PowerBoss®
The Power of Clean

User Manual

Operation & Safety

Admiral 28 Cylindrical Scrubber

PowerBoss,Inc.
A member Of The Hako Group

PB# 4100013 Rev A 03/10

Preface

Dear customer,
It is our desire that the excellent characteristics of the Admiral 28 should justify the confidence you demonstrated by making this purchase. Our goal is to supply you with the best most dependable and efficient machine available today. Before operating this unit carefully read this manual. This manual contains Safety Information as well as operation,service and maintenance information in order to ensure you safe workings with the machine. Your own safety, as well as the safety of others, depends on how the vehicle is operated and maintained.

Warning symbols are used in this manual to identify

Items that are relevant to safety on the unit. Please observe the safety provisions. (See chapter on General Safety Information).

Your authorized PowerBoss dealer will be pleased to answer further questions regarding the unit or the operation and maintenance manual. Please be advised explicitly that PowerBoss 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. Genuine spare parts may guarantee a dependable machine. PowerBoss reserves the right to change without notice.

Prior to first operation, read this manual carefully and strictly comply with the instructions contained

Valid as of: March 2010

PowerBoss,Inc.

175 Anderson Street

Aberdeen, North Carolina 28315

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1. Introduction

1.1 Proper use

The Admiral 28 machine is a vacuumized ride on scrubbing machine used for wet cleaning of hard-surfaced floors. Using the machine beyond this scope of application will be deemed improper and negligent use; The manufacturer cannot be held liable for consequential damages the user alone bears the risk. The term of proper use also includes operation, maintenance and repair work to be performed in compliance with the manufacturer's specifications.

The Admiral 28 may be used by Qualified persons familiar with the machine and aware of possible hazards involved. The applicable Accident Prevention Regulations and further regulations concerning safety and work must be complied with. If modifications to the Admiral 28 are made in absence of the manufacturer's prior consent, PowerBoss cannot be held liable for damage resulting from such unauthorized modification.

This machine is equipped with a debris hopper which allows the collecting of small debris such as cigarette butts or pieces of similar size during the scrubbing operation. Sweeping the floor before proceeding scrubbing is recommended.

1.2 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 items such as squeegee blades, skirts and brushes. Damages caused by overload, negligence and unauthorized modification of the machine are not covered by warranty. Moreover, any claim for warranty cannot be accepted if damages of the machine are caused by improper fitting of parts or accessories without PowerBoss's prior consent, or by non-compliance with the maintenance instructions and schedule.

1.3 Acceptance of the machine

Upon arrival, check machine for possible damages in transit. Follow unpacking instructions on shipping pallet. Each unit has been tested and thoroughly inspected before shipment. Any damage is the responsibility of the delivery carrier who should be notified immediately.

For refund of such damage, have the freight forwarder confirm damage and mail notification

Along with waybill to:

PowerBoss,Inc.
175 Anderson Street
Aberdeen, North Carolina 28315

2. Safety Information

2.1 Safety and Warning Symbols

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

Table 1 - Safety and 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 the health of the environment

2.2 General Safety Information

- Apart from the provisions contained in this instruction manual, the general safety provisions and the accident prevention regulations as imposed by law must be complied with.
- Before operating your machine, carefully read the instruction manual as well as other separate instructions for accessories or attached implements. Comply with all points mentioned there during work.
- Only persons trained by qualified PowerBoss personnel are authorized to operate, service and repair the machine.
- You are advised to thoroughly study the safety instructions, this will help in avoiding errors during operation of the machine and thus guarantees the correct usage of the machine.
- The operating instructions should be on board the machine at all times during machine use for reference.
- When selling,lending or renting the machine hand out these documents to the new owner/operator and have the transfer certified!
- The warning and instruction plates attached to the Admiral 28 machine contain valuable advice about safe operation. Immediately replace incomplete or illegible labels.
- For safety standards, spare parts must be equal to genuine OEM parts!

Caution! Remove the protective covers for maintenance or transport purposes only with the engine being off and do not operate the machine without the covers being in place and locked.

It is indispensable for the operator to be familiar with the operation of all attachments and controls as well with their function before operation of unit begins.

2.3 Provisions for Operation

- Before the 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 was insufficiently done.
- Before operation always check the machine for operational safety. Immediately remedy any malfunctions!
- The machine should only be used on surfaces clearly specified by the owner or his authorized representative.
- When operating the machine take notice of persons within the operation area especially children.
- Use only cleaning agents suitable for automatic machines (low-foaming) and comply with the instructions for use, disposal and with the warning information specified by the cleaning agent's manufacturer.

- This machine is not designed for the collecting of hazardous, inflammable or explosive dust or substances.
- Usage of this machine in an explosive area is prohibited.
- Never leave the machine unattended. When the motors are running the machine is not protected against unintended movements.

Pull the ignition key to avoid unauthorized use of the machine.

2.4 Safety Information

Caution!

Never collect explosive fluids, undiluted acids and solvents! This includes e.g. gasoline, paint thinners or fuel oil, which when penetrating the air being taken in may form explosive vapors or mixtures; moreover acetone, undiluted acids and solvents should not be used. They Would be aggressive to the material used in the machine components.

Caution!

This machine is not suitable for the evacuation of dusts which may be explosive or dangerous to health. The machine must not be used in areas endangered by explosion hazards. The machine may be used only on hard floorings and for operation on level grounds with a maximum inclination of up to 2%.

I.e. Driving on ramps with a maximum inclination of 10% is only allowed for transportation. The uphill ride must not exceed 1-minute duration and particular care has to be taken.

Repair, maintenance and cleaning work must be performed only with the control key removed. Before working at the electrical system, make sure to disconnect the battery connector.

Transporting other persons on the unit is prohibited. The Admiral 28 is equipped with a driver's seat incorporating a safety switch allowing it to be started only with the operator being seated.

Good maintenance of the machine helps in preventing accidents.

Use the appropriate tools when performing repairs and maintenance of the unit.

Spare parts other than the OEM genuine parts must be equal to or exceed the specifications of the manufacture for safety and performance.

The Admiral 28 must be checked for proper and safe operation by an trained PowerBoss technician at regular intervals. We recommend yearly checks and after any modification or repairs.

The Admiral 28 must be equipped with brushes and pads as specified by the manufacturer (refer to the "Technical Data" paragraph). Using other brushes/pads other than indicated may affect your safety and performance.

Do not clean the machine using vapor jet or high pressure cleaning equipment. Before cleaning or servicing the machine as well as before replacing parts, switch unit off.

Disconnect the battery connector and the main plug of the charger unit.

Make sure to take precautions against unintended starting of the machine.

Due to an increase in tilting hazards, pneumatic tires are not admissible on the Admiral 28.

Do not allow water to penetrate the electrical parts.

The machine is splash-water resistant, not water proof! Do not allow water to get into the machines driver seat area. This may allow water to be collected on the battery stored below the seat. Remove water if required.

See instructions for safe handling of batteries (Enclosed leaflet 88-60-2556)

The machine is equipped (optionally) with a charger unit.

Comply with the instructions of the operating manual for the battery charger unit.

2.5 Information for Protection of Environment

For safe use of substances inheriting a danger to health and environment specific knowledge is required.

Observe the legal directives and local regulations for disposal of detergents, see Water Management Act.

Used batteries labeled as recyclable contain reusable economic goods. These batteries must not be added to the normal waste. See crossed dust bin label.

2.6 Labels On The Machine

The following safety and information labels are legibly attached to the machine.

Replace missing or illegible labels immediately.

Figure 1 - PowerBoss nameplate

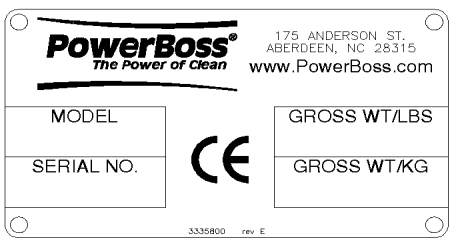


Figure 2 - Machine identification number

Figure 3 - Dirty water drain hose

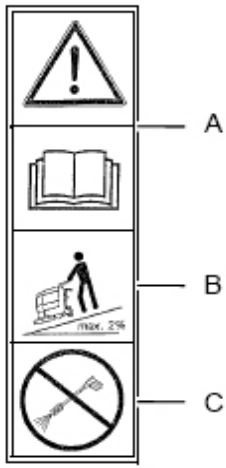


Figure 4 - Safety

A = Read and observe the instruction manual

B = Maximum inclination of 2 %

C = Do not clean the machine by means of high-pressure cleaning equipment

3. Battery System

3.1 Battery Types

Table 2 shows the different battery system types available.

Table 2 - Battery system types

Battery System A: Tray-Type Battery, 24V/320Ah5, PzS, Aquamatic	7450.02
Battery System B: Tray-Type Battery, 24V/280Ah5, PzS, Maintenance Free	7451
Battery System C: Drive Battery, 6V/180Ah5, Maintenance Free	7411
Battery System D: Compound Battery, 6 V/240Ah, GiV, Maintenance Free	7401
Dimensions of Tray Type Batteries: Length 425mm, Width 525mm, Height 465mm	
The machine (709.20) is equipped with an on board charger unit 24V32A, IUIa characteristic, with 230V AC power supply and suitable for all batteries In the factory, the charger unit is set to a 280Ah-PzV battery type (Switch Position 3). If other batteries are used, set the charger unit characteristics accordingly.	
Note: We recommend to have the characteristic curve of the on board charger set by your local PowerBoss Service Center.	

3.2 Battery Charge Warning Unit

(Low Discharge Sensor)

The Admiral 28 is equipped with a charge status monitoring device to preclude poor battery charge conditions.

This monitoring device is integrated in the electronic system and factory set as follows:

Dip switch setting 1111

PzV batteries as GEL-Deta

Using other battery types requires modification of the low discharge sensor setting.

Note: We recommend having the low discharge sensor set by your local PowerBoss service center only.

Caution! Before starting work on the electrical system, disconnect the battery plug.

3.3 Operation, Service and Maintenance of Batteries

See enclosed leaflet 88-60-2556 "Instructions for Batteries"

3.4 Plug connection coding

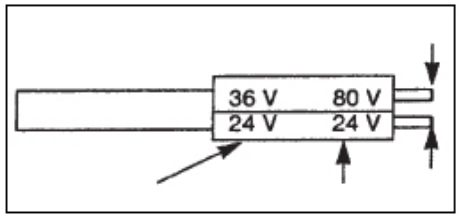
On the machine, All battery plugs, batteries and battery charger units have to be color coded with the colored coded pins according to the battery type and the nominal voltage.

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

Plug case of **Charger units :**
Grey for fluid-filled batteries
Green for maintenance-free Gel batteries

Plug case of **Machine :**
Yellow for both battery types
Socket case of battery:

Grey for fluid-filled **Batteries :**
Green for maintenance-free Gel batteries



Nominal plug voltage is indicated on each side of the hexagon

Indication for nominal socket voltage accordingly

Figure 5 - Plug and Socket Voltage

Press together for removal

Replace the coded plug by pressing the ends together with pliers.

Press together for removal.

Insert coded plug, such that the nominal voltage inscription is visible through the case window. Connect socket and plug only with the same nominal voltage.

The following three conditions have to be met:

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

Open the seat console of the Admiral 28 before charging the batteries.

3.5 Before operation

Before operation of the machine, fully charge the batteries 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 initial charge has not or was sufficiently done.

3.6 Plug Connector

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

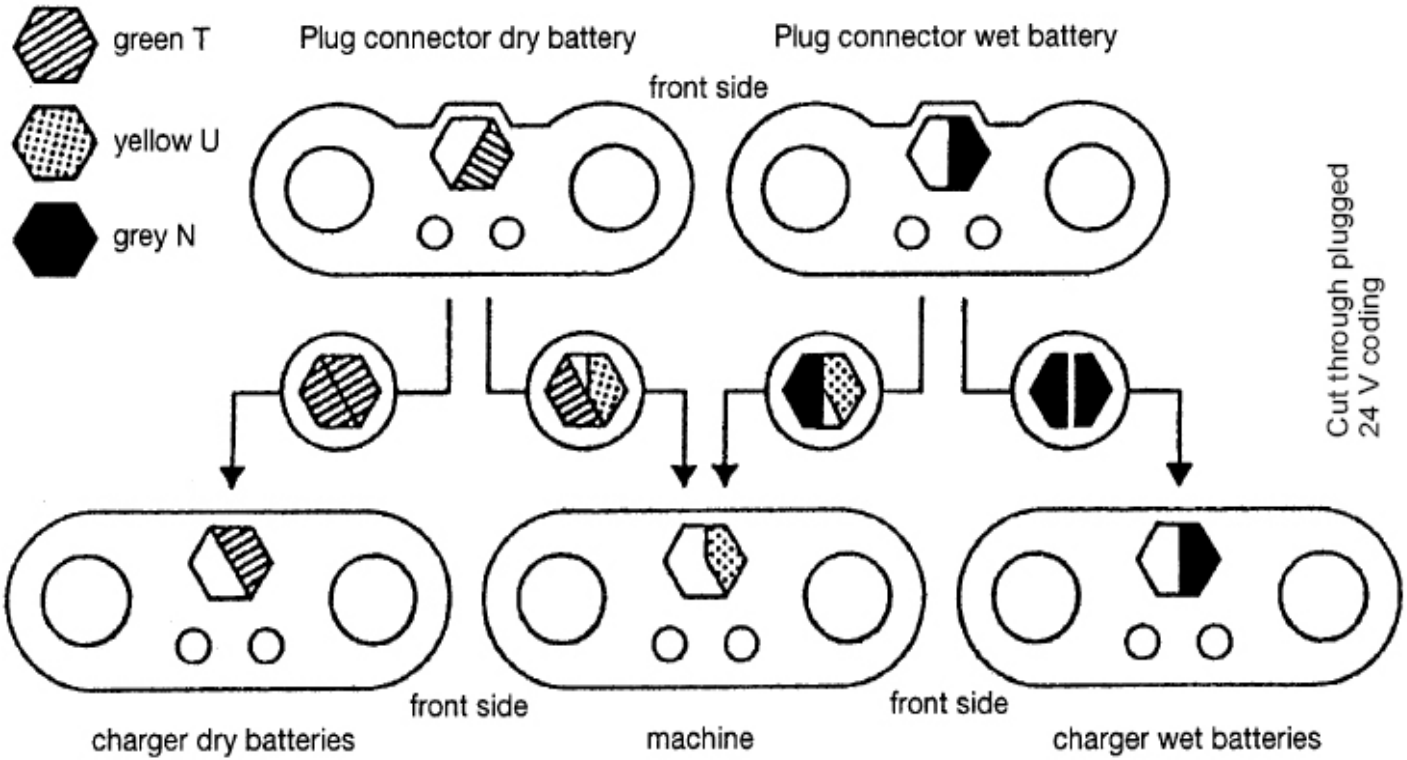


Figure 6 - Plug Connector

3.7 Changing The Batteries

3.7.1 Tray Type Batteries

Disassembling Tray Type Batteries

Refer to Figure 7 for items in the procedure.

1. Turn Ignition Key To Off Position
2. Remove control key
3. Engage parking brake of the machine
4. Tilt seat console (1) upwards
5. Set safety strap (2) at position (4)
6. Disconnect battery plug (11).
7. Loosen hexagonal nuts (5)
8. Remove holder (5) with battery cable and let it overhang at position (3).
9. Loosen hexagonal nuts (7 and 10).
10. Remove plate (9).
11. Apply carrying straps at position A and remove tray battery with a lifting device.

Note : Upon delivery of the machine the handle (11) for battery plug is located in position 8.

Remove main cable in the area (8) and let it overhang sidewise on the unit. Assembling tray-type batteries

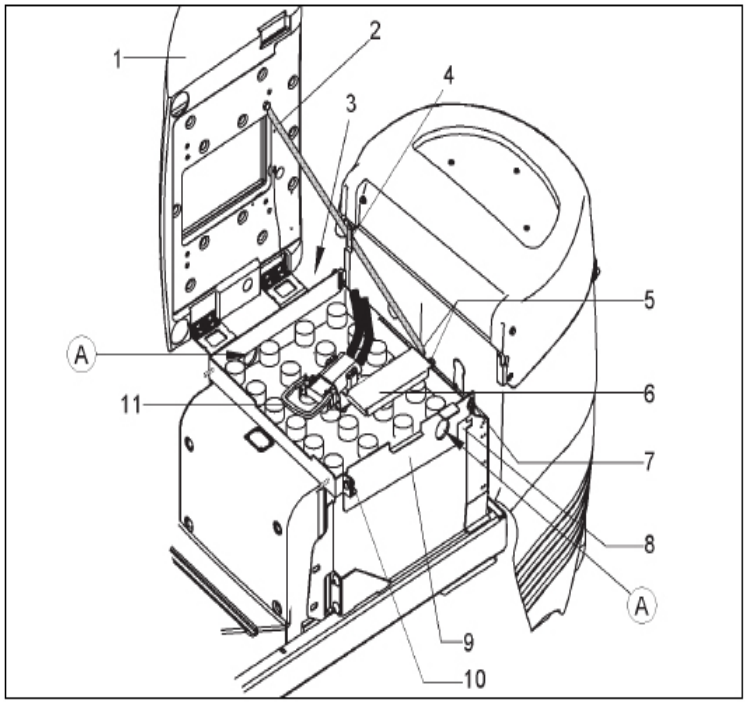


Figure 7 - Battery tray assembly and Disassembly

Assembling Tray Type Batteries

Proceed in reverse order for assembly of tray type batteries. Refer to Figure 7 for items in the procedure and note the following:

1. Fasten hex. screws (7 and 11) and hex.. nuts (2) hand tight
2. Align seat console (1)
3. Tighten hex. screws (7 and 11) and hex. nuts (2)

3.7.2 Compound Batteries

Disassembling compound batteries

Refer to Figure 7 for items in the procedure

1. Switch off key switch
2. Remove control key
3. Engage parking brake of the machine
4. Tilt seat console (1) upwards
5. Disconnect battery plug (8)
6. Remove harness of battery
7. Dismount holder (9) and set aside
8. Remove battery

Assembling Compound Batteries

Proceed in reverse order for assembly of compound batteries.

Caution! Remove or install the compound batteries by means of a lifting device only!

4.1 Control And Display Elements

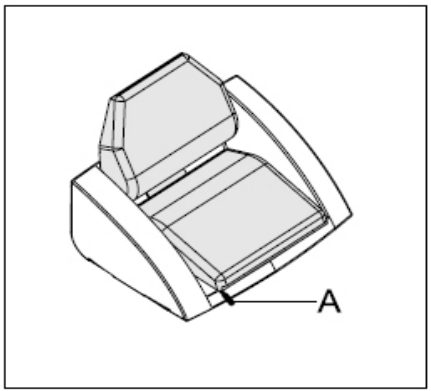


Figure 8 - Adjustment Driver's Seat

4.1.1 Adjusting driver's seat

Adjust the driver's seat such that the operator is comfortably seated and has all control elements within his reach.

Adjust the driver's seat as follows, refer to Figure 8 for items in the procedure:

1. Push lever (A) to the side
2. Displace the seat as required,
3. Then let the lever (A) catch into place again.

4.1.2 Left Hand Control Panel

The left hand controls are shown in Figure 9.

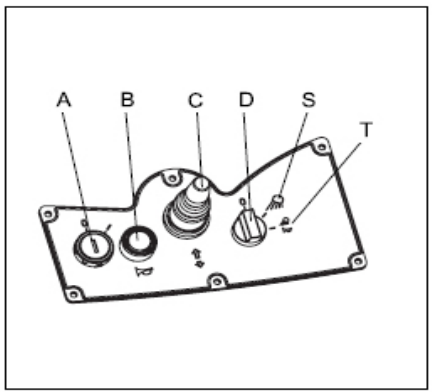


Figure 9 - Left Hand Control Panel

A. Ignition key switch (on/off)
B. Horn button
C. Direction selector (forward/reverse)
D. Option (buzzer/warning light) or searchlight
S. Working Flashlight
T. Warning Flashlight And Buzzer Position

4.1.3 Right Hand Control Panel

The Right hand controls are shown in Figure 10.

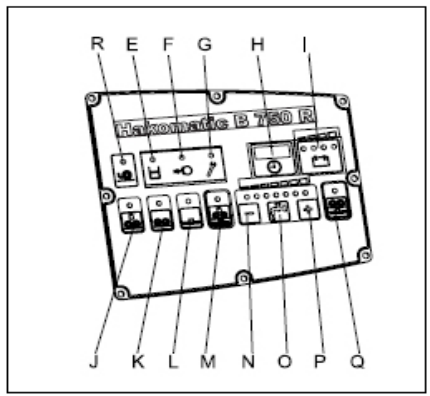


Figure 10 - Right Hand Control Panel

E. Pilot lamp (red) for max. filling level in dirty water recovery tank
F. Pilot lamp (red) for parking brake
G. Pilot lamp (red) for fault display
H. Hour Meter/Service Display
I. Indicator for battery charge condition
J. Switch for increasing brush pressure with green indicator light

K. Switch for brush drive with green indicator light

L. Switch for squeegee and vacuum motor on/off with green indicator light

M. Switch for cleaning program 2 on/off, for brush head/squeegee (up/down) with green indicator light. Additionally increases brush pressure and last saved amount of water

N. Switch for water flow reduction with green indicator light

O. Switch for water flow on/off with green indicator light

P. Switch for water flow increase with green indicator light

Q. Switch for program 1 brush drive, vacuum motor on/off with simultaneous brush head/squeegee up/down movement with green indicator light and last saved amount of water

R. Yellow Indicator light for polishing operation

4.1.4 Control and brake pedals

Refer to Figure 11 for control and brake pedal location and function.

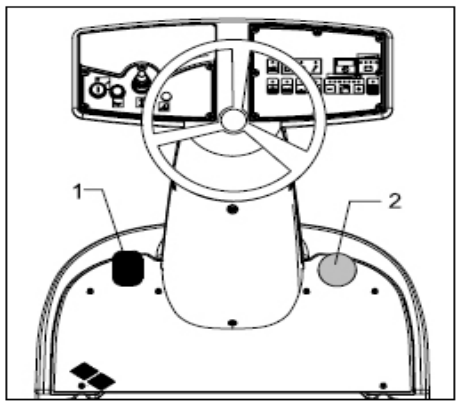


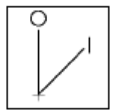
Figure 11 - Control and Brake Pedals

1 Brake pedal / parking brake
2 Accelerator pedal

Note: The parking brake engages after depressing the brake pedal and pushing the pedal back slightly. Disengage the parking brake by pushing the brake pedal forward.

4.1.5 Display Elements

(A) Ignition Switch



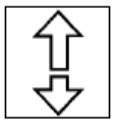
Turns the electrical system ON/OFF and protects the machine against unauthorized use; and holds the hour meter display. With the switch in OFF position, all control functions are reset to the initial state.

(B) Horn Button

Actuates the electric horn.

(C) Direction Selector

Selects the direction of travel



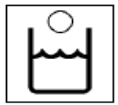
Forward Switch Position = Forward Travel
Central Switch Position = Neutral
Reverse Switch Position = Reverse Travel
Before changing direction, slow unit down with service brake, then select travel direction and accelerate.

(D) Optional

Buzzer/Warning Light or Searchlight

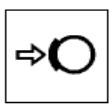
Turns buzzer or warning light on and off as well as a searchlight. (Warning light/ Searchlight is optional)

(E) Pilot Light



Red for max. filling level in dirty water recovery tank lights if the max. filling level is attained in the dirty water recovery tank. A floater (Figure 12/7) switch turns the vacuum motor off.

(F) Pilot Light



Red for parking brake lights if the parking brake pedal (Figure 11/1) is set

(G) Pilot Light

Red for fault display lights in case of one of the following faults occur ring:

- Thermal switch of the brush motor or the drive motor has responded
- One of the fuses is defective or one of the electronic circuit-breakers has tripped
- Other faults

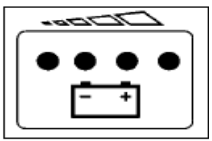
(H) Hour Meter/Service Display

Displays the operation hours. The meter only counts if a function such as drive or brush motor or vacuum motor are ON. A red dot at the bottom right of the display flashes simultaneously. Equally displays occurring errors when the red light for the fault display (G) lights up

Note: Should the contact to the seat switch not be engaged, the hour meter will

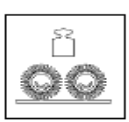
start flashing.

(I) Pilot lamp for Battery Charge condition



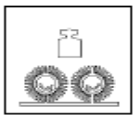
Upon turning on the ignition switch, all green indicator lights will turn on if the batteries are fully charged. During operation, the lights will go out as the battery discharges. A flashing red light indicates that operation will soon be interrupted and a buzzer will sound.

(J) Switch For Increasing Brush Pressure with Green Indicator Light



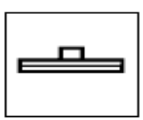
Increases the brush pressure to 106 Lbs. (48kg) max. if required as determined by the degree of soiling.

(K) Switch For Brush Drive with Green Indicator Light



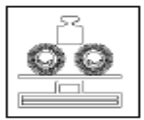
Turns the brush drive ON and OFF. The green light turns on if the brush head is lowered and the brushes rotate. In case of malfunction, the fault light (G) turns on and an error code appears in the service display

(L) Switch For Squeegee and Vacuum Motor on/off with Green Indicator Light



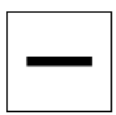
Activates lowering/lifting the squeegee and turns the vacuum motor ON/OFF. The green light is on if the squeegee is lowered and the vacuum motor is ON. In case of malfunction, the fault lamp (G) lights up and an error code appears in the service display.

(M) Switch For Cleaning Heavy Soil



Switches the program for heavy soiling and, simultaneously,brushing and vacuuming with increased brush pressure ON and OFF. The last saved amount of water is supplied automatically. In case of malfunction, the fault lamp (G) alights and an error code appears in the service display

(N) Switch For Decreasing Water Flow With Green Indicator Light

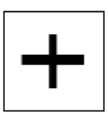


Used to reduce the amount of solution or clean water supplied to the brushes. The flow rate may be gradually reduced from 5.2l to 1.0l per minute, each grade corresponding to one light.

(O) Switch For Solution On With Green Indicator Light

Used to turn ON and OFF the solution clean water supply. When switching on the brushes, the last saved water amount is supplied automatically. The flow rate can be increased or decreased via the (N) and (P) switches.

(P) Switch For Increasing Water Flow With Green Indicator Light



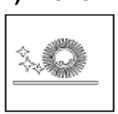
Used to increase the water quantity supplied up to a max. of 5.2l per minute.

(Q) Program Switch 1 or Brush Drive & Suction With Green Indicator Light

Turns the brush drive assembly and the squeegee ON and OFF with a simultaneous lowering/lifting of the squeegee.

The green indicator lights if the functions are ON and lowered. In case of malfunction, the fault indicator(G) lights up and an error code appears in the service display.

(R) Yellow Indicator Light



Lights when polishing function is switched on

(S) Work Flashlight

In this position switch D (Figure 9) the working flashlight is on.

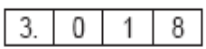
(T) Warning Flashlight And Buzzer Position

In this position switch D (Figure 9) the warning flashlight and the buzzer are on. The buzzer sounds in addition to the flashlight.

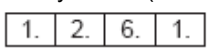
4.1.6 Service Display

The hour meter shows the service display. When unit is turned on, the following is displayed:

- The software version is displayed for approximately 1 sec.,

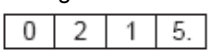


- The last error is repeated for approximately 2 sec. (flashing dots),



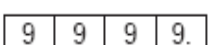
Note: If an error is present, a buzzer sounds and the red indicator lights up (-)

- The operating hours are displayed,



During operation, the dot flash

Note: On new machines, the following may appear after turning on the ignition key switch.



This display is for internal control purposes only and changes after an hour max. to display of zero hours of operation while the Admiral 28 is nevertheless operable. The fault display is activated. If a malfunction occurs during operation, the 4-digit number is displayed, the four dots flash and a buzzer sounds. Refer to “5. Service Display Codes” on page 20 for a list of errors you may remedy yourself.

If these measures do not help, write down the displayed error code and inform your local PowerBoss Service Center

5. Service Display Codes

5.1 Service Display Code Definitions

Table 3 provides definitions for the service display codes.

Table 3 - Service Display Codes

Displayed Error Code	Malfunction	Cause	Remedy
1. 2. 5. 2.	Brushes Have Stopped	Cord,Wire,Plastic wrap or similar debris accumulated between brush & shaft	Remove debris
1. 2. 6. 1.	Brushes Have Stopped	Brushes blocked by foreign debris	Check brush head and remove debris
3. 4. 5. 1.	Cleaning function is off	Parking brake engaged Drive chain or drive wheels blocked by debris	Release parking brake Remove debris
1. 2. 6. 3.	Brush Lift will not engage Brush motor is off	Debris between brush head & machine Brush head placed on a step	Remove debris Remove machine from step
1. 4. 6. 1.	Squeegee lift will not engage Vacuum motor is off	Squeegee is stuck or debris is between squeegee & machine	Free squeegee or remove debris

6.1 Working With The Admiral 28

The driver should read this manual carefully. The control elements are represented by comprehensible symbols and facilitate familiarization.

The first operation of the unit should be on a clear training ground until the driver is acquainted with the controls and their functions.

Comply With The Following

When using the Admiral 28 the safety instructions generally applicable for use of self-propelled working machines must be complied with. Transporting persons on the Admiral 28 is strictly prohibited. The warning and instruction plates attached to the Admiral 28 give important advice about safe operation. Complying with the instructions is important to your safety.

Before operating, check the Admiral 28 and its working implements for proper and safe condition. Do not operate the machine without the protection covers being installed.

6.2 Detergents

Important Note: Use detergents suitable for automatic scrubbing machines low foaming types only. We recommend using PowerBoss detergents for proper cleaning and care. These are perfectly adapted for use in the Admiral 28. Follow the manufacture's instructions for correct amount of detergent. Too much foam will affect the performance of your machine. Too much foam is also an indicator that an excessive amount was used or improper metering for degree of soilage. Unused detergent particles can lead to formation of foam. Test made by yourself in practise will help you find the ideal type of detergent and the correct mix applicable to it.

Using the correct amount will help you save money and protect the environment.

6.3 Driving The Admiral 28

6.3.1 Starting

Disconnect battery charger unit Connect battery with machine or unplug main cable and store in cable case.

Before connecting the battery plug between machine and battery pack, be sure that the ignition key is in the "OFF" position.

Note: This Machine Is Equipped With A Safety Switch In The Seat.

The driver must be seated before starting. If the operator leaves the seat (for approximately 2 seconds) the power supply is interrupted. When the operator sits down again they may restart the unit after setting the direction selector (Figure 10/C) or the accelerator pedal (Figure 11/2) to the neutral position.

6.3.2 Stopping The Unit

Releasing the accelerator pedal the pedal will return to it's initial position and the machine will slow down and eventually stop.

Note: Stopping the unit faster may be increased by actuating the foot brake.

Switch unit off by the ignition key. Turn key to off position and remove key.

Before leaving the machine unattended make sure to remove the ignition key and engage the parking brake.

To reduce skidding hazards on wet surface slow down! Also when turning or riding downhill.

Actuate The Following Controls For Operation Of The Admiral 28

- Ignition key switch to ON
- Release parking brake (if engaged)
- Press Switch (Figure 10/Q) to initiate the following:
  - Brush head will lower
  - Brushes begin rotation
  - Squeegee lowers
  - Vacuum motor starts operation / solution pump starts running
  - Solution shutoff valve opens
- Turn on/off the solution supply via pressing (Figure 10/O) switch. Reduce solution flow by pressing the (-) or increase flow pressing the (+) switch.
- Depress accelerator pedal until the required speed is attained.

Note: Start riding immediately after brush head has lowered otherwise the brushes may leave marks on the floor. Lift the brush head before riding over obstacles of more than 10mm height.

After Work :

- Stop the machine
- Lift up brush head and squeegee by pressing on the (Figure 10/Q) switch (the vacuum motor continues to run for approximately 19 seconds, the squeegee lifts after approximately 6 seconds).
- Switch unit off by ignition key
- Engage the parking brake
- Empty dirty water in recovery tank via drain hose (Figure 12/5) and rinse tank clean.
- Clean Squeegee rubber blades of the squeegee assembly.
- Check intake filter (Figure 12/6) and clean if required via water hose by opening (Figure 12/8)
- Empty the debris hopper (see "9.7 Emptying and leaning The Debris Hopper" on page 39)

Note: Do not clean the machine with high pressure cleaning equipment but by a standard water hose with pressure no more than (6 bar) 87 psi max. from top to the bottom only. Do not direct the water jet into any openings or slots on electronic module control panels or seals.

6.4 Dirty Water Recovery And Fresh Water Solution Tanks

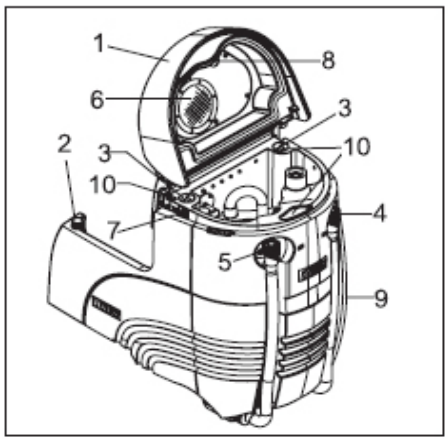


Figure 12 - Dirty Water Recovery and Fresh Water Solution Tanks

(1) Tank lid

(2) Maintenance opening

(3) Plug

(4) Drain hose for fresh water solution tank

(5) Drain hose of dirty water recovery tank

(6) Mist filter

(7) Floater in dirty water recovery tank

(8) Maintenance opening

(9) Visible gauge for fresh water tank

(10) Inlet opening of fresh water tank

6.4.1 Filling The Fresh Water Solution Tank

Refer to Figure 12 for items in the procedure:

1. Open tank lid (1)
2. Add cleaning agent according to the manufacture's instructions
3. Refill the tank according to the instructions via the openings (3) with fresh water
(temperature: (50°C) 122° max.)

6.4.2 5.4.2 Cleaning The Fresh Water Solution Tank

Refer to Figure 12 for items in the procedure:

1. Clean the fresh water solution tank via the maintenance openings (2). by Inserting a water hose. Drain the tank via the drain hose (4).
2. Clean the mist filter by inserting a water hose into opening (8) and rinse the filter from inside.

Note: Empty the dirty water recovery tank and rinse tank using a water hose after work shift. Clean the float assembly as well. Clean the drain hose plug at regular intervals and grease the O-ring if required.

Observe the legal provisions for disposal of dirty water and detergent solution.

Do not open the maintenance cap (Figure 12/2) when solution tank is filled.

6.5 Cylindrical Scrub Head

6.5.1 Removing Cylindrical Scrub Brush

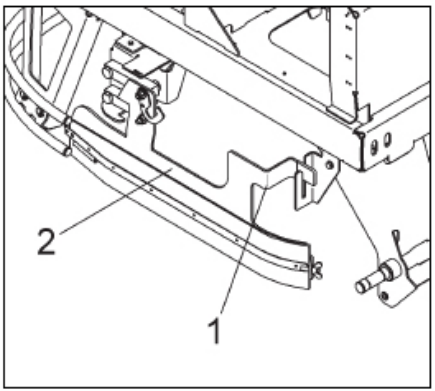


Figure 13 - Side Squeegee in normal working position

(1) Holding point to swing side squeegee out

(2) Left hand side squeegee

1. Switch machine off and remove ignition key.
2. Set parking brake
3. Lift complete side squeegee at holding point (Figure 13/1) and swing squeegee to the outside.
4. Hinge locking hook (Figure 14/1) into position (Figure 14/2).

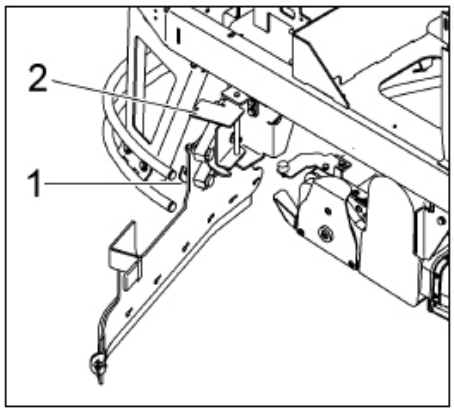


Figure 14 - Squeegee in Waiting Position

Squeegee is now in waiting position

Procedure is the same for the right hand side squeegee.

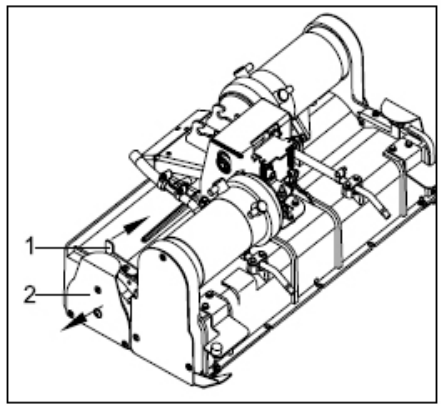


Figure 15 - Scrub Head Assembly

(1) Locking Lever

(2) Brush Cover Idle Plate

5. Push locking lever (Figure 15/1) towards the center of the scrub head and hold.
6. Lower brush cover idle plate (Figure 15/2) and remove it in direction of the arrow.
7. The cylindrical brush can now be removed

6.5.2 Installing Cylindrical Scrub Brush

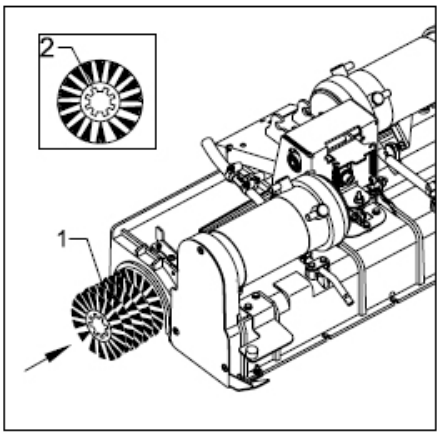


Figure 16 - Scrub Head Assembly

(1) Scrub Brush

(2) Brush Toothing

Note: The brush toothing (2) must point to the outside of the brush

1. Insert brush (Figure 16/1) with one hand by pushing evenly and in the direction of the arrow into the scrub head brush chamber.
2. When the brush stops at the drive shaft end lift the brush slightly and push onto the brush drive shaft until it catches.
3. Place the brush cover idle plate (Figure 15/2) onto the cylindrical brush, push the cover onto the scrub head housing while lifting upwards. Move the locking lever (Figure 15/1) towards the center of the scrub head assembly.
4. Allow the locking lever to pivot below the brush cover until it stops (Figure 29 on page 40)
5. Replace side squeegee mounting accordingly reverse order (Figure 13).

6.6 Squeegee

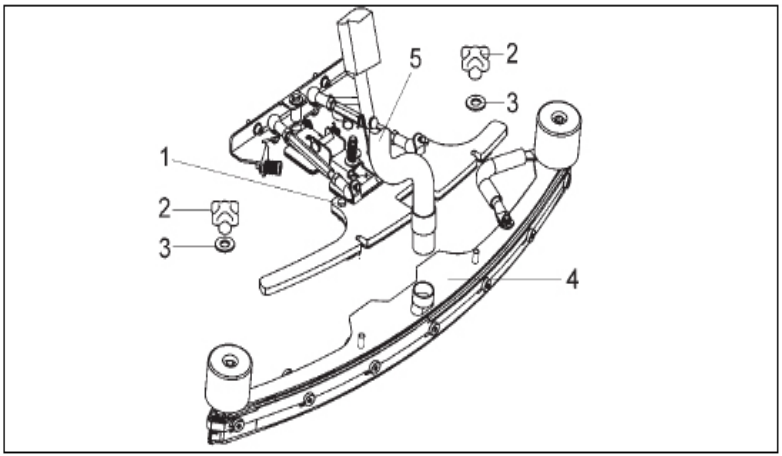


Figure 17 - Installing and Removing Squeegee tool

(1) Squeegee holder
(2) Star-shaped knob
(3) Washers
(4) Squeegee
(5) Suction hose

6.6.1 Installing Squeegee Tool

Refer to Figure 17 for items in the procedure:

1. Lower squeegee mount (1)
2. Switch unit off by ignition switch
3. Engage parking brake
4. Fasten squeegee tool (4) to squeegee mount (1) according to (Figure 17)
5. Attach suction hose (5) to squeegee tool.

6.6.2 Removing Squeegee Tool

Refer to Figure 17 for items in the procedure:

1. Lower squeegee mount(1)
2. Switch unit off by ignition switch
3. Engage parking brake
4. Unplug suction hose (5) from squeegee tool
5. Unscrew star-shaped knobs (2)
6. Pull squeegee tool (4) towards bottom and remove (Figure 17).

6.6.3 Adjusting Parallel Squeegee Motion

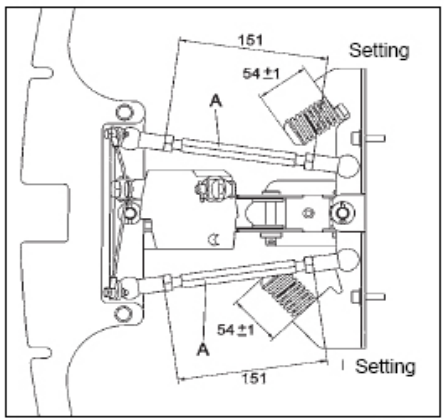


Figure 18 - Squeegee Parallel Adjustment

(A) Adjustment bar

- Pre-adjust to (151mm) approximately 6.0” by bar (Figure 18/A)
- Fine adjustment with bar (Figure 18/A), make sure that squeegee blades rest evenly and vertically on the floor.

6.6.4 Adjusting Squeegee Castor Wheel

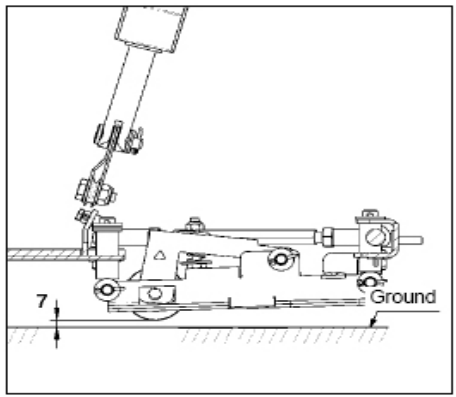


Figure 19 - Squeegee Castor Adjustment

With the squeegee tool being lowered, the ground clearance to the castor is (7mm) approximately .25”

6.6.5 Changing/Replacing Squeegee Blades

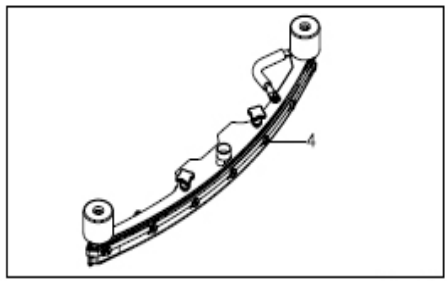


Figure 20 - Blade Replacement

(4) knurled nuts

Changing/replacing the squeegee blades does not require any tools and is as follows:

1. Remove squeegee tool according to Figure 17.
2. Loosen knurled nuts (Figure 20/4).
3. Remove supporting and sealing strips
4. Mount new squeegee blade in reverse order. Tighten the knurled nuts by hand from the center to the outsides. Slotted blade is to the front, flat blade to the back.

Note: If the front edge of the squeegee blade is worn, turn it by 180° and reinstall. Replace blade if both edges are worn.

7. Brush Types

7.1 Brushes

According to the degree of soiling and the type of floor, the Admiral 28 should be fitted with proper brushes from Table 4.

Note: Use the brushes listed above Usage of other types of brushes may affect safety and performance.

Table 4 - Brush Types

Application	Brush Type	PN
Light to Medium	Synthetic Fiber	7096
Medium to Heavy	500 Grit	7099
Extremely Heavy	180 Grit	7094

8. Technical Data

8.1 Technical Specification

Refer to Tables 5, 6 and 7 for the technical specification for the Admiral 28.

Table 5 - Technical Specification

Dimensions	Length with squeegee	166 cm	65.0”
	Width w/o squeegee	80 cm	31.5”
	Height above tank lid top	144 cm	57.0”
Working Width	Scrub head	71 cm	28.0”
	Squeegee	96 cm	38.0”
Weights	Empty weight (without batteries)	340 kg	750 lbs
	Total Weight (operable)	720 kg	1587 lbs
Performance data	Driving speed	6.5 Km/h	4 MPH
	Forward/reverse up to max.		
	Gradability, (tank filled)	10 %	10 %
	Ramp angle (level/inclined) with squeegee and brush head (max.)	15°/5°	
	Turning Radius	169 cm	66.5”
Wheels	Drive wheel	4.00-4 Soft	
	Wheels (rear)	4.00-4 Soft	
	Wheel diameter	305 mm	
	Specific wheel pressure front/rear (gross)	0.59/0.55 N/ mm²	
Travel Drive Assembly	Oil filling (Aral Degol P 15 150)	0,5 l	

Table 6 - Technical Specification (Continued)

Tank Capacities	Clean Water Solution Tank	116 l	30 gal
	Dirty Water Recovery Tank	116 l	30 gal
Scrub Head	Quantity of Brushes	2	
	Brush Speed	850 1/min	850 rpm
	Brush Pressure - min./max.	22/32 kg	
	Specific Surface Pressure - min./max.	0,4/0,5	
Suction system	Air Volume	110 m³/h	110 m³/h
	Vacuum	170 mbar	170 mbar
Electric System	Operating Voltage	24 V	24 V
	Wattage max. (P1)	3350 W	3350 W
	Protection Class	(III) DIN EN 60335-2-72	(III) DIN EN 60335-2-72
	Brush Motor (P1) 2 parts	880 W	880 W
	Fuse for Drive Assembly	100 A	100 A
	Vacuum Motor (P1)	550 W	550 W
	Drive Motor (P1) at S2 to 120 min	816 W	816 W
	Solution Pump (P1)	100 W	100 W
	Water Resistance	(IPX3) DIN EN 60529	(IPX3) DIN EN 60529
Fuses	F1 Control Voltage	10 A	10 A
	F2 Main Fuse	125 A	125 A
	F3 Horn	7,5 A	7,5 A
	F4 Optional working floodlight/warning element	10 A	10 A
	“Forward ride”		

Table 7 - Technical Specifications

Built-in charger unit	Protection class	(I) DIN EN 60335-2-72
Noise level	Sound pressure as per DIN EN ISO 111201, part 1 under normal conditions of use measured at the operating area	63 dba
Vibrations	The frequency weighted acceleration which has an effect upon the upper limbs (hand-arm-system) measured according to EN 1033 under normal condition does not exceed	2,5 m/s²
	The frequency weighted acceleration which has an effect upon the body (feet and back) measured according to EN 1033 under normal condition does not exceed	0,5 m/s²

9. Maintenance and Service

9.1 Maintenance work

Compliance with our recommendations concerning the maintenance of this unit will insure you of always having a dependable machine at your disposal in perfect operating condition.

It is better to take precautions than to repair damages and less expensive. For service please contact your local PowerBoss service center; your PowerBoss dealer will be glad to perform the work for you. The personal is qualified and use only genuine OEM spare parts for your service.

All technical inquiries or spare parts orders require the serial number of the machine. You will find it on the identification plate of the unit. The identification plate is located on the chassis above the right hand rear wheel.

Before cleaning, servicing or making repairs on the machine as well as before replacing parts, switch unit off. If the machine is battery driven, disconnect the battery plug and the main plug of the integrated charger unit.

Be sure to take precautions against unintended starting of the machine.

Make sure to protect the tank lid against accidental closing or tilting down before working in the area of a lifted tank lid.

The machine may be operated after all protective devices have been fitted and positioned. As far as possible, cleaning should not be done by hand but using appropriate tools and equipment.

Maintenance repair and adjustments should be carried out with use of appropriate tools by a qualified PowerBoss service representative.

When using or replacing batteries, battery connecting cables or battery charger units, comply with the manufacturer's instructions.

For safety and performance reasons, use only genuine spare parts.

Note : Do not clean the machine with high pressure cleaning equipment but by use of a standard water hose having no more than (6 bar) 87 psi max. pressure. Clean from top to bottom. Do not direct the water jet into openings, slots, and electronic modules, control panels or seals. Do not allow water to get onto the seat console as the water may be collected on the battery stored under the seat.

Let the machine dry after cleaning i.e. for the weekend. The use of aggressive detergents is not recommended.

☞ Legal provisions and the local regulations for disposal of detergents must be observed.

The Admiral 28 is equipped with a service display. If a malfunction occurs during operation, i.e. a defective fuse, a 4-digit number appears in the hour meter display with 4 dots flashing and a buzzer sounding. This 4- digit number advises the technician in detail on the last error found. This allows reduced repair times.

Refer to the separate instruction manual of the manufacturer for information and specifications on maintenance and service of the optional battery charger unit.

9.2 Scheduled Maintenance

Refer to Tables 8, 9 and 10 for scheduled maintenance items.

Table 8 - Maintenance Table

Schedule Maintenance Item	Service Hours			
	Daily	50	200	500
Recharge batteries according to charger unit instructions	•			
Empty and clean (rinse) recovery water tank	•			
Check condition of squeegee blades	•			
Check squeegee for foreign debris taken in and clean if required	•			
Check mist filter in the tank lid and clean if required	•			
Check condition of left and right separator	•			
Check battery poles and clean or grease if required		•		
Check battery filling level and top with distilled water if required (PzS version)		•		
Check for tight fit and condition of suction hose between squeegee and recovery water tank		•		
Check squeegee blades for wear and turn or replace if required		•		
Check brushes and water retaining ring for tight fit and condition. Replace if required		•		
Check function of floater		•		
Check seal on tank lid. Replace if required		•		

Table 9 - Maintenance Table

Schedule Maintenance Item	Service Hours			
	Daily	50	200	500
Check front wheel fasteners. Retorque if required to 25 foot pounds (34Nm)		•		
Check rotation direction of brushes		•		
Check function of brake and brake pedal locking device		•		
Check squeegee tool and castor wheel. Readjust if required		•		
Check clean water solution supply to the brushes. Also function check solution flow solenoid valve and solution pump		•		
Note: Empty the fresh water tank before replacing				
Check filter of water inlet. Clean or replace if required		•		
Note: Empty the fresh water tank before replacing				
Clean the ventilation grid of the brush motors.			•	
Check & clean drive motor from carbon dust. Check the carbon brushes for smooth running and wear. Replace if required				•
Check the fresh water solution tank for deposits and clean according to page. 5.4.2 if required		•		

Table 10 - Maintenance Table				
Schedule Maintenance Item	Service Hours			
	Daily	50	200	500
Clean electric motors from carbon dust.				
Check carbon brushes for smooth running and wear.				•
Replace if required				
Grease steering pinion and gear ring				•
Check joints at squeegee mount. Grease if required			•	
Clean debris hopper	•			
Check drive belt of cylindrical brush drive. Adjust tension			•	
if required				
Check spray jet and nozzles. Clean nozzles if required.		•		

9.3 Grease Points At The Squeegee Mount

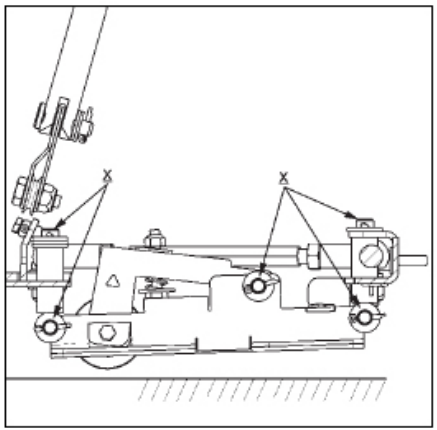


Figure 21 - Side View of the Squeegee Mount

(x) Grease Joint

Grease the joints (Figure 21/X) according to the maintenance table.

9.4 Greasing The Gear Ring Of The Wheel Drive And The Steering Pinion

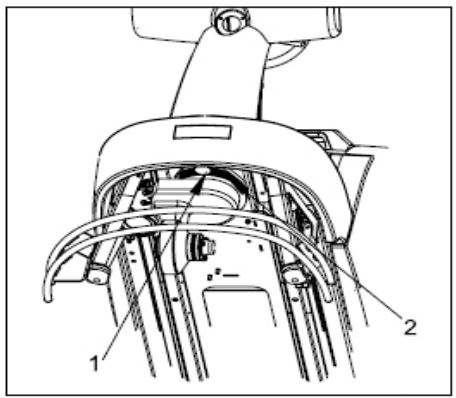


Figure 22 - Front View of the Machine

(1) Steering Pinion

(2) Gear Ring

Grease the steering pinion (Figure 22/1) and the gear ring of the drive wheel (Figure 22/2) according to the maintenance table.

9.5 Cleaning and Replacing The Water Filter for Fresh Water Supply To Scrub Brushes

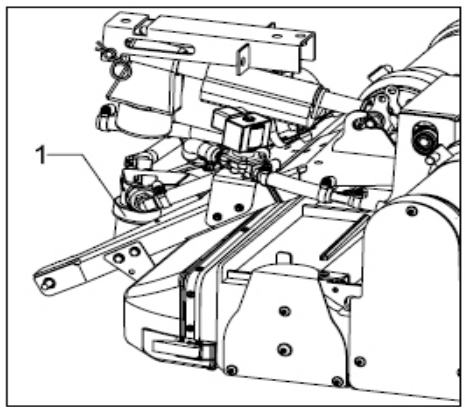


Figure 23 - Fresh Water Filter

(1) Water Filter

Clean or replace the water filter (Figure 23/1) according to the maintenance table.

9.6 Tank stabilizer

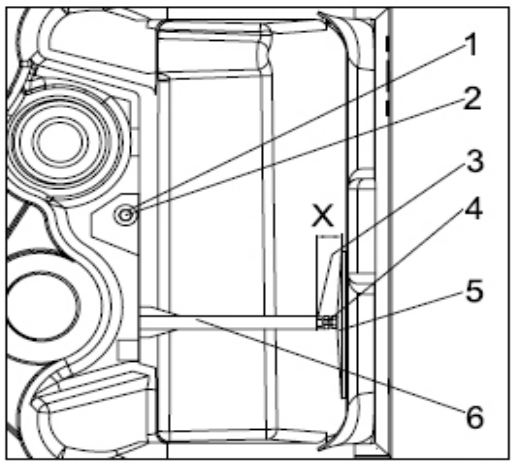


Figure 24 - Tank Stabilizer

(1) Washer

(2) Hex. Bolt

(3) Hex. Nut

(4) Hex. Nut

(5) Pressure plate

(6) Stay

How To Mount The Stabilizer

Refer to Figure 24 for items in the procedure:

1. Before fitting stabilizer plate to measure @ X adjust mount to (20 mm) .75”
2. Mount complete stabilizer (6) in the tank and fasten hand tight by items 1&2 of (Figure 24)
3. Fasten plate (5) hand-tight at tank wall and determine X
4. Adjust tension of plate (5) to X + (4mm) 1/8”
5. Tighten Hex Bolt (2)
6. Fasten (counter-lock) plate (5) by means of jam nut (4)

9.7 Emptying and leaning The Debris Hopper

9.7.1 Removing The Debris Hopper

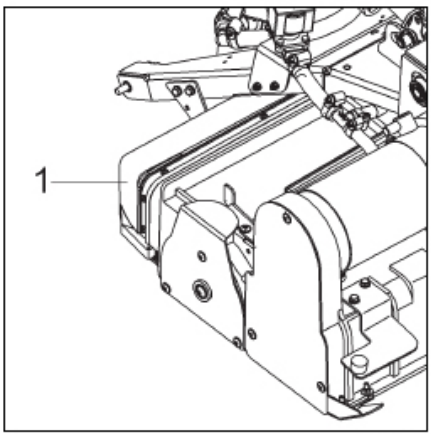


Figure 25 - Cylindrical Scrub Head

(1) Debris Hopper

1. Unhinge the right side squeegee assembly, see “6.5.1 Removing Cylindrical Scrub Brush” on page 24.
2. Grasp hopper, lift and slide out.
3. Remove the slotted retainer (Figure 26/3) by opening the snap buckles (Figure 26/4) in order to facilitate cleaning.

9.7.2 Installing The Debris Hopper

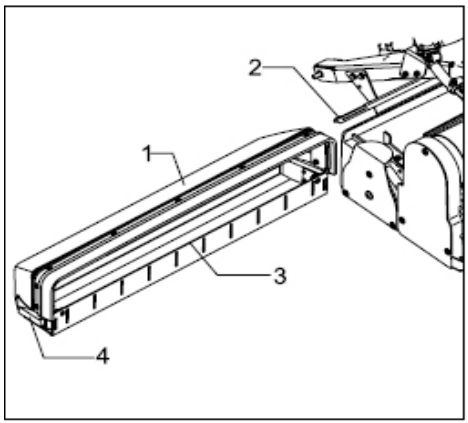


Figure 26 - Debris Hopper

(1) Debris Hopper

(2) Guiding Bars

(3) Slotted Retainer

(4) Snap Buckles

1. Place the debris hopper (Figure 26/1) onto the guiding bars (Figure 26/2).
2. Slide hopper inward until it stops & seats into place.

9.8 Cleaning The Bearing Surface Of The Brush Cover Idle Plate

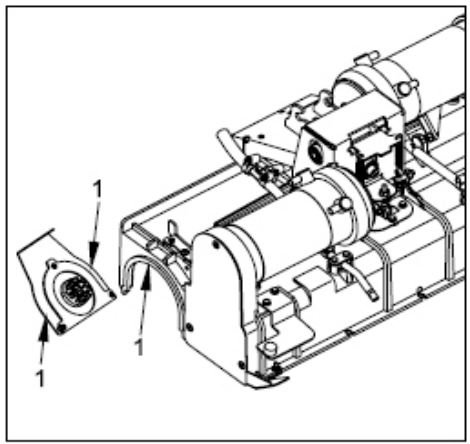


Figure 27 - Cylindrical Scrub Head / Brush Cover Idle Plate

(1) Bearing Surfaces

- Clean the bearing surfaces (Figure 27/1) after each brush replacement.

9.9 Replacing Side Squeegee Blade

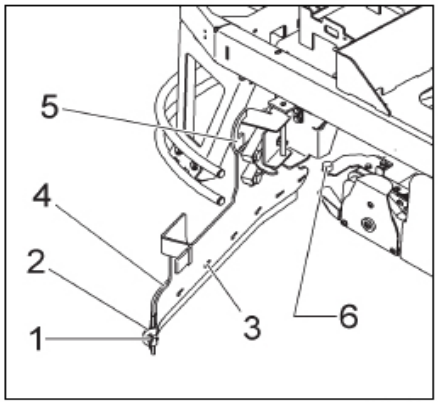


Figure 28 - Sire Squeegee Blade

(1) Wing nut

(2) Clamping strip

(3) Hook (at clamping strip)

(4) Squeegee blade

(5) Locking hook (to hold blade up)

(6) Stop buffer

Refer to Figure 28 for items in the procedure:

1. Loosen wing nut (1) push clamping strip (2) until the hooks (3) are free and the clamping strip can be removed.
2. Change squeegee blade (4)
3. Proceed in reverse order to remount squeegee blade. Make sure that the complete side squeegee assembly is lowered onto the front left or right stop buffer (6) after mounting.

Note: Hinge the locking hook (5) when changing the side squeegee blades.

9.10 Adjusting The Locking Lever For The Brush Cover Plate

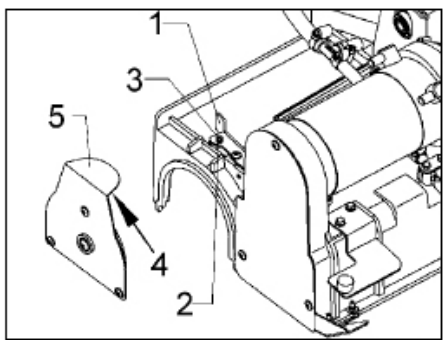


Figure 29 - Cylindrical Scrub Head & Brush Cover

(1) Locking Lever

(2) Hex. Nut

(3) Phillips Head Screw

(4) Top Surface

(5) Brush Cover Plate

Refer to Figure 29 for items in the procedure:

1. Before making adjustments to the locking lever (1), remove the brush cover plate (5). See Figure 15 in “6.5.1 Removing Cylindrical Scrub Brush” on page 24.
2. Loosen hex. nut (2)
3. Proceed to readjust by the phillips head screw (3)
4. Adjustment is correct when the phillips head screw (3) catches with a slight drag at the top surface (4) of the brush cover plate when installing plate to scrub head.

9.11 Adjustment of The Scrub Head

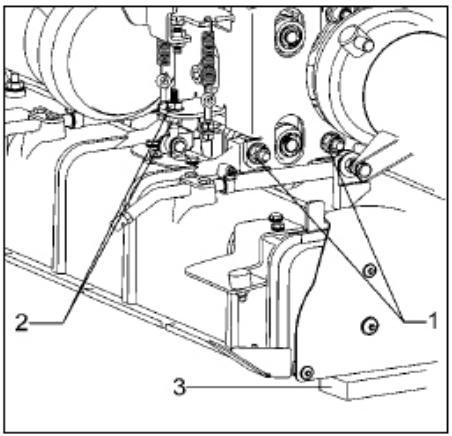


Figure 30 - Scrub Head Adjustment

(1) Screws

(2) Hex Nuts

(3) Level Blocks

1. Loosen fixing screws (Figure 30/1) at the left and right side of the machine.
2. Loosen hexagonal nuts (Figure 30/2) of the fine adjustment.

Note: The machine must be positioned on level surface before making adjustments to the scrub head.

3. Before proceeding with the fine adjustments, make sure that the scrub head is evenly positioned on two level blocks (Figure 30/3).

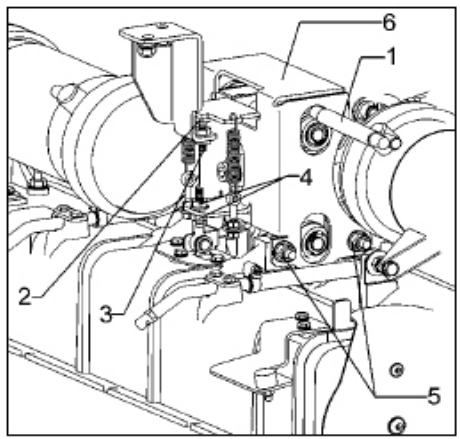


Figure 31 - Scrub Head Adjustment

(1) Test mandrel

(2) Stop screw

(3) Counter-nuts

(4) Counter nut (fine adjustment)

(5) Fixing Screws

(6) Guide angle

4. Proceed with adjustment by using a test mandrel (Figure 31/1).

Note: The two test mandrel dimensions are Ø 12mm and Ø13mm.

Note: The distance to be adjusted must be between 12 and 13mm. It must not exceed 13mm. The 13mm mandrel may fit in the neck part only. See (Figure 31/1)

5. Check the adjustment described above at both sides of the guiding angle 2 the scrub head (Figure 31/6).
6. Use the stop screw (Figure 31/2) for distance adjustment.
7. After initial adjustment at both sides of the scrub head according to Figure 30, proceed as follows:
8. Carefully tighten the counter-nut (Figure 31/3) by hand then continue tightening using the appropriate tools.
9. Carefully tighten the counter-nut for fine adjustment (Figure 31/4) by hand, then using appropriate tools.
10. Tighten fixing screws (Figure 31/5) at both sides of the scrub head.

9.12 Direction Of Rotation For Scrub Brushes

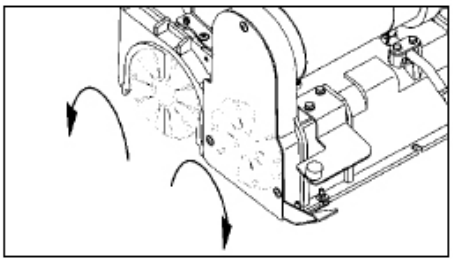


Figure 32 - Direction of Scrub Brush Rotation

- Check rotation direction of scrub brushes according to Figure 32 correct if required.

9.13 Check Current Consumption Of Scrub Motors

Checking the current consumption (amp draw) of the brush motors (M4 and M5) is mandatory.

Proceed as follows:

1. Three measurements at different scrub pressures are required.
2. Before first measurement let the brushes run for approximately 5 minutes (with normal pressure).
3. The difference of measured current consumption between front/rear brush motors must not exceed 2A.
4. If the 2A value is not attained, proceed to re-adjustment. Loosen fixing screws (Figure 31/5)
5. To do so, loosen the counter nuts (Figure 31/4) of the fine adjustment and re-adjust.
6. Carefully tighten the counter-nut for fine adjustment (Figure 31/4) using the appropriate tools.
7. Tighten fixing screws (Figure 31/5) at both sides of the scrub head.
8. Repeat measurement

10.1 Program Functions

1. Start with machine in the “OFF” position.
2. Press the two far right buttons on the dashboard (green button and the one next to it.)
3. Turn machine on and you will now be in programming mode.
4. Use the solution plus and minus buttons to toggle through the programs.
5. Once you see the program number you would like to select in the LCD screen, press the far right hand button again for three second (green button.)
6. Turn machine to “OFF” position.
7. Turn machine back on and the new program should be stored.
8. Please try the machine to ensure that you have selected the correct program and that it is now stored.
9. If you are satisfied, then you are ready to go.
10. If you are not satisfied, please repeat steps 1-8.
11. If you are still not satisfied, please call PowerBoss Technical Support at 800-982-7141 x 4069.

Figure 33 - Two Far Right Buttons For Programming

10.2 Program Functions:

The Description of program functions requires the “brushing” and / or “vacuuming” function being turned ON.
All programs allow normal cleaning of vacuuming in the ‘Forward’ and ‘Reverse’ position. The following chart shows the differences for ‘Neutral’ and ‘Reverse’ drive rheostat position (up to software version 3.017).

Program Code	Drive Rheostat Setting	Function With A Given Drive Rheostat	
		Brush Head	Squeegee
1	Neutral	Brushes & Water On	Vacuum Remains On
	Reverse	Brushes & Water On	Squeegee Off & Lifted
2	Neutral	Brushes & Water On	Squeegee Off & Lifted
	Reverse	Brushes & Water On	Squeegee Off & Lifted
3	Neutral	Brushes & Water On	Vacuum Remains On
	Reverse	Brushes & Water On	Squeegee Off & Lifted
4	Neutral	Brushes & water OFF Brush head lifted (3 sec. delay on brushes to prevent brushes from being OFF when switching from forward to reverse mode)	Squeegee Off & Lifted
	Reverse	Brushes & Water On	Squeegee Off & Lifted
5	Neutral	Brushes & Water OFF (3 Sec. delay)	Squeegee Off & Lifted
	Reverse	Brushes & Water On Lowered	Squeegee Off & Lifted
6	Neutral	Brushes & Water OFF, brush head remains lowered	Vacuum Remains On
	Reverse	Brushes & Water remain OFF	Squeegee Off & Lifted

10. Programming Guide

The description of program functions requires the “brushing” and / or “vacuuming” function being turned ON. All programs allow normal cleaning or vacuuming in the ‘Forward’ drive rheostat position. The following chart shows the differences for ‘Neutral’ and ‘Reverse’ drive rheostat position (up to software version 3.017)

Program Code	Drive Rheostat Setting	Function With A Given Drive Rheostat	
		Brush Head	Squeegee
1	Neutral	Brushes & Water On	Vacuum Remains On
	Reverse	Brushes & Water On	Squeegee Off & Lifted
2	Neutral	Brushes On / Water Off	Vacuum Remains On
	Reverse	Brushes & Water On	Squeegee Off & Lifted
3	Neutral	Brushes & Water OFF	Vacuum Remains On
	Reverse	Brushes & Water On	Squeegee Off & Lifted
4 (Long Switch Off Time)	Neutral	Brushes & water OFF Brush head lifted (3 sec. delay on brushes to prevent brushes from being OFF when switching from forward to reverse mode)	Squeegee Off & Lifted
	Reverse	Brushes & Water On	Squeegee Off & Lifted
5 (Long Switch Off Time)	Neutral	Brushes & Water OFF (3 Sec. delay) Brush Head lifted	Vacuum remains on
	Reverse	Brushes & Water On & Lowered	Squeegee Off & Lifted
6 (Medium Switch Off Time)	Neutral	Brushes & Water OFF, brush head remains lowered	Vacuum Remains On
	Reverse	Brushes & Water remain OFF	Squeegee Off & Lifted
7 (Short Switch Off Time	Neutral	Brushes & Water OFF(Less than 1 Sec.)	Vacuum remains on
	Reverse	Brushes ON Water OFF	Squeegee Off & Lifted
8 (Long Switch Off Time)	Neutral	Brushes & Water OFF,	Vacuum Remains On
	Reverse	Brushes & Water ON	Squeegee Off & Lifted

11. Warranty Information

Revision F
Effective November 1, 2008
PowerBoss Made Simple Industrial Limited Warranty

Minuteman International owner of PowerBoss warrants to the original purchaser/user that the 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. Parts not manufactured by PowerBoss are covered by and subject to the warranties and/or guarantees of their manufacturers. Please contact Minuteman International for procedures in warranty claims against these manufacturers.

Special warning to purchaser -- Use of replacement parts not manufactured by PowerBoss or its designated licensees, will void all warranties expressed or implied. A potential health hazard exits without original equipment replacement.

All warranted items become the sole property of Minuteman International or 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.

11. Warranty Information

	Travel*	Labor	Parts	Engine	Extended Warranty	Costs
Walk behinds						
Battery sweepers	Ninety days	One year	One year	N/A	2 years Parts + Labor (or 2000 Hours)	2%
IC sweepers	Ninety days	One year	One year	Through manufacturer	2 years Parts + Labor (or 2000 Hours)	2%
Battery scrubbers	Ninety days	Two years	Three years	N/A	3 Years Parts + Labor (or 3000 Hours)	2%
Riders						
Battery scrubbers	Ninety days	Two years	Three years/2000 hrs	N/A	3 Years Parts + Labor (or 3000 Hours)	2%
IC sweeper/scrubbers	Ninety days	Six months	Two years/2000 hrs	Two years/3000 hrs**	2 years Parts + Labor (or 2000 Hours)	3%
IC sweepers	Ninety days	Six months	Four years/3000 hrs	Five years/3000 hrs**	4 Years Parts + 2 Years Labor (or 4000 Hours)	3%
Exceptions						
Apex series sweeper	Ninety days	One year	One year/1000 hrs	One year/1000 hrs**	2 years Parts + Labor (or 2000 Hours)	3%
6X sweeper	Ninety days	Six months	Two years/2000 hrs	Two years/2000 hours**	2 years Parts + Labor (or 2000 Hours)	3%

Tank Bladders Eight years/ no additional labor
Polypropylene plastic tanks Ten years/ no additional labor
Batteries 0-3 months full replacement, 4-12 prorated credit
Chargers One-year replacement
Replacement parts Ninety days
***Two-hour cap**
****Through engine manufacturer. See section 3 of warranty manual for engine warranty exceptions**
***** Based upon dealer's certification status**
Extended Warranty MUST be signed up within 30 days of delivery to End User (Dealer has 1Year from Receiving Machine to Sign up extended Warranty)
Extended Warranty Cost is based on Invoice Price multiplied by the Percentage listed in the Extended Warranty Column

All above labor and travel reimbursed at 65 or 75% of the published shop rate.

12. EC-Declaration Of Conformity (According To Directive 89/392/EEC)

PowerBoss,Inc.
175 Anderson Street
Aberdeen, North Carolina 28315

Declare under our sole responsibility,
that the product:

Admiral 28
Type 7090

To which this declaration corresponds to the
relevant basic safety and health requirement of the
Directive 89/392/EEC, and to the requirements of
the other relevant Directives:

For the relevant implementation of the
safety and health requirements mentioned
in the Directives, the following standard(s)
and / or technical specification(s)
has (have) been respected:

EN 292
EN 60335-2-72
EN 55081-1
EN 50082-1

13. Notes

PowerBoss®

"The Power of Clean"

PowerBoss,Inc 175 Anderson Street P.O. Box 1227- Aberdeen North Carolina 28315

Phone: 800-982-7141 - Fax: 1-800-277-7141 Local: 910-944-2105 Fax: 910-944-7409 e-mail:techsupport@powerboss.com