Fig. 1/13) and (Fig. 2/9) (option)



Pinching hazard (both sides) (Fig. 2/2)



Fuel (Fig. 2/3)
Apex 58 (6300.13) = Benzin (petrol)
Apex 58 (6300.23) = Diesel (diesel)

Benzin
Diesel

Burning surface (Fig. 2/4)



Sweeper roller wearing take-up
(Fig. 2/5)



Rotating parts (Fig. 2/6)



Hydraulic fluid (Fig. 2/7)



Type name (Fig. 2/8)

Apex 58

Safety information

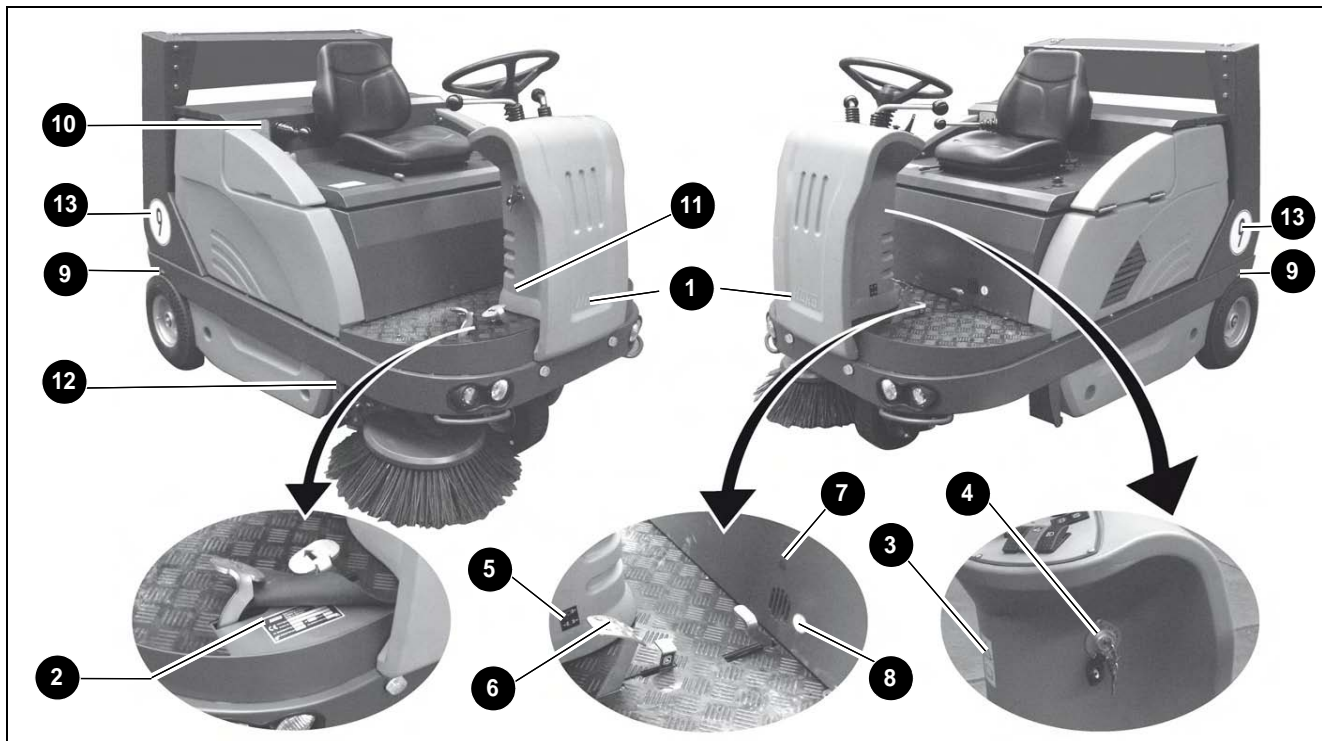


Fig.1

Safety information

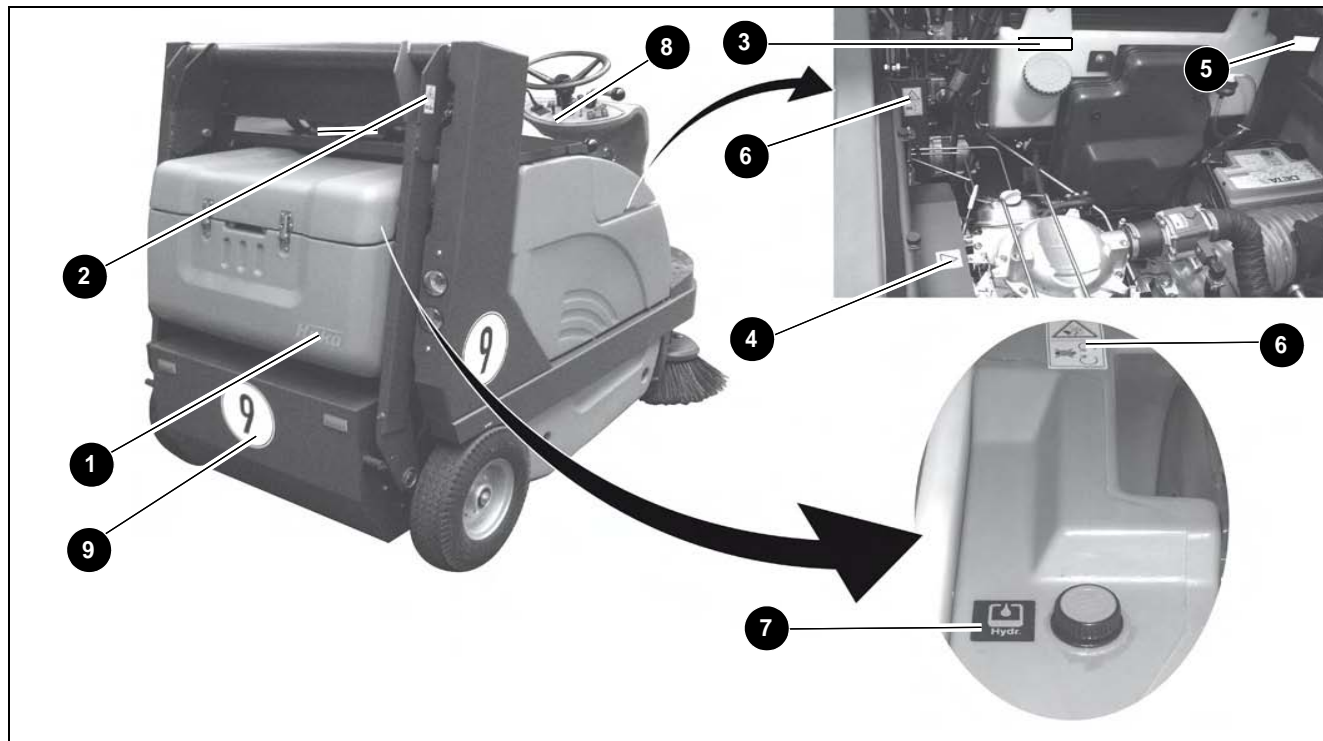


Fig.2

First Operation

2 First Operation

2.1 Instruction

Instruction is required before first operation. First instruction into handling of the machine must be held by a qualified person sent by your local PowerBoss contract dealer. Your PowerBoss dealer will be informed by the manufacturer upon delivery of the vehicle and will contact you to make a date for instruction.

2.2 Initial charging procedure



Before first operation of the machine, fully charge the battery with an initial charging procedure and comply with the operating instructions of the charger as well as with those of the battery manufacturer. PowerBoss cannot be held liable for damages resulting from the fact that the initial charging has not or insufficiently been done.

2.3 Before Taking into Operation

Proceed to the following inspections before taking the machine into operation:

1. Check parking site for signs of leakage. Hoses, lines and tanks must be free from any leakage or damage.
2. Open seat hood.
3. Check fuel level and refill if required.
4. Check engine oil level.
5. Close seat hood.

2.4 Start Machine



Before starting the machine you are advised to read and comply with the Provisions of Operating from Safety Information chapter!

Before starting the machine, subsequently actuate the following control elements:

1. Set all operating levers and switches to neutral.
2. Secure the vehicle by engaging the parking brake.
3. Turn ignition key to switch on ignition.

4. Apex 58 (6300.13):
Actuate choke (with cold engine only).
Apex 58 (6300.23):
Preheat until control lamp extinguishes.
5. Continue turning ignition key clockwise to start engine.
- After the motor has started, the engine oil pressure and charge status lamps have to extinguish.



Do not use the Apex 58 at ambient temperatures of more than 40°C.

Do not start the machine at temperatures of -15°C or less. Liquid propellant gas system: refer to LPG operating instructions.



Its not possible to start the machine, when the accelerator pedal is linked.



If the starting procedure has to be repeated or if the engine stops, re-starting is possible only after ignition has been turned off. The ignition lock is equipped with a protection to

First Operation

preclude repeated ignition with the engine running.



Interruption of the starting procedure after 10 seconds and brief pause between starting cycles is recommended to save the battery.

6. Run the engine up and press slowly the choke knob (Apex 58 (6300.13)) down.



Refer to LPG operating instructions for information on how to start machine equipped with liquid propellant gas system.

2.5 Operation

Proceed to the following to set the machine into operation:

1. Check the machine, see paragraph 2.3 - Before Taking into Operation.
2. Start vehicle, see paragraph 2.4.
3. Adjust service speed.



In initial position, vacuuming is activated. Use the operating draw if the collected dirt is wet.

4. Lower sweeper roller and side

broom.

5. Release parking brake.
6. Slowly depress drive pedal until desired speed has been attained.
7. Check filling level of the dirt hopper and empty if required.
8. Operate shaking installation regular for cleaning the filter.

2.6 Machine stopping and parking

1. Release drive pedal which returns automatically in neutral position and the machine slows down to standstill.
2. Actuate parking brake.
3. Lift sweeper roller and side broom.
4. Turn engine off.



Slowing down the Apex 58 is possible by applying opposite forces with the drive pedal or by using the service brake.



When leaving the machine unattended, pull key in order to preclude unauthorized use.

2.7 After work

1. Ride machine to suitable site for cleaning.
2. Stop machine, lift sweeper roller and side boom.
3. Start shaking procedure.
4. Empty dirt hopper, see operation chapter 3.2.2.
5. Clean machine.



Do not clean the electrical parts by means of high-pressure cleaning equipment.

First Operation

2.8 Transport rides and Towing Transport rides

Before transporting the Apex 58 on other vehicles, engage the parking brake and secure the machine by placing wedges at the wheels and by straps on the tie-down points front (Fig. 3/1) and rear (both sides) (Fig. 3/2).

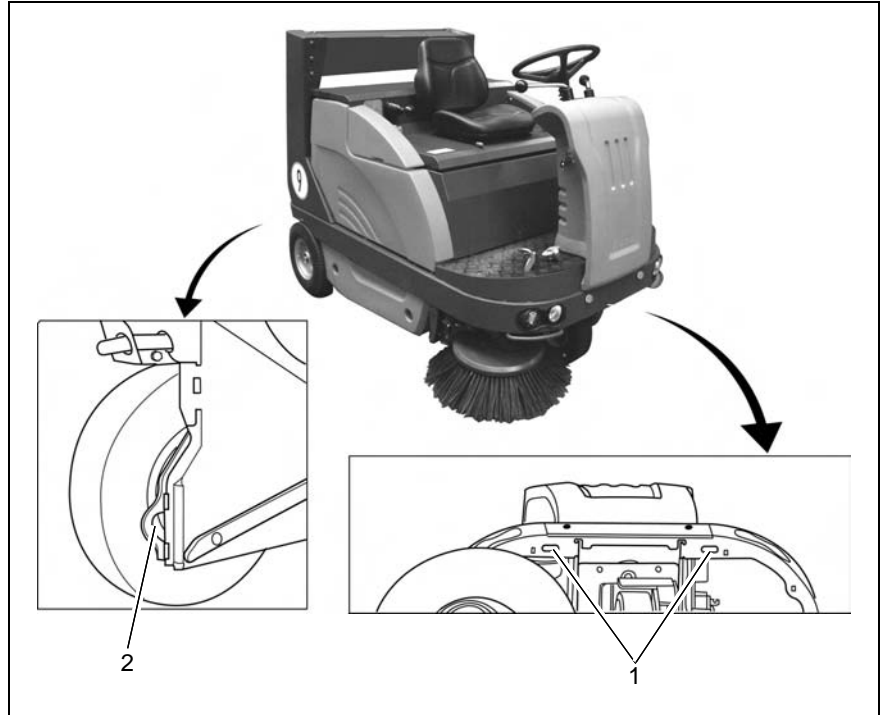


Fig.3

First Operation

Towing

If the Apex 58 should be moved with engine being off, actuate the bypass valve (Fig. 4/4) as follows.

1. Open seat hood.
2. Loosen wing screw left (Fig. 4/1) and wing screw right (Fig. 4/2) of side covers.
3. Tip front plate (Fig. 4/3) forward.
4. Turn the lever (Fig. 4/4) of the bypass valve anticlockwise approx. to the touch.

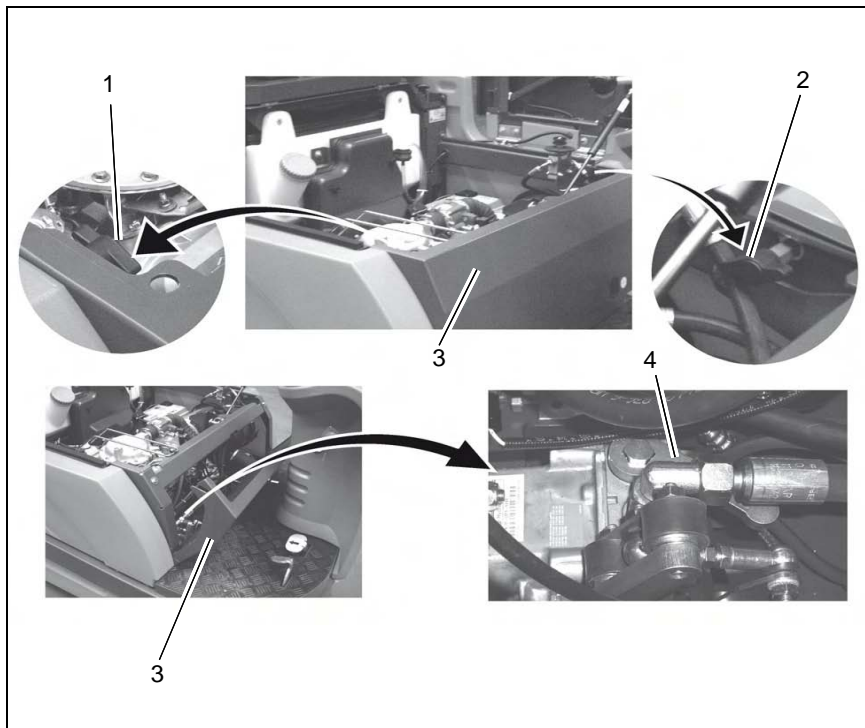


Fig.4

3 Operation

3.1 Working Procedure

General

The Apex 58 sweeper has been exclusively designed for collecting dry and moist matter from floor surfaces in e.g. factories, storage buildings, parking grounds and pedestrian areas.

Functional Description

The side broom (Fig. 5/1) is used to collect dirt at corners and borders and to enlarge the working width as well as to increase the area performance on large surfaces.

The sweeper roller (Fig. 5/2) casts the dirt overhead into the dirt hopper (Fig. 5/3). The collected fine dust is evacuated by the suction fan and separated by a filter system (Fig. 5/4). The air returned into the environment is clean.

Dirt disposal at the Apex 58 is realized via lift-up disposal (lift-up high > 1420mm) directly into standard waste container.

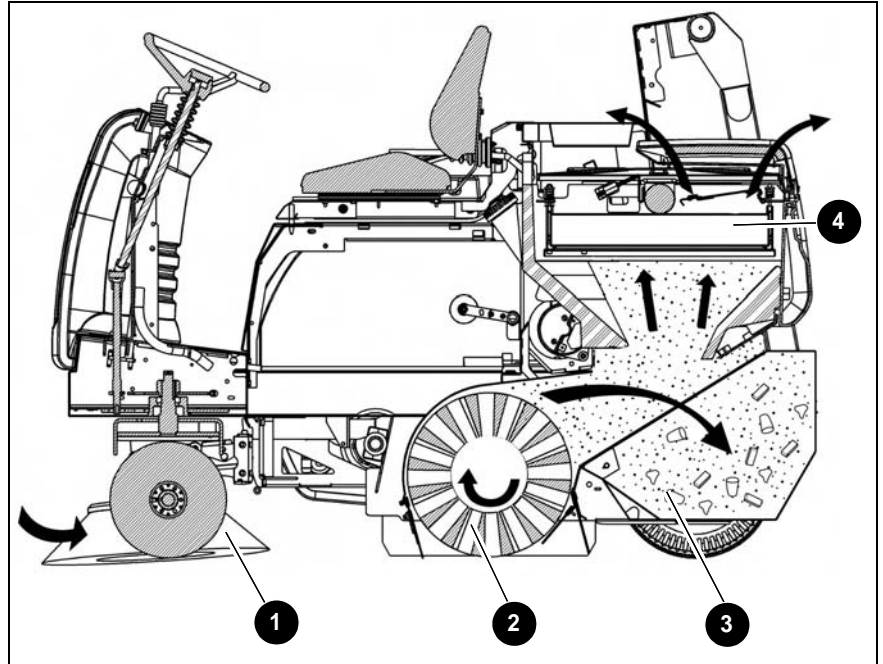


Fig.5

Operation

3.1.1 Sweeper Roller

The sweeper roller (Fig. 5/2) is equipped with 12 rows of bristles arranged in v-shape.

The sweeper roller width amounts to 800 mm and its diameter to 430 mm. The operator lifts and lowers is by hand lever (Fig. 6/1).

3.1.2 Side Broom

The standard version, the side broom (Fig. 6/2) is located at the front right of the machine. The operator lifts and lowers is by hand lever (Fig. 6/3). The swinging area of the side broom arm is limited by stops.

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

3.1.3 Steering

Steerage is effectuated mechanically from steering wheel to front wheel via chain. This chain is to be re-adjusted as required.



Fig.6



Any work at the steering has to be executed by authorized PowerBoss-service-workshop only.

Operation

3.1.4 Filter System Dust Evacuation

The filter system is located in the filter case (Fig. 7/1) above the dirt hopper (Fig. 7/2). The suction fan transports the fine dust raised by the sweeper roller to the plate filter (Fig. 7/3) where it is separated. The fine dust sets at the outside of the filter blades.



In case of heavy dusty sweeping dirt, check and clean the plate filter (Fig. 7/3) at regular intervals.

3.1.5 Shaking System

Due to normal working vibration the set dust from the plate filter (Fig. 7/3) partly falls off into the dirt hopper (Fig. 7/2). To ensure working in a dustfree ambiance, actuate the shaking system regularly, or after request by the control lamp (Fig. 10/5) at the latest.



Fig.7

Operation

3.1.6 Brake

The Apex 58 is equipped with a service brake. This brake has been constructed as shoe brake and equally serves as parking brake. It is located in the rear wheels and is actuated via cables. Two special adjustment screws (Fig. 8/2) are located in front of the chassis, behind the front cover (Fig. 8/1).



Any work at the braking system has to be executed by authorized PowerBoss-service-workshop only.

3.1.7 Travel Drive Assembly

The Apex 58 are equipped with a hydrostatic drive assembly which is driven by the combustion engine via hydraulic pump.

3.1.8 Hydraulic System

The hydraulic system existing of hydraulic valves, hydraulic pump with hydraulic fluid tank (Fig. 8/3) and serves the operation of the lifted-up disposal and the side broom.

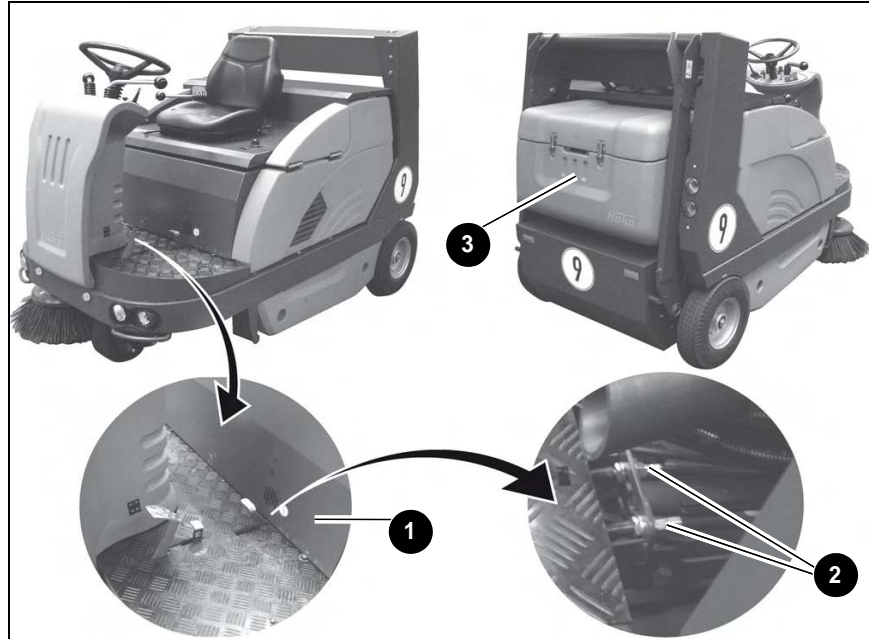


Fig.8

Operation

3.2 Operating Elements

- 1 Actuator for folding apron
- 2 Service brake lock
- 3 Service brake / parking brake pedal
- 4 Drive pedal, reverse
- 5 Drive pedal, forward
- 6 Control panel
- 7 Seat adjustment
- 8 Lever for dirt hopper (lifting-lowering-swinging)

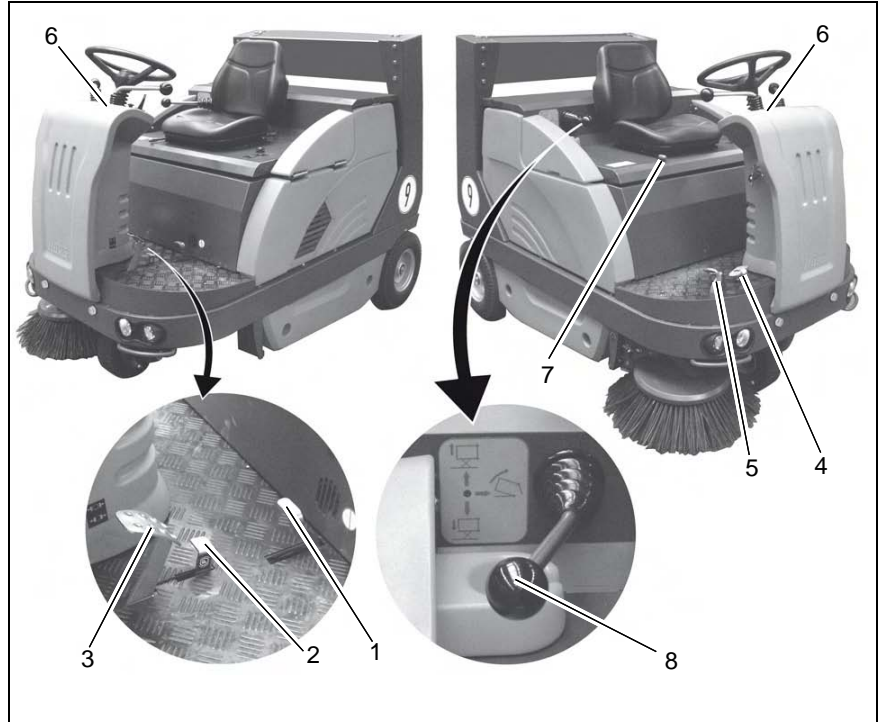


Fig.9

Operation

Actuator for folding apron (Fig. 9/1)

To open and close the folding apron for collecting coarse dirt during sweeping drive.

Service brake / parking brake lock (Fig. 9/2)

To lock the service brake / parking brake. Operate pedal and fix with lock. The service brake is working then as parking brake. The lock released by pushing service brake pedal (Fig. 9/3).

Service brake / parking brake pedal (Fig. 9/3)

Serves for operating the service brake on the rear wheels. Simultaneously actuate service and parking brake before leaving the machine.

Drive pedal, forward (Fig. 9/5)

To change direction to forward ride with continuous regulation of riding speed at the same time. If the driver releases the pedal it returns to initial position and the machine slows down to standstill.

Drive pedal, reverse (Fig. 9/4)

To change direction to reverse ride with continuous regulation of riding speed at the same time. If the driver releases the pedal it returns to initial position and the machine slows down to standstill.

Control panel (Fig. 9/6)

Refer to chapter „control Panel“.

Seat adjustment (Fig. 9/7)

To adjust the seat position to drivers of different height. Adjust the seat so as to allow the driver being comfortably seated and attaining all elements required for operation.

- Adjust seat lengthwise:
push lever slightly to the right and displace seat forwards or backwards to the required position.
Then let the lever catch again.

Lever for dirt hopper (Fig. 9/8) (lifting-lowering-swinging)

Lever for lifting-lowering-swinging the dirt hopper.

For lifting and lowering pull simultaneously lever for release of lifted-up disposal function (Fig. 10/1).

Swinging follows without operating of the lever (Fig. 10/1).

Simultaneously actuate lever for release of lifted-up disposal function, lever for sweeper roller (see chapter „Control Panel“), he serves releasing the dirt hopper for lifting and lowering. Swinging of the dirt hopper without lever for release for lifted-up disposal function.

Operation

3.2.1 Control Panel Apex 58

- 1 Sweeper roller lever and release of lifted-up disposal function
 - 2 Side broom lever or rather for side broom and sweeper roller
 - 3 Engine speed regulation knob
 - 4 Suction fan / shaking system knob
 - 5 Control lamp, shaking system (Option)
 - 6 Control lamp, direction indicator (Option)
 - 7 Hourmeter
 - 8 Control lamp, parking brake
 - 9 Battery charge status indicator
 - 10 Horn
 - 11 Ignition switch
 - 12 Indicator lever (Option)
 - 13 Lighting (Option)
 - 14 Warning light (Option)
 - 15 Rotating beacon (Option)
 - 16 Side broom left (Option)
 - 17 Control lamp, engine oil pressure
 - 18 Choke flap knob
- Apex 58 (6300.23)**
- 19 Control lamp engine oil pressure and water temperature
 - 20 Control lamp, preheat

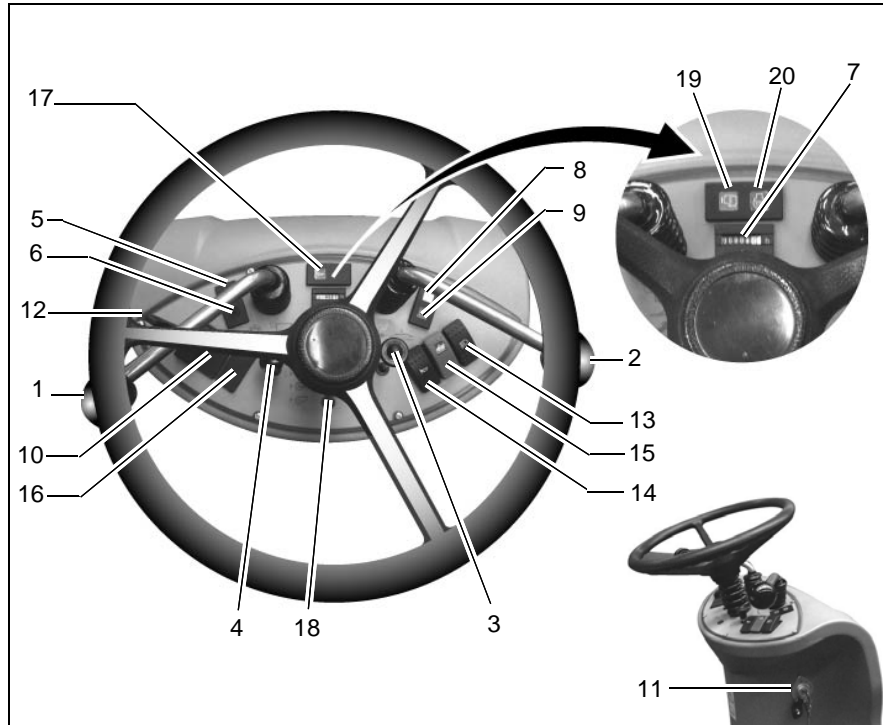
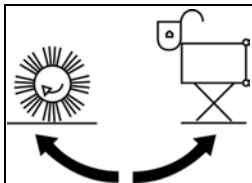


Fig.10

Operation



Sweeper roller lever and lifted-up disposal (Fig. 10/1)

Two-Hand-Operation.

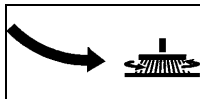
For lifting, lowering, swinging, to switch on and off the sweeper roller and to release of lifted-up disposal.

- Sweeper roller lowering and switch on = push lever
- Sweeper roller lifting and switch off = pull in middle position
- Release of lifted-up disposal function = pull lever

(see chapter „Emptying of the Dirt Hopper“).



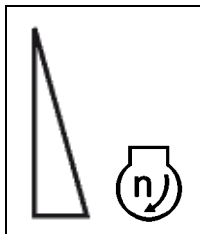
Lifting and turn off the sweeper roller, if the lever for the right side broom is in lifting position.



Side broom lever (Fig. 10/2)

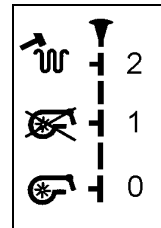
To lift and lower the side broom or lower and turn on the side broom and sweeper roller in one process (Fig. 10/1).

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



Engine speed regulation knob (Fig. 10/3)

To adjust the engine speed. Neutral speed is attained by pulling the knob up.



Suction fan / shaking system (Fig. 10/4)

Knob position (from bottom to top):

- 0 Activated vacuuming function
- 1 Deactivated vacuuming function
- 2 Shaking system ON (pull knob to stop and then release)

If the yellow control lamp (Fig. 10/5) lights by ignition or with the engine running, actuate the shaking system (position 2).

In this position, the shaking system is operable and proceeds to jolting in 7 repeated intervals.

Operation



After jolting, the knob is to be kept in position 1 for about 25 seconds.

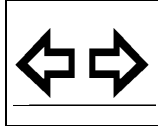


Control lamp, shaking system (Fig. 10/5)

Proceed to jolting of the filter system upon lighting of this control lamp by actuating the knob (Fig. 10/4) in position 2.



The control lamp flashes during the shaking procedure and extinguishes after filter has been cleaned. Jolting is effectuated in 7 intervals.



Control lamp, direction indicator (Option) (Fig. 10/6)

Indicate, if using the indicator lever, the direction.



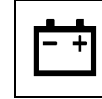
Houmeter (Fig. 10/7)

Indicates the operating hours. the counter works only if the driver is seated and the ignition is ON.



Control lamp, parking brake (Fig. 10/8)

Lights upon actuation of the parking brake. Extinguishes upon release of the parking btake.



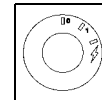
Battery charge status indicator (Fig. 10/9)

Lights upon actuation of the ignition switch and has to extinguish as the engine fires.



Horn (Fig. 10/10)

An acoustic signal sounds upon actuation of this button.



Ignition switch (Fig. 10/11)

To switch ignition on and off, to start and stop engine and to secure it against unauthorised use.

Operation



For safety reasons, the Apex 58 has been equipped with a seat contact switch. Starting the engine is possible only after the driver has taken place on the seat. If seat contact is interrupted while the engine is running, the combustion engine of the Apex 58 has to be re-started.



The Apex 58 can not started, when the accelerator pedal is linked.

Indicator lever (Option) (Fig. 10/12)

Indicate changing of direction

- Lever down = to left.
- Lever up = to right.



Lighting (Option) (Fig. 10/13)

To switch the driving headlight ON/OFF.



Warning light (Option) (Fig. 10/14)

Use this switch by a technical defect, if is impossible to move the machine. Lighting flashes ON/OFF.



Rotating beacon (Option) (Fig. 10/15)

To switch the rotating beacon ON/OFF.



Side broom left (Option) (Fig. 10/16)

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

- Switch actuate = side broom lowering and turning on.
- Switch not actuate = side broom lifting and is laying up.



Control lamp, engine oil pressure (Apex 58 (6300.13) only) (Fig. 10/17)

Lights upon, if too few engine oil in the engine oil tank. Stop the machine and refill engine oil.

If control lamp continues lighting please inform the PowerBoss-Service department.

Operation



Choke flap knob (Apex 58 (6300.13) only) (Fig. 10/18)

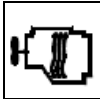
To actuate the chke flap (cold start).

- Knob down = choke not actuated.
- Knob pulled up = choke actuated for cold start.



Control lamp, preheat (Apex 58 (6300.23) only) (Fig. 10/20)

Lights upon by switch on ignition. Start the machine when control lamp extinguish.



Control lamp engine oil pressure and water temperature (Apex 58 (6300.23) only) (Fig. 10/19)

The contrl lamp lights upon occurrence of an error at the engine or the controller. If control lamp continues lighting please inform the PowerBoss-Service department.

Operation

3.2.2 Emptying of the Dirt Hopper

Proceed to emptying of the dirt hopper as follows:

- Lift and switch off side broom and sweeper roller.
- Proceed to shaking of the filter system.
- Lift dirt hopper as follows:
Pull lever for dirt hopper (Fig. 11/1) upwards and simultaneously pull the lever for sweeper roller and release for lifted-up disposal (Fig. 11/2) in arrow direction.
- Bring dirt hopper for disposal in suitable height position.
- Back the Apex 58 until the dirt hopper is positioned above the container.
- Pull lever for dirt hopper (Fig. 11/1) in arrow direction, dirt hopper is swinging in emptying position.
- Forward the Apex 58 after complete emptying.



Caution by driving away, if dirt hopper is towering in the container:
Hazard of damaging!

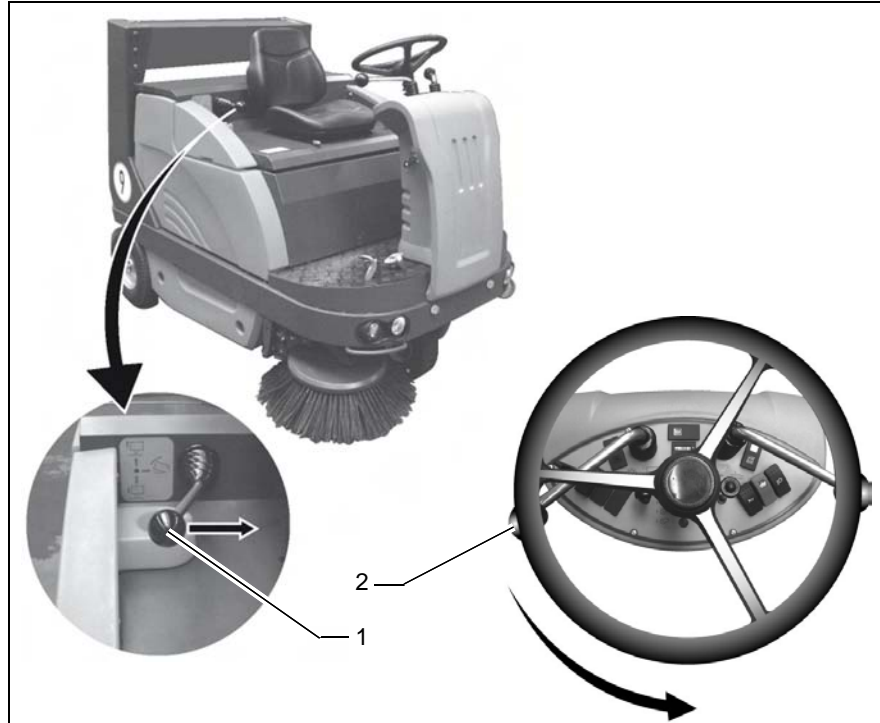


Fig.11

Operation

- Lower dirt hopper as follows:
Pull lever for dirt hopper (Fig. 11/1) down and simultaneously pull the lever for sweeper roller and release for lifted-up disposal (Fig. 11/2) in arrow direction.
- The dirt hopper is swinging automatically in starting position by lowering.
- Dirt hopper is again in working position.



The operation of lifted-up disposal function is blocked as long as sweeping function is ON.



Do not switch on sweeper roller when dirt hopper lifting out.



Riding with the lifted dirt hopper reduces stability of the machine significantly. For this reason, do not lift the dirt hopper but just before emptying. Before lifting the dirt hopper, the operator has to make sure that no persons or objects are behind or next to the machine.

Stop the machine on level ground before lifting the dirt hopper.



When the dirt hopper is lifted, the operator has to ride the machine slowly.



Keep clear of the hazard zone! Pinching and shearing hazard. Provide for required safe distance before lifting or lowering the dirt hopper



The dirt hopper is approved only for max. filling of 130 litres but not more than a weight of 220 kg.



Do not move the machine during the lifting procedure.



Clean the dirt hopper in regular intervals.

Technical Data

4 Technical Data

Apex 58		
Dimensions and weights		
Length with side broom	mm	1998
Width without side broom	mm	1142
Width with 1 side broom	mm	1142
Width with 2 side brooms	mm	1142
Height above driver's seat	mm	1520
Dead weight	kg	V: 763 / D: 784
Admissible total weight	kg	1330
Driving and sweeping performance		
Forward speed	km/h	0-9
Reverse speed	km/h	0-4
Sweeping speed up to (4 km/h recommended)	km/h	9,0
Sweeping track w/o/with 1 side broom	mm	800 / 1150
Sweeping track with 2 side brooms	mm	1470
Theoretical sweep. perf. with 1 or 2 side brooms	m ² / h	10300/13200
Theoretical sweep. perf. without side broom	m ² / h	7200
Gradability, max.	%	18

Technical Data

Apex 58		
Filter system		
Filtering surface	m ²	5,0
Plate filter	peaces	1
Sweeper roller		
Length / diameter	mm	800 / 430
Wearing limit	mm	350
Speed	1/min	500+/-20
Sweeping track	mm	70+10
Quantity of bristle rows		12 v-shaped
Serial bristling		PA
Ground clearance of sealing		
Sealing strips, left / right / rear	mm	1 / 1 / 4
Sealing strip, front		lying on the bottom
Side brooms		
Diameter	mm	600
Speed	1/min	85+/-4
Serial bristling		PA

Technical Data

Apex 58		
Dirt hopper		
Hopper capacity	litre	130
Drive wheels		
wheel front, solid rubber tyres		4.00-4
Wheels rear		4.00-8
Inflation pressure	bar	6
Solid rubber tyres (rear)		4.00-8 (Option)
Hydraulic system Travel drive assembly		
Hydraulic fluid, e.g. Mobiloil		DTE 15 M (or an equivalent oil)
Hydraulic tank, capacity	litre	22
Fluid filter cartridge	order-no.	CS-050-P-10-A
Electric system		
Starter battery	V / Ah	12/74
Generator	A	13

Technical Data

Apex 58		6300.13	6300.23
Engine			
Manufacturer		Briggs & Stratton	Lombardini
Type		Vanguard V-Twin	LDW 502
Working process/no. of cylinders		4-Takt / 2 Zyl.	4-Takt / 2 Zyl.
Piston capacity	cm ³	480	505
Performance at 2550 rpm	KW	8.2	8.0
Service speed (with sweeper roller, side broom and suction fan being on)	rpm	2550+50	2550+50
Fuel tank capacity	litre	25 (unleaded)	25 (diesel)
Fuel consumption	litre / h	2,5	1,25
Engine oil / filling	type / litre	15W-40 / 1,5	15W-40 / 1,5
Spark plug		Champion RC 12 YC	
Air cleaner		Mann & Hummel 44 100 92 911	Mann & Hummel 44 100 92 911

Technical Data

Apex 58 (6300.13)			
Noise emission		Standard	Sound insulation package
The sound pressure level (LpA) measured according to DIN IEC 60335-2-72 and under standard operating conditions at the operator's ear amounts to:	dB (A)	78	77
The sound power level (LwA) measured according to DIN IEC 60335-2-72 under standard operating conditions and maximum volume flow amounts to:	dB (A)	94	94

Apex 58 (6300.23)			
Noise emission		Standard	Sound insulation package
The sound pressure level (LpA) measured according to DIN IEC 60335-2-72 and under standard operating conditions at the operator's ear amounts to:	dB (A)	79	77
The sound power level (LwA) measured according to DIN IEC 60335-2-72 under standard operating conditions and maximum volume flow amounts to:	dB (A)	95	94

5 Maintenance and Care

General



Before proceeding to maintenance and care work you are advised to read and comply with the Safety Information chapter!

Compliance with the recommended maintenance works will give you the certitude of always having a reliable machine at disposition.

Daily or weekly maintenance and repair works may be executed by the driver/operator having been trained accordingly. Further PowerBoss system maintenance works have to be executed by qualified personnel only. Please contact your local PowerBoss Service Centre or PowerBoss contract dealer. We cannot be held liable for damages resulting from non-compliance with these instructions.

Please indicate the machine's serial number with any enquiry or spare part order, see paragraph 1.7 - Nameplate.

5.1 PowerBoss System Maintenance

The PowerBoss System Maintenance:

- guarantees reliable operability of the PowerBoss machines (preventive maintenance)
- minimizes operating costs, repair costs and maintenance costs
- ensures long service life and operability of the machine

The PowerBoss System Maintenance is structured in separate modules and determines specific technical works to be executed as well as the intervals for such maintenance works. For any specific maintenance type, the replacement parts are determined and listed in spare part kits.

PowerBoss-System Maintenance K:

To be performed by the customer in accordance to the maintenance and care instructions contained in the operating instructions (daily or weekly). The driver/operator will be instructed upon delivery of the machine.

PowerBoss-System Maintenance I :

(after 50 hours of operation - uniquely)
To be performed by qualified personnel of authorised PowerBoss Service Centre in accordance with the machine-spe-

cific system maintenance including spare part kit.

PowerBoss-System Maintenance II:

(every 125 hours of operation)
To be performed by qualified personnel of authorised PowerBoss Service Centre in accordance with the machine-specific system maintenance including spare part kit.

PowerBoss-System Maintenance III:

(every 250 hours of operation)
To be performed by qualified personnel of authorised PowerBoss Service Centre in accordance with the machine-specific system maintenance including spare part kit.

PowerBoss-System Maintenance S:

(every 500 hours of operation safety check)
To be performed by qualified personnel of authorised PowerBoss Service Centre in accordance with the machine-specific system maintenance including spare part kit. Execution of all safety-relevant inspections according to UVV-BGV-TÜV-VDE as prescribed by law.

Maintenance and Care

5.2 Maintenance document

<p>Handing over</p> <p>Upgrade Test drive Handing over to the customer Instruction carried out on:</p> <p>at _____ operatin hours</p>	<p>PowerBoss-System-Maintenance I 50 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>	<p>PowerBoss-System-Maintenance II 125 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>	<p>PowerBoss-System-Maintenance III 250 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>
<p>PowerBoss-System-Maintenance II 375 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>	<p>PowerBoss-System-Maintenance III+S 500 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>	<p>PowerBoss-System-Maintenance II 625 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>	<p>PowerBoss-System-Maintenance III 750 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>
<p>PowerBoss-System-Maintenance II 875 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>	<p>PowerBoss-System-Maintenance III+S 1000 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>	<p>PowerBoss-System-Maintenance II 1125 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>	<p>PowerBoss-System-Maintenance III 1250 operating hours Workshop stamp</p> <p>carried out on:</p> <p>at _____ operatin hours</p>

Maintenance and Care

5.3 Maintenance Schedule

PowerBoss-System Maintenance

Customer

The following maintenance works are to be performed by the customer.

Discription of task	Interval
	daily
Check engine oil level and refill if required	o
Check fuel level and refill if required	o
Check dirt hopper (dustbin), and empty if required	o
Operate shaking system	o
Test drive and function test	o

Maintenance and Care

PowerBoss-System Maintenance

Customer

The following maintenance works are to be performed by the customer.

Discription of task	Interval
	weekly
Check engine air cleaner for soiling and clean if required (tap, do not use compressed air), replace air cleaner insert if required	o
Visual check of engine for oil leakage, refill if required	o
Dirt hopper: Check sealing and replace if required	o
Check sweeper roller for wearing or foreign particles, re-adjust or replace if required	o
Check electrical system	o
Check inflation pressure	o
Check hydraulic fluid level, refill if required	o
Check side broom for wearing, re-adjust and replace if required	o
Check folding apron for wearing and damaging, re-adjust and replace if required	o
Visual check of engine and hydrailic system for oil leakage	o
Clean machine	o
Test drive and function test	o

Maintenance and Care

PowerBoss-System Maintenance I

The following maintenance works are to be performed by authorized Power-Boss-Service-Centre.

Discription of task	Interval
	after 50 hours of operation (uniquely)
Change engine oil and engine oil filter	o
Clean fuel filter	o
Check engine speed	o
Check sealings at filter system	o
Visual check of V-belts	o
Check hydraulic fluid filter and refill fluid	o
Check optical condition of machine	o
Test drive and function test	o

Maintenance and Care

PowerBoss-System Maintenance II

The following maintenance works are to be performed by authorized Power-Boss-Service-Centre.

Discription of task	Interval
	every 125 hours of operation
Check engine oil and engine oil filter Apex 58 (6300.13)	o
Change engine air cleaner	o
Check spark plug, replace if required	o
Check zero centering of the drive pump	o
Check service/parking brake and re-adjust if required	o
Check inflation pressure	o
Check hydraulic fluid level	o
Check sweeping track and adjust if required (main- and sidebrush)	o
Check brush apron and adjust if required or change	o
Check sealing at filter system	o
Check V-belt for wearing and correct tension and re-adjust if required	o
Basic cleaning of the plate filter	o
Check optical condition of machine	o

Maintenance and Care

Discription of task	Interval
	every 125 hours of operation
Test drive and function test	o

Maintenance and Care

PowerBoss-System Maintenance III

The following maintenance works are to be performed by authorized Power-Boss-Service-Centre.

Discription of task	Interval
	every 250 hours of operation
Perform maintenance works according to PowerBoss-System Maintenance II	o
Change engine oil and engine oil filter Apex 58 (6300.13)	o
Check idling and service speed	o
Check battery	o
Check tension of steering chain and adjust tension if required	o
Check tread of wheels	o
Check plate filter	o
Check lifted-up disposal function (2-hand-operation)	o
Check hydraulic hoses and replace if required	o
Check service/parking brake and re-adjust if required	o
Check cables and plugged connections for damages and tight fit	o

Maintenance and Care

PowerBoss-System Maintenance S (Safety check)

The following maintenance works are to be performed by authorized Power-Boss-Service-Centre at least once yearly.

Discription of task	Interval
	every 500 hours of operation
Perform maintenance works according to PowerBoss-System Maintenance II and III	o
Change hydraulic fluid and filter	o
Engine: adjust valve and change seal of valve cover	o
Check fixing screws (brake, steering wheel and lifted up disposal) and tighten if required (Safety check)	o
Check braking system (Safety check)	o
For LPG-version (Germany): Expert opinion yearly (BGV D 34) (Safety check)	o
Check steering wheel (Safety check)	o
Test drive and function test of safety components	o

Maintenance and Care

5.4 Mount/Dismount Sweeper Roller

The sweeper roller is accessible from the left side of the machine and is to be dismantled as follows:

- Lower sweeper roller
- Pull ignition key and protect by engaging parking brake.
- Open locks (Fig. 12/1) by enclosed square spanner (turn counter-clockwise).
- Remove cover (Fig. 12/2).
- Loosen star-shaped knob (Fig. 12/3) and remove.
- Remove sweeper roller seating (Fig. 12/4).
- Turn handle (Fig. 12/5) upwards and unlock.
- Remove plate with sealing strip (Fig. 12/6).
- Remove sweeper roller (Fig. 12/7) by pulling.

For mounting the sweeper roller proceed in inverse order.

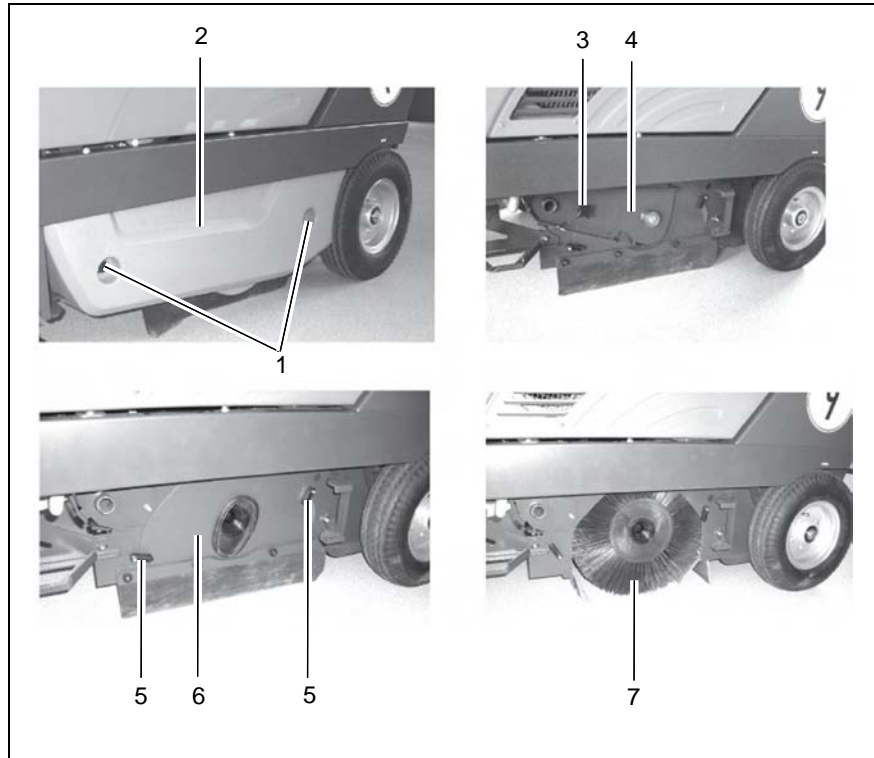


Fig.12

Maintenance and Care

5.5 Adjust Sweeping Track

An adjustment device allows adaption to different sweeping conditions. The sweeper roller has to be adjusted for normal use and with regard to a low degree of wearing as described in the following.

Check the sweeper adjustment on level ground as follows:



Before checking:
Mark level surface for checking sweeper adjustment by chalk (1000 x 300 mm).
Drive sweeping roller over underline floorspace.



Check inflation pressure of tyres (6bar).
Air tyres only.

- Secure machine by engaging parking brake.
- Lower sweeper roller and let it run dry.
- Lift sweeper roller and forward the Apex 58 a bit.
With the correct sweeper adjustment the parallel sweeping marks have to appear on the floor (sweeping track).

The sweeping track width is to be 70 mm with the Apex 58.

The sweeping track width can be adjusted at the star-shaped knob (Fig. 13/1) as follows:

- Stop engine and pull key.
- Engage parking brake.
- Open seat hood.
- Turn star-shaped knob (Fig. 13/1) to the left = wider sweeping track to the right = smaller sweeping track (Sweeper adjustment sticker (Fig. 13/2))

- Check sweeping track



With one full turn of the knob, the track widens or broadens by approx. 10mm.



When exceeding the sweeping track width the sweeper roller wearing increases as well as the load of the drive.

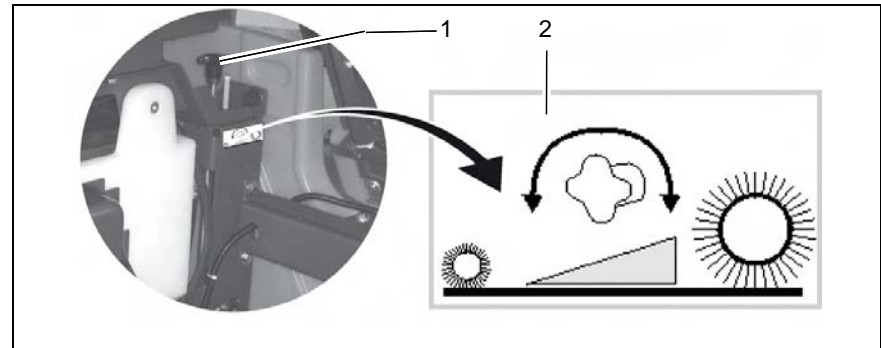


Fig.13

Maintenance and Care

5.6 Sealing Strips for Broom Compartment

In order to assure good function of the sweeper, a perfect condition of the sealing strips is required, especially in order to attain the prescribed low pressure in the broom compartment, a clean sweeping result and the less possible wear of the sealing strips.

Check the sealing strips of the broom compartment for wearing and damages in regular intervals.

Replace defective sealing strips.

The ground clearance of the lateral and rear sealing strips is adjustable (oblong holes in the sealing strips).

Ground clearance:

sides approx. 1mm

rear approx. 4mm

Proceed to adjustment with an inflation pressure of the pneumatic tyres of 6 bar. Height of the front sealing strip (folding apron) cannot be adjusted. Being dragged, it has contact with the floor.

5.7 Replace Side Broom

The side broom is located at the front right of the machine (standard version). Use the lever (chapter 3.2.1, Fig. 10/2) to lift and lower the side broom.

The swinging area of the side broom is limited by stop screws.

The side broom is driven by hydraulic engine.

Fitting of a second side broom (left side) for specific appliances is possible.

Proceed as follows for dismounting of the side broom:

- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Side broom lifted.
- Loosen hexagonal nut (Fig. 14/1) below the side broom.
- Remove side broom.

Proceed in inverse order for mounting of the side broom.

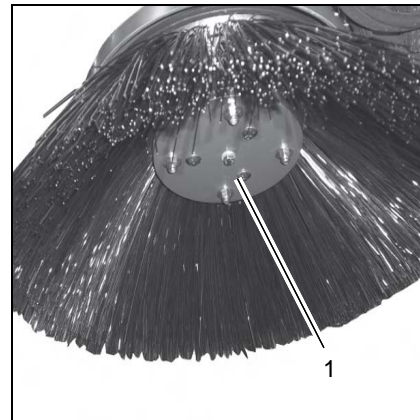


Fig.14



Check for correct mounting.

Maintenance and Care

5.8 Dismount Plate Filter

Proceed as follows for dismounting of the plate filter:

- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Open quick-release locks (Fig. 15/1) and remove cover (Fig. 15/2).
- Remove cover (Fig. 15/3) of the filter installation.
- Loosen wing screws, four peaces, (Fig. 15/4) and remove.
- Fold back frame (Fig. 15/5) and hook frame (Fig. 15/5) at indicated position by rubber fastening (Fig. 15/6).
- Remove plate filter (Fig. 15/7).

For mounting of plate filter proceed in inverse order.



Clean filter area.

Check plate filter of damaging. Watch for direction of the air on the plate filter.

Check for correct fit of the plate filter in the machine frame.

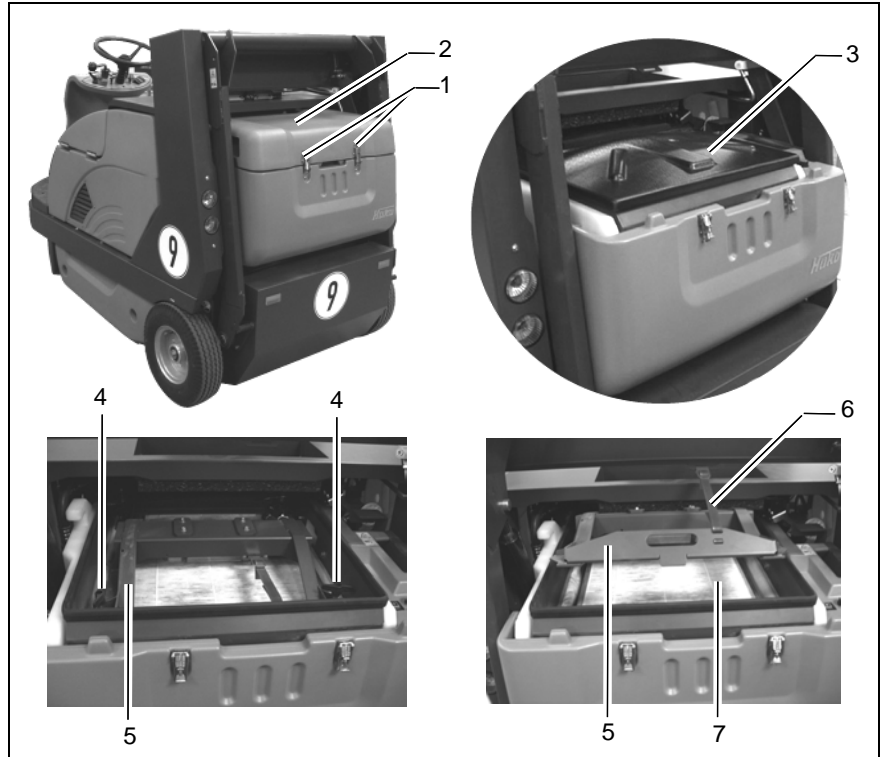


Fig.15

Maintenance and Care

5.9 Basic Cleaning of Plate Filter

Hold the plate filter (Fig. 16/1) in vertical position and drop it from a height of approx. 1m to the even floor as represented in (Fig. 16/).



The soiled side of the plate filter points to the bottom.

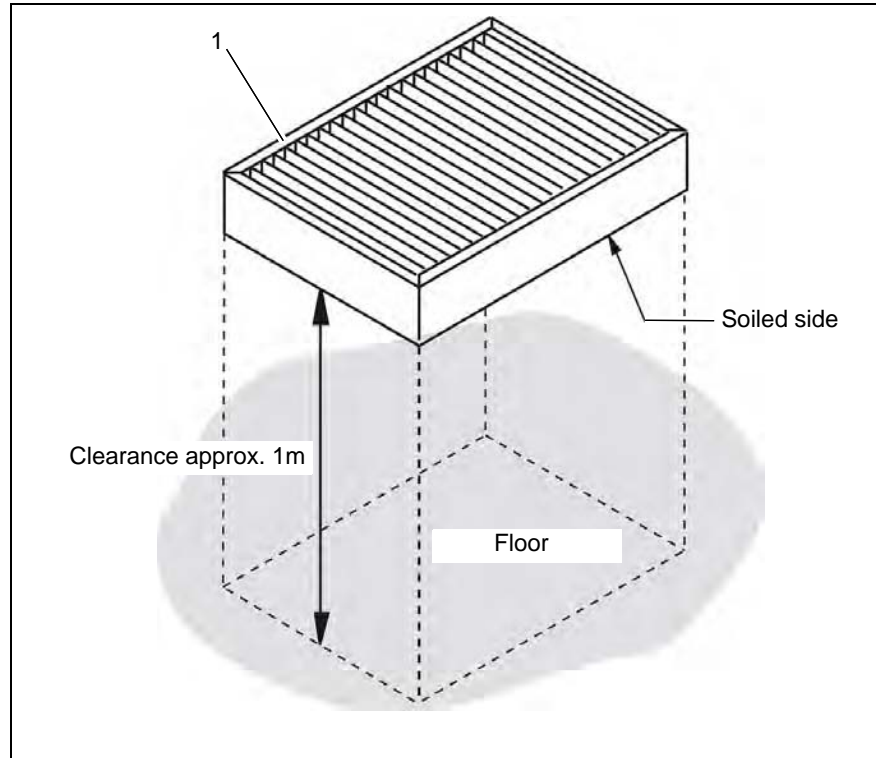


Fig.16

Maintenance and Care

5.10 Engine

General

The engine is a robust four-stroke engine and easy-to-maintain.

Maintenance work is to execute at regular intervals. Find the details described in the following.



Before cleaning or maintaining the Apex 58 as well as before replacing parts, turn the engine off and pull the ignition key.

Use appropriate tools for maintenance, service, setting etc.

As far as aspect of safety are concerned, spare parts will have to be at least of the same quality as the genuine spare parts.

5.10.1 Check Engine Oil Level



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

- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Open seat hood.
- Pull plug (Fig. 17/1) with dipstick.

- Pull dipstick(Fig. 17/1).
- Wipe dipstick (Fig. 17/1) and push into opening until stop and pull it again.
- Oil level has to be mark between minimum and maximum (Fig. 17/2), refill engine oil if required.
- Re-insert dipstick(Fig. 17/1).

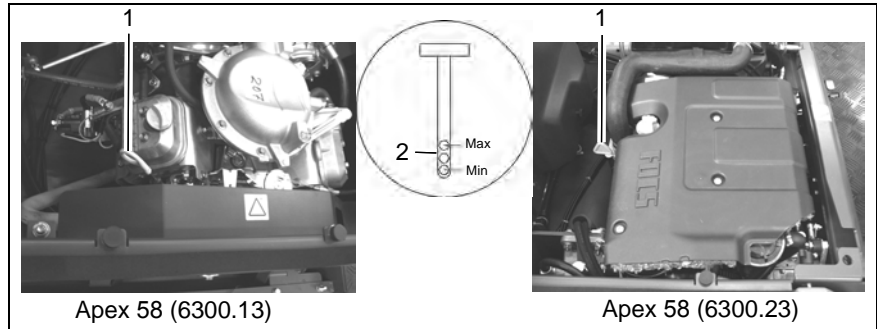


Fig.17

Maintenance and Care

5.10.2 Change Engine Oil



If the machine has not been used for a longer time, let the engine run to have the oil attain appropriate temperature.



Caution!
Burning hazard at muffler pipe!

For change engine oil proceed as follows:

- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Open seat hood.
- Loosen wing screws of the front cover and tip the front cover outwards.
- Loosen and remove lock screw (Fig. 18/1), drain oil.
- Attach lock screw (Fig. 18/1) again and fill engine oil in the filling opening (Fig. 18/2) with the machine standing on level ground.
- Let the engine run a short time.
- Check oil level with dipstick, continue filling if required.

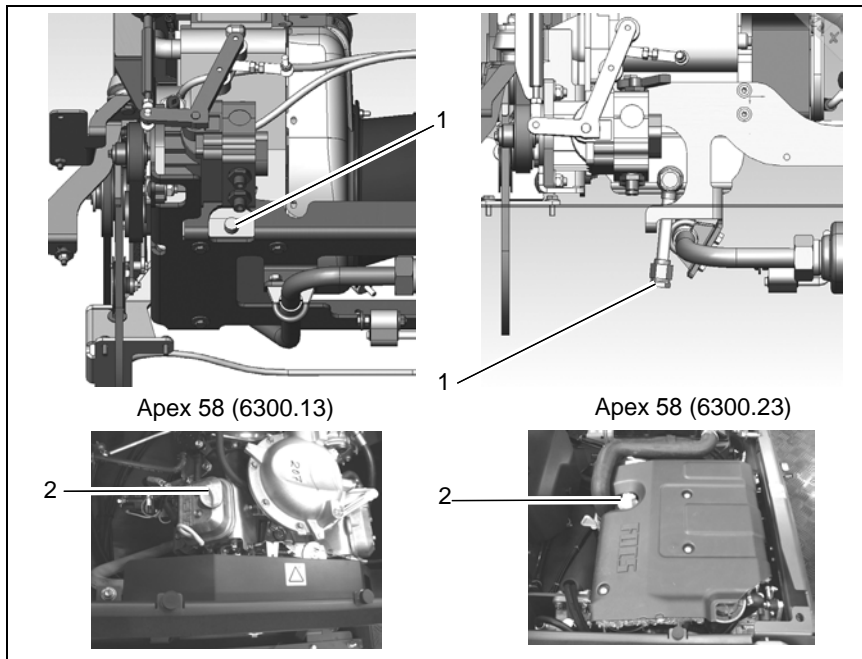


Fig.18

Engine oil: SAE 15 W 40 (1.5 litre)



Use an oil-resistant funnel for filling engine oil.

Maintenance and Care

5.10.3 Change Engine Oil Filter Apex 58 (6300.13)

Change the engine oil filter according to maintenance schedule.

For change engine oil filter proceed as follows:

- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Open seat hood.
- Loosen wing screws of the front cover and tip the front cover outwards.
- Turn oil filter (Fig. 19/1) counter-clockwise to loosen it and unscrew.
- Screwing new filter.
- Attach front cover by using wing screw.
- Close seat hood.



Fig.19

Maintenance and Care

5.10.4 Change Engine Oil Filter Apex 58 (6300.23)

Change the engine oil filter according to maintenance schedule.

For change engine oil filter proceed as follows:

- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Open seat hood.
- Turn oil filter (Fig. 20/1) counter-clockwise to loosen it and unscrew.
- Screwing new filter.
- Close seat hood.



Fig.20

Maintenance and Care

5.10.5 Air Cleaner

The air cleaner is located in the engine compartment. Clean the air filter weekly and change them after 125 hours of operation.



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

Proceed as follows for dismantling the air cleaner:

- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Open seat hood, loosen and remove the wing screws of the left side cover.
- Remove side cover.
- Remove lock cap (Fig. 21/1) and filter (Fig. 21/2).
- Proceed to dry cleaning of the air filter or replace if required.

For mounting of air filter proceed in inverse order.

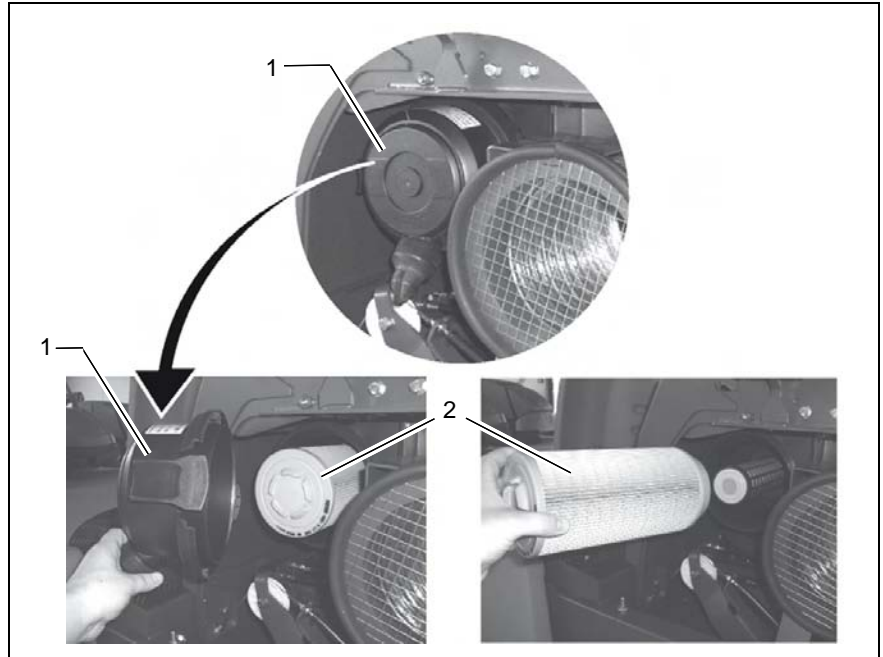


Fig.21

Maintenance and Care

5.11 Hydraulic System

The hydraulic units are oil- and maintenance-free. The hydraulic oil and filter concerned by maintenance work only. Premature failure can be prevented by regular inspection and periodical maintenance according to maintenance schedule.



We recommend having all other works at the hydraulic system done by a authorized PowerBoss-service-workshop.

5.11.1 Check Hydraulic Fluid Level

- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Open quick-release locks (Fig. 22/1) and remove cover (Fig. 22/2)
- Clean the area of the dipstick (Fig. 22/3).
- Pull dipstick (Fig. 22/3).
- Wipe dipstick by means of cloth.
- Put in dipstick until stop.

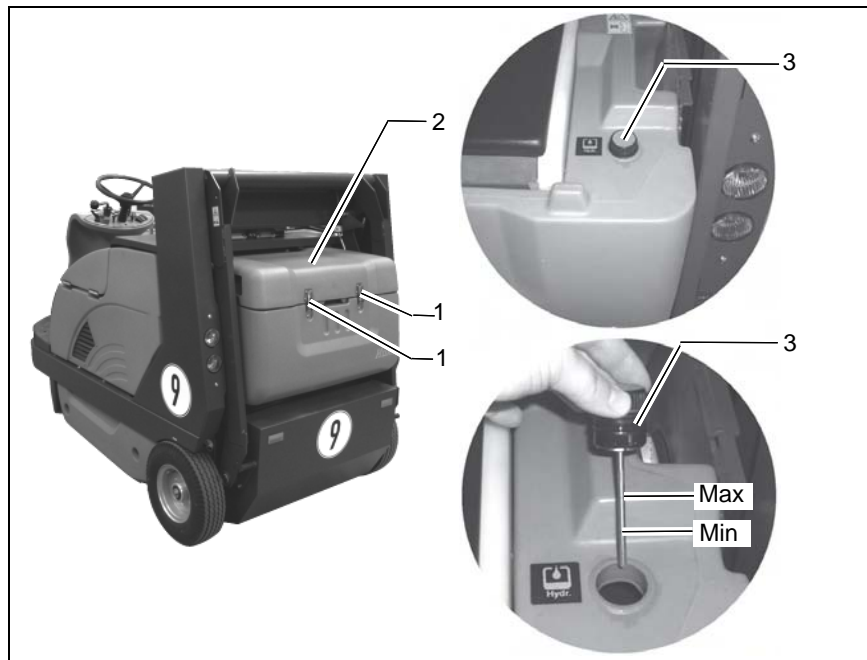


Fig.22

Maintenance and Care

- Pull dipstick (Fig. 22/3) and check the hydraulic fluid level, refill if required.

5.11.2 Refill Hydraulic Fluid

- Unscrew cap with dipstick (Fig. 22/2) and check hydraulic fluid level, siehe Abschnitt 5.11.1.
- Use appropriate oil-resistant recipient with mouth or funnel for refilling.
- Proceed to check of fluid level after refilling.
- The hydraulic fluid level must not fall below the minimum. It should read between the minimum and the maximum (Fig. 22/).

5.11.3 Change Hydraulic Filter

Change the hydraulic filter according to maintenance schedule.

For change hydraulic filter proceed as follows:

- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Open seat hood, loosen and remove the wing screws of the left side cover.
- Turn hydraulic filter (Fig. 23/1) counter-clockwise to loosen it and unscrew.
- Before screwing new filter, fill it with oil.
- Ride the machine a short distance.
- Refill sufficient hydraulic oil.
- Check fluid filling level.



Fig.23

5.11.4 Change Hydraulic Fluid

Change the hydraulic fluid according to maintenance schedule.

For change hydraulic fluid proceed as follows:

- Move up the dirt hopper (Fig. 24/1).
- Turn engine off and pull key.
- Secure machine by engaging parking brake.
- Place recipient under the drain plug (Fig. 24/2), drain plug is located underneath the hydraulic case (Fig. 24/3), and remove drain plug (Fig. 24/2).
- Turn in the screw, observe of the O-ring.
- Refill hydraulic fluid, siehe Abschnitt 5.11.2

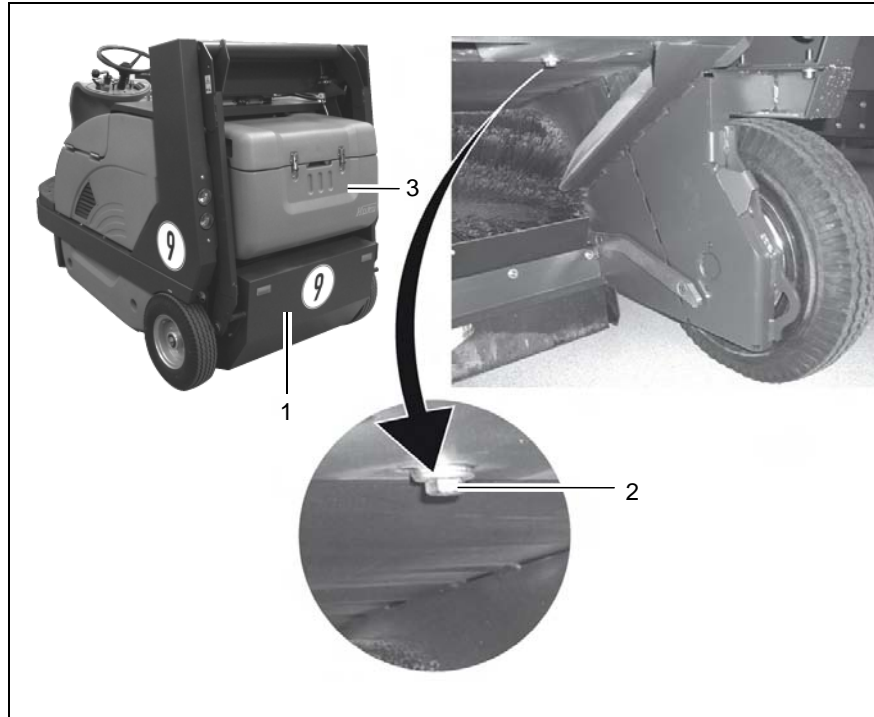


Fig.24

Maintenance and Care

5.12 V-Belt Drive Apex 58

- 1 Suction fan V-belt (75 Hz)
- 2 Tensioning roller for dynamo
- 3 V-belt pulley
- 4 Hydraulic pump V-belt
- 5 Belt guide
- 6 Hexagonal nut
- 7 V-belt for sweeper roller
- 8 Hydraulic pump belt pulley
- 9 Coupling roller for sweeper roller
- 10 V-belt for sweeper roller
- 11 Belt pulley for sweeper roller
- 12 Tension spring
- 13 Tensioning roller lever
- 14 Tension spring
- 15 Tensioning roller
- 16 Tensioning roller lever for sweeper roller drive
- 17 V-belt pulley for suction fan
- 18 V-belt for dynamo(50 Hz)
- 19 Belt pulley for hydraulic pump
- 20 V-belt for hydraulic pump (150 Hz)
- 21 Belt pulley for dynamo
- 22 Transmission pulley for sweeper roller drive

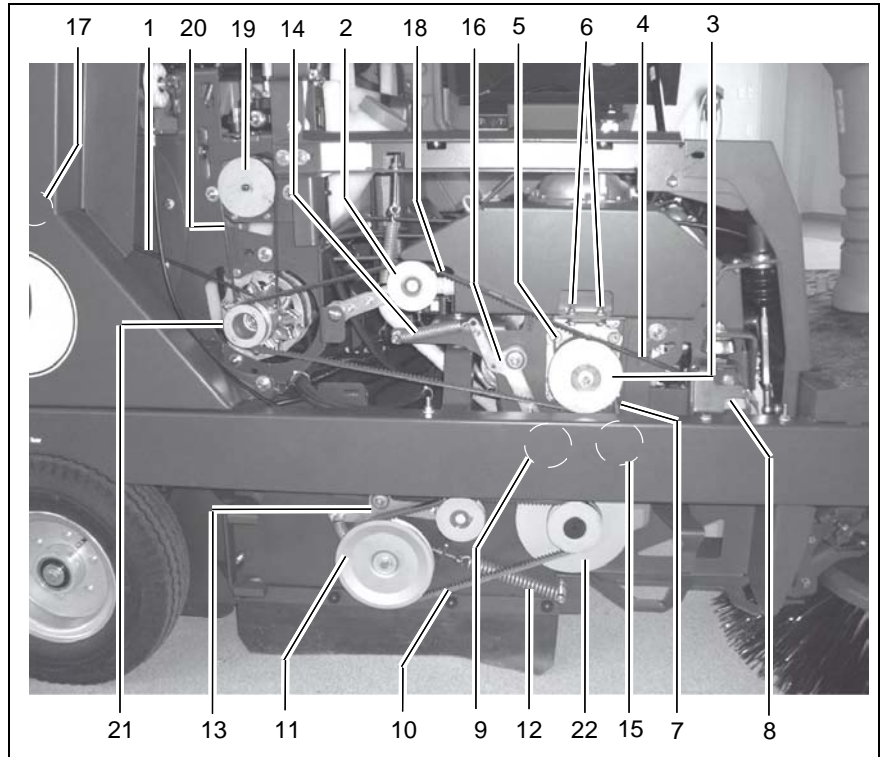


Fig.25

Maintenance and Care

5.13 Electric System Apex 58

- 1 F1 Pre-fuse(15A)
- 2 F2 Supply unit control perm.(5A)
- 3 F3 Supply unit control connected(10A)
- 4 F4 Horn, oil pressure, option side broom left(10A)
- 5 F5 Electric lighting (15A), option
- 6 F6 Electric lighting (10A), option
- 7 F7 Parking and rear light left (5A), option
- 8 F8 Parking and rear light right (5A), option
- 9 F9 Vibratory motor (35A)
- 10 F10 Warning light and rotating beacon (10A), option
- 11 F11 Side broom left (4A), option
- 12 F12 Control voltage preheat (10A) (Apex 58 (6300.23) only)
- 13 F13 Control voltage preheat (10A) (Apex 58 (6300.23) only)
- 14 K1 Control unit
- 15 K4 Automatic monitoring for filter
- 16 K5 Shaking device
- 17 K2 Auxiliary relay
- 18 K3 Auxiliary relay

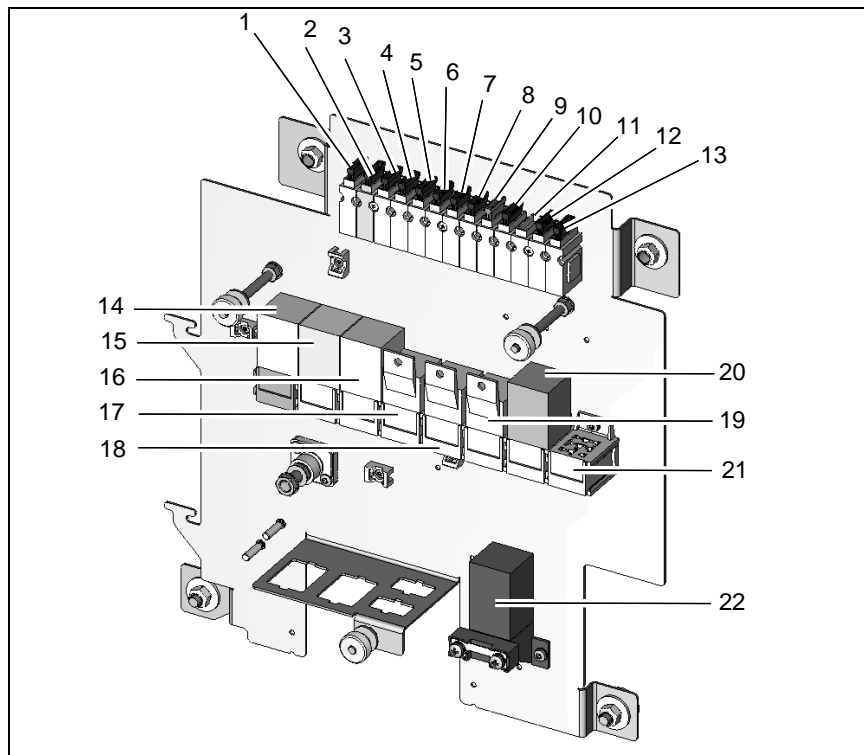


Fig.26

Maintenance and Care

- 19 K6 Dim light or head lamps, option
- 20 K7 Flasher unit, option
- 21 A1 LPG Switchgear unit, option
- 22 F14 Heater plugs
(Apex 58 (6300.23) only)
- 23 F0 Main fuse (50A)
(below the battery)



Fig.27

Maintenance and Care

5.14 Special Equipment and Spare Parts

Designation	Description	Order no.
Protective roof	for Apex 58	6304
Liquid petroleum gas system	Liquid petroleum gas system (LPG) without change bottle	6303
Side broom system, left	with deflector plate, without brush	6336
Rotating beacon	for mounting on the protective roof	6305
Rotating beacon	for direct fitting	6306
High-performance filter	Superfine filter with special coating for dust-free sweeping in problematic areas	see spare part catalogue
Comfort seat	Seat features adjustable cushioning	7093
Silence Kit	For use within noise-sensitive areas	6339
Solid rubber tyres	Set of puncture-safe SE-Superelastic-tyres 4.00-4 (2 rear wheels on rim)	6334
Solid rubber tyres	Set of puncture-safe SE-Superelastic-tyres 4.00-4, leaving no traces (2 rear wheels on rim)	6335
Lighting system	front lights (according to german StVZO)	6302
Sweeper roller	PA bristling	6312
Side broom	PES bristling (PA 1,5)	6414
Side broom	PES bristling (PA 2)	6423



PowerBoss Made Simple Commercial Limited Warranty

PowerBoss, Inc. warrants to the original purchaser/user that this product is free from defects in workmanship and materials under normal use. PowerBoss will, at its option, repair or replace without charge, parts that fail under normal use and service when operated and maintained in accordance with the applicable operation and instruction manuals.

All warranty claims must be submitted through and approved by factory authorized repair stations.

This warranty does not apply to normal wear, or to items whose life is dependent on their use and care, such as belts, cords, switches, hoses, rubber parts, electrical motor components or adjustments. Parts not manufactured by are covered by and subject to the warranties and/or guarantees of their manufacturers. Please contact PowerBoss for procedures in warranty claims against these manufacturers.

Special warning to purchaser -- Use of replacement filters and/or prefilters not manufactured by PowerBoss or its designated licensees, will void all warranties expressed or implied.

A potential health hazard exists without original equipment replacement.

All warranted items become the sole property of PowerBoss or its original manufacturer, whichever the case may be. PowerBoss disclaims any implied warranty, including the warranty of merchantability and the warranty of fitness for a particular purpose.

PowerBoss assumes no responsibility for any special, incidental or consequential damages.

This limited warranty is applicable only in the U.S.A. and Canada, and is extended only to the original user/purchaser of this product. Customers outside the U.S.A. and Canada should contact their local distributor for export warranty policies. PowerBoss is not responsible for costs or repairs performed by persons other than those specifically authorized by PowerBoss. This warranty does not apply to damage from transportation, alterations by unauthorized persons, misuse or abuse of the equipment, use of non-compatible chemicals, or damage to property, or loss of income due to malfunctions of the product.

If a difficulty develops with this machine, you should contact the dealer from whom it was purchased.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state. Some states do not allow the exclusion or limitation of special, incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions and limitations may not apply to you.

Cord Electric Group	Three years parts, two years labor, ninety days travel (Not to exceed two hours)
Exceptions	Port-A-Scrub, one year parts, six months labor MPV 13, one year parts MPV 14 and 18, two years parts, one year labor Rapid Air blower, one year parts, one year labor Pneumatic Vacuums, three years parts, one year labor EX 12 and EX 12H, one year parts, one year labor
Battery Operated Group	Three years parts, two years labor, ninety days travel (Not to exceed two hours)
Exceptions	Sweepers, one year parts, one year labor, ninety days travel (Not to exceed two hours)
Replacement parts	Ninety days
Batteries	0-3 months replacement, 4-12 months pro-rate
Polypropyl. Plastic Tanks	Ten years, no additional labor

PowerBoss®

Excellence Meets Clean



PowerBoss Inc. • 175 Anderson Street • Aberdeen, NC 28315 • U.S.A.
Telephone: (910) 944-2105 • Fax: (910) 944-740

88-10-2775