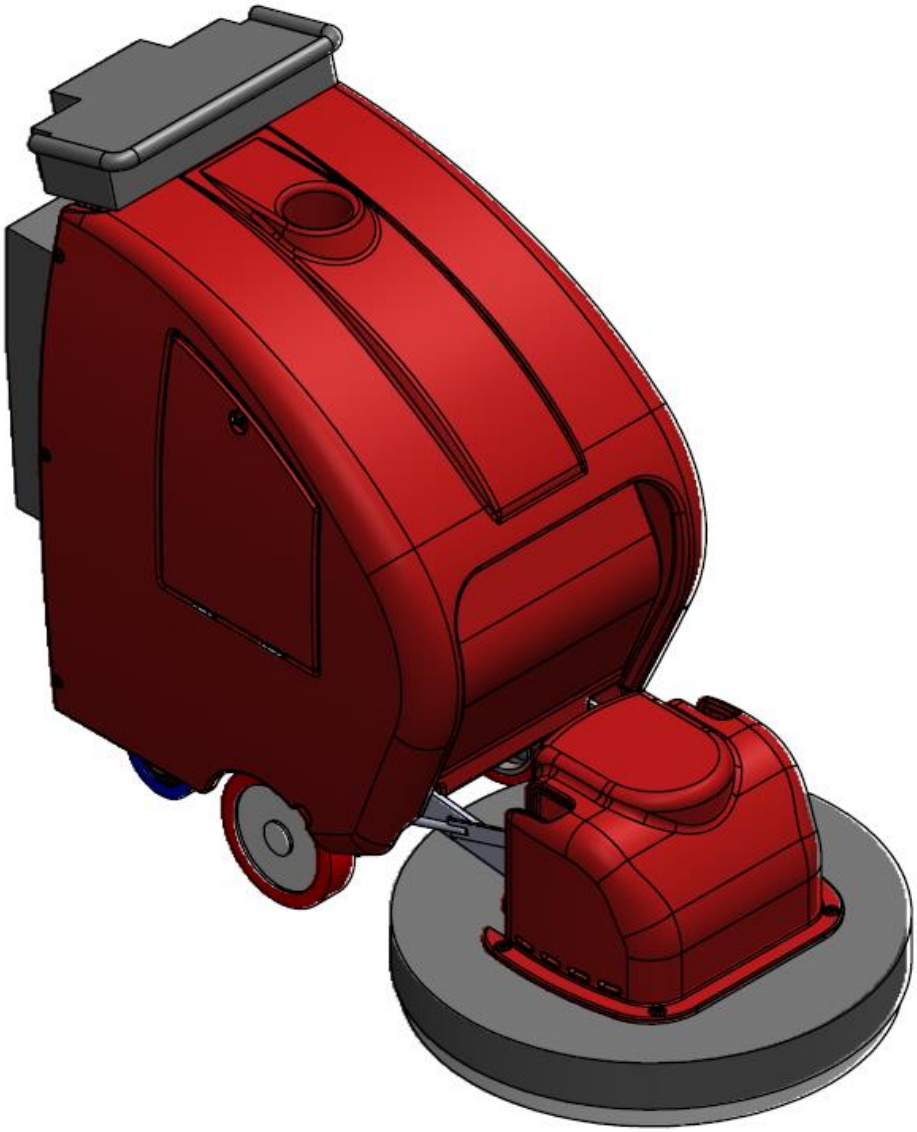
POLIVAC

INTERNATIONAL PTY LTD

Stealth Battery Burnisher



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Introduction

Manual Purpose and Contents

The purpose of this Manual is to provide the operator with all necessary information to use the machine properly in a safe way.

It contains information about technical data, operation, storage, maintenance, spare parts and safety.

Before carrying out any procedure on the machine, the operators and qualified technicians must read this manual carefully.

Target

This Manual is intended for operators and technicians qualified to perform machine maintenance. The operators must not carry out operations reserved for qualified technicians. Polivac International will not be responsible for damages coming from the non-observance of this prohibition.

How to keep this manual

The user manual must be kept near the machine, inside an adequate case, away from liquids and other substances that can cause damage to it.

Other reference manuals

- Electronic battery charger manual (supplied), to be considered an integral part of this manual

- Spare parts manual

Instruction for Use

Please read the manual before operating the machine, failure to read and understand this manual before operating this machine or performing service on this machine may result in injury to the operator or nearby personnel or result in damage to the machine or nearby property. Each operator must be trained in the operation of this machine before being allowed to use it.

Notice

Three statements you will find in this operation manual that you must read and observed to ensure safe operation of this machine.

⚠ **Danger!** Indicates possibility of severe bodily injury or death can occur if Danger! Statements are ignored. Read and observe all Danger! Statements included in the Operation Manual and attached to the machine.

⚠ **Warning!** Indicates possibility of bodily injury to the operator and other people can occur if Warning! Statements are ignored. Read and observe all Warning! Statements included in the Operation Manual and attached to the machine.

⚠ **Caution!** Indicates possibility of damage to the machine or other property can occur if Caution! Statements are ignored. Read and observe all Caution! Statements included in the Operation Manual and attached to the machine.

Proper maintenance is necessary with all battery floor equipment. The scheduled maintenance procedures found in this operation manual will provide many years of continuous service.

Apart from the scheduled maintenance procedures listed it is recommended to have your machine serviced by certified service technician every 300 hours.

Important Information *(please fill in)*

Date of purchase _____

Purchased from _____

Address _____

City _____ State _____ P Code

Phone _____ Contact _____

Machine Model _____

Machine Serial Number _____

Emergency Phone Numbers

Medical Emergency _____

Police _____

Fire Department _____

Other _____

Machine Specification

Polishing Area Coverage.....2,900 sq m / 31,200 sq ft per hr
Pad Width .....610mm / 24”
Pad Speed .....2000 RPM Constant under load
Pad Pressure .....12 to 18 Kg range electronically adjustable
Pad Drive Head .....Floating
Dust Control Skirt .....Floating
Dust Control .....Fan forced vacuum system
Dust control Collection .....Reusable cloth / Disposable bag
Forward / Reverse Speed .....Up to 5Km / h
Pad Drive Motor .....3.5 KW 36V DC
Batteries.....Maintenance free 6 x 6V DC AGM 235Ah
Battery Charger .....On–Board 36V DC Delta-Q IC 650 18A
Operating Time .....Approximately 2hrs
Self-Propulsion .....Electric transaxle
Wheels.....200mm diameter Cast Polyurethane
Rear Wheels.....Self - levelling HD castor wheel
Noise .....70 dB
Overload protection .....Resettable main key switch
Electronic Controller .....Fully sealed, and pest proof
Gross Weight with Batteries 354Kg
Weight without batteries 264Kg
Length .....1400mm Head up
1540mm Head down
Body Width 521mm
Height 1065mm
Transport Lugs .....Four heavy duty lugs on chassis

Routine Maintenance Consumables and Parts

- Pad, 61cm/ 24”.....P60JACKROO
- Dust bag P/N VPV063
- Dust bag clip P/N VPV051
- Plastic padlock P/N GZ010/3083
- Padlock tee bolt P/N GZ010/3074
- Plastic skirting P/N BAT004
- Plastic Bumper P/N.....PPR002
- Plastic fan blades P/N VPV186
- Vacuum pulley spindle P/N SLB015
- Vacuum belt Poly Vee J3 X 330 P/N BAT005
- Vacuum bearing 6200 2R P/N SLB016
- Fuse AMG150A 32V P/N BAT299
- Fuse short blade 15A automotive P/N BAT324
- Battery sealed AGM 6 X 6V P/N BAT029

Operator Responsibility

The operator is responsible for performing the recommended daily maintenance and check-ups of the machine to keep it in good working condition. The operator must inform the service personnel or supervisor when recommended maintenance procedures are required as prescribed in MAINTENANCE SECTION of this manual.

Read this manual carefully before operating this machine.

FOR SAFETY: Do not operate machine before reading and understanding the operation manual. Keep your machine regularly maintained by following the maintenance information in this manual. We recommend taking advantage of a service contract from Polivac International Authorized Distributor or Service centre.
Order parts and supplies only from an Authorized Polivac International Distributor. Use the parts illustration section of your manual when ordering parts.

During and after operation, perform the recommended daily and hourly procedures outlined in the Maintenance Chart.

Unpacking and Preparation Of the Machine

The weight of the machine with batteries is 354 Kg; caution should be taken to remove the machine from the pallet. Polivac International trained distributors have proper equipment for safe unloading and delivery of the machine. Any delivery of the machine to the remote areas must be discussed and understood about safe unloading of the machine by both parties prior dispatching machine. Any damage caused by inappropriate unloading of the machine from the pallet is not covered by WARRANTY.

Have the machine on the pallet in flat and safe area for unpacking. Check the machine for shipping damage.
Remove the box from the pallet. Unbolt the wooden packing blocks that fasten the machine to the pallet by wheels.
(*Use spanner No 13 included in box.)* Attach ramp to the pallet. (*Ramp is not included in the box.*)
Remove the cover from the machine and reconnect battery negative BLACK/ BLUE heavy cable back to the battery post. Replace the cover. Turn the key switch ON, red light should come on. Turn the *HEAD LIFTER* switch to UP position, head should raise. Before machine is driven off the pallet, be sure the ramp is attached correctly at the rear of the pallet and clear off any obstruction.

Flick the *FORWARD/ REVERSE* switch to *REVERSE* position, turn the SPEED CONTROL knob to about 9 O'clock position, pull the *HANDLE-LEVER* up and watch the machine driving off the pallet with caution. Use the handle lever to *STOP* or *START* the machine.

⚠ *Caution!*

To turn the machine ON, be sure the PAD ROTATION switch is in OFF position. Should there be not enough forward motion to drive the machine off the pallet, turn the speed control knob slightly clockwise.

⚠ *Caution!*

Please do read the manual and familiar yourself with the machine before taking next step.

⚠ *Caution!*

The machine is equipped with four lugs for the transport shipping purpose, two upfront and two at the back of the machine.

Machine Features

Batteries

- Machine comes with fully sealed batteries that require no maintenance. On-board battery charger is sophisticated device that is programmed to suit the type of battery that are installed and will not undercharge or overcharge.

⚠ *Caution*

- A new battery charger programming may take place if different batteries are installed. Programming is very simple process that can be provided by distributor or battery installer. (Please refer to separate Battery Charger Manual provided)

On-board Battery Charger

- Battery charger is mounted on the machine and requires 240V, 10A extension lead. The lead must be at least 10amp lead wire and should be no longer than 15m. Battery charger programming is factory set and ready to use. Red light indicates charging is taking place. Green light indicates charging is completed.
  Once the charge cycle is complete, the charger remains active in a trickle charge mode to maintain the charge on the batteries until the charger is unplugged from the power. Any further specific information (Please refer to separate Battery Charger Manual provided)

Pad Size

- Pad size is 61cm / 24”. Easy pad replacement, pad holder head is raised up and tilted to vertical position by turning the head lifter switch to UP. Head will tilt to about 80 degrees with reference to floor.

Area Coverage

- 2,900 square meters per hr / 31,200 square ft per hr

Pad Holder Floating Head

- The floating head compensates for uneven floor and maintains constant pad pressure. This is unique feature on this machine.

Pad Speed 2000 RPM

- 3.5KW motor 36V DC powers the pad holder driver at constant 2000 rpm under the full load. The pad holder driver is driven direct, no belt.

Automatic Machine Shut Down

- This machine is fitted with over current circuitry in electronic controllers as a safety feature. The machine will automatically shut down due to excessive pad pressure or by excessive current draw by the transaxle.

  There should be no lights ON, on the console before turning key switch ON for resetting. Handle trigger lever must also be released.

Dust Control

- Belt driven fan forced vacuum dust control is located under the pad drive head.

Dust Bag

- Cloth material.

Early model metal cover

- Dust bag is located on the right hand side of the machine and is accessible through top cover metal door.

Late model plastic cover

- Dust bag is accessible on the right hand side of the machine through the side plastic door.

Floating Dust Control Skirt Non-marking plastic floating skirt. The skirting aligns itself to the floor and prevents any dust from escaping. Raising the head in up position makes it very easy to replace skirt.

Self-Propulsion

- The machine is fitted with electric driven transaxle. The speed of the traction is controlled via speed control dial knob located on the console. Maximum counter clockwise knob turn, machine does not move. Turning dial knob progressively clockwise, machine will reach up to maximum 5km / hr speed. The speed control - knob is for setting speed only, spring loaded handle lever starts or stops the machine. Two -position rocker switch enables the machine to move forward or reverse. Operator can switch the direction of the machine from forward to reverse mode while machine is still in motion, or vice versa. This feature is very useful for handling machine in tight spots.

All Wheel Floor Contact

- All four wheels are in constant contact with floor due to special wheel construction design. Back casters mounted on an axle bridge that is as one unit attached in the middle of a back part of a chassis via one pivoting bolt. This one unit back casters subassembly pivots in the middle and thus allows the casters to align with floor.

Fully Sealed Electronic Controller

- The Controller and all associated relays are fully sealed to prevent any entry of insect or pests that can cause a problem. The controller controls both the pad drive motor and the electric transaxle. The aluminium block that the controller is mounted on, works as heat sink. The controller has many different programmable features that can be chosen. The programming is set to factory specification; Polivac International may customise it to special request.

Emergency Stop Backup Switch

- Stop back up switch lever is located at the back of the machine console at approximately operator's torso height. This spring loaded pivoting lever prevents the operator being crushed against an object while reversing the machine. Just before operator gets trapped against something while reversing, the pivoting stop lever contacts against operator's torso and activates the automatic transaxle breaking. If this occurs, flick the direction switch to forward mode, reset the machine and drive forward.

Emergency Brake Disengagement

- Under normal operation, automatic brake comes ON when machine stops. During loss of power, batteries are dead or disconnected from electrical control board, the automatic brake engages and prevents machine moving. To manually disengage the break, the manual disengagement lever of the automatic brake is located on the right hand side of the machine under the cover next to wheel. Shift the lever to upward position. Machine is ready to move manually.

⚠ *Caution!*

- Be aware how you park the machine with disengaged brake. Good safety practise would be to engage the brake lever again by shifting it downwards.

Transport Lugs

- Four heavy- duty lugs are provided on the machine for transport purpose. Two at the back and two at the front.

Console Features

Keyed Switch

Key switch is the main switch for the machine, red light indicates power is ON

Pad Drive Head Lifter Switch

Up or down switch position brings the head accordingly. The movement of the head is active only when key switch is ON

Traction Forward/Reverse Switch

Forward/reverse switch directs the machine accordingly. Switching the direction between forward and reverse mode helps the operator manoeuvre the machine much better in corners and tight spots. Quick switching between forward and reverse modes regardless of machine direction movement, will not harm the machine.

Speed Control Knob

The knob sets the machine speed to operator's safe confident level. Maximum counter clockwise knob position prevents any machine travel. Progressively turning knob clockwise, speed can reach up to maximum 5km/ hr.

Handle Lever Trigger

The handle lever activates the traction of the machine and or pad drive if switched ON and can be actuated by both hands or by one

Pad Drive Rotation Switch

ON –OFF switch position acts accordingly. Red light indicates pad drive rotation is ON. For safety, reason pad drive will spin only when pad drive head is dropped down to floor.

⚠ *Attention!*

Be sure the red light of the pad rotation switch is in OFF position during resetting the machine from machine shutdown mode.

Pad Pressure Monitor

- Ideal dynamic pad pressure is 14 to 18kg, anything above starts to remove polish from the floor. This machine will deliver more than 18kg if required, but is not designed for this purpose! Operator controls pad pressure electrically through the momentary 3 position switch. Plus/minus sign on the switch indicates which way to control pad pressure. When increasing pad pressure ensure you are monitoring the Pad Pressure Gauge, the Yellow colour represents no pressure or very little, green colour represents ideal pressure on the floor and red indicate excessive pad pressure. Excessive pad pressure will trigger an automatic machine shut down if pad pressure is not decreased soon enough. Should this happen the machine requires resetting. *(See MACHINE SHUT DOWN RESETTING below.)*

Pad Pressure Switch

Operator controls pad pressure electrically through the momentary 3 position switch. Centre-position momentary rocker switch, marked +/- activates UP or DOWN pad drive pressure. The switch has three functions:

1. Increase pad pressure. (lower head)
2. Decrease pad pressure. (raise head)

3. Drop pad drive head below brand new pad preset level to enable use of second hand pad.

- Before each use always check the pad condition. If pad isn't worn down pad and is still good for use, before polishing it will require drive head to be dropped lower than its preset (the width of a brand new pad). After the head has dropped down and stops automatically to preset stop, Turn pad rotation switch to ON, whilst the pad is spinning, monitor your pad pressure bar graph. Increase pad pressure by pressing pad pressure switch (+) briefly few times till green LED comes ON. Ideal pad pressure is when green LEDs are glowing between yellow and red. This is how pad pressure is maintained by this switch, pressing + or -, (plus increases and – decreases pad pressure). Once the pad pressure is set to satisfactory level, no further adjustment needed for some time, until obvious ware of the floor pad. The optimum setting between pad pressure and pad wear is achieved by operator's discretion through the pad pressure switch.

⚠ *Caution!*

How to Use Pad Pressure Switch

The duration of pad pressure switching should be very short, about one second flick at a time and two or three in succession while watching pad pressure monitor. This is when machine is polishing the floor. There is slight time delay after each flick. Keep flicking the switch till you get green LEDs on the pad pressure monitor ON. One can have longer flicks if pad pressure is taking off, but short once when increasing pressure to prevent unnecessary machine shutdown and resetting.

Hour Meter

The hour meter indicates polishing hours. The machine will only count hours while polishing, (pad motor spinning).

Fault Code Display

Fault code display has two functions.

1. It displays fault code that directs the technician to a particular problem. Conveyed code to service personnel narrows down problem possibility.
2. It monitors battery charge highest number 9 indicates buttery fully charged, the numbers drops progressively down as the battery is discharged. Machine will shut down when it gets between numbers 3-2.

Machine shut down resetting

If machine has ceased operation due to excessive pad pressure, reduce the pad pressure by pressing briefly minus side of the pads pressure switch while key switch is in ON position. Turn the key switch OFF.

1. If machine has ceased operation whilst claiming steep ramp (breaks will auto engage), turn
2. Switch to reverse mode and be prepared to back off the ramp once the machine is reset.
3. If the machine has ceased operation by obstacle to transaxle wheels, remove it before resetting.
4. Turn the key switch to OFF.
5. Turn the pad rotation switch OFF.
6. Turn the key switch ON again, wait a few seconds to hear the solenoid click. After solenoid clicks, pad drive rotation switch can be switched ON.
7. Machine is reset.

Machine Operation

Machine Checkpoints before Use

1. For safety reason be sure you read the manual and understand all the features in this machine, or you had adequate training by the employer.
2. Check machine visually for any damage, loose bolts and nuts, before use.
3. Check the battery charge condition.
4. Disconnect power cord if connected.
5. Check pad condition, replace if required.
6. Check the condition of the pad drive for the breaks and cracks.
7. Check vacuum dust bag, empty if required.

 ***Warning!*** *Do not use machine if pad drive is damaged or has cracks.*

Machine ready for Use

1. Check what direction machine will travel in (reverse, forward), switch it to right direction.
2. Be sure pad drive rotation switch is OFF before turning key switch ON.
3. Turn keyed switch ON.
4. Pull handle lever UP to get machine moving, adjust machine traction speed to safe manageable level.
5. If machine is ready for polishing, drop pad drive head down and turn pad drive rotation switch to ON. Pad rotation is controlled by handle lever switch. Any time machine stops or starts, pad rotation will also stop or start. Pad rotation speed is constant 2000 RPM and cannot be changed.

Pad Wear Compensation

- Pad wear must be monitored by the operator. As the pad wears the pad pressure needs to be increased by clicking the momentary switch to the "+" symbols head will need to be lowered. (The head height preset level is set for a new pad). When using a second hand usable pad, the pad drive drops down to automatic preset level, after the first stop, pad pressure switch + is used to drop the head further down. Click the switch briefly few times and watch the pad pressure monitor to maintain ideal pad pressure. Should you create too much pressure, reverse the procedure to prevent machine shutdown. Once the pressure is set, it should stay at that level for some time.

Servicing Machine

Daily before Use

1. Check the machine for any damage, loose bolts, nuts or any unusual indicating sign.
2. Check the battery charge.
3. Check the condition of the pad.
4. Check the condition of the pad drive to ensure there are no breaks or cracks.
5. Check the condition of floating skirt.
6. Check the condition of dust bag, and act accordingly, empty it or replace disposable bag if required.
7. Clean all vents on the pad drive motor cover and On-board charger.
8. Check the condition of extension lead for battery charger.

Three Hundred Hours Service

1. Check the condition of all above.
2. Check the condition of the pad drive.

3. Check the condition of plastic padlock.
4. Check the condition of Tee nut.
5. Check the condition of the vacuum belt, spindle bearing, fan blades,
6. Vacuum hose and dust bag.
7. Check all the pivoting linkages, wheels, casters.
8. Check the condition of the floating head, drop the head down if it is up, remove the cover from the motor, step with one foot on the top of the pad drive head, spring loaded action movement up and down will be felt. Watch the pivoting joints sliding in the slots.

- This action will demonstrate that the subassembly movement is smooth, nice and free of jams.

9. Although batteries are fully sealed and maintenance free, check it visually for physical shape to ensure there is no swelling, cracks and leaks.

10. Check the battery cable for loose connections.

Thousand Hours Service

1. Inspect all above.
2. Inspect carbon brushes and condition of commutator on pad drive and transaxle motor. The service and inspection must be carried out by competent certified technician.

Maintenance Summary		
Operation	Daily	300 Hr
• Check the pad condition	•	•
• Check the pad drive condition	•	•
• Clean / empty dust bag	•	•
• Check the extension lead	•	•
• Clear dust and debris from the head	•	•
• Check the plastic padlock		•
• Check the Tee nut		•
• Check the vacuum system		•
• Check the vacuum belt		•
• Check the vacuum bearings		•
• Check casters		•
• Check pad drive head		•
• Check battery cable connection		•
• Check batteries		•
• Check the extension lead		•
• Pad drive motor carbon brushes		•
• Transaxle drive motor carbon brushes		•
• Check the extension lead		•

Machine Troubleshooting

Problem	Possible cause
• Machine will not move when main key switch is turned ON and red LED is ON	1) Pad drive rotation switch is turned ON, switch to OFF position
• Machine is turned on but will not move forward / reverse	1) Speed control knob may be turned all the way counter clockwise 2) Handle lever is engaged or is jammed in before main keyed switch was turned on 3) Electrical fault
• Pad drive motor will not rotate	1) Pad drive rotation switch is OFF 2) Speed control knob maybe turned all the way counter clockwise. 3) Pad drive head is in a up position. 4) Electrical fault.
• Machine stopped during floor polishing and fault code digit is flashing in cycle from 4 to F	1) Pad pressure too excessive. 2) Electrical fault
• Machine will not turn on when main keyed switch is turn to ON position and red LED is off	1) Batteries not connected or completely discharged. 2) Electrical wiring loose or faulty
• Pad drive head will not raise or lower to the floor	1) Turnkey-switch is turned OFF. 2) Faulty head lifter switch. 3) Fuse blown out. 4) Electrical fault
• Pad drive head does not sit flat when lowered	1) Under normal circumstances, this is designed this way. When pad starts to rotate, head will be sucked to the floor and level itself. 2) However, if this does not happen, head assembly is sticking and requires service attention.
• Machine has stopped for some reason and must be moved to parking area, machine will not drive.	1) Power failure, when power is lost, automatic brake comes on and machine cannot be moved, please disengage brake use the lever located under the right hand side front wheel, please lift lever to disengage brake. Ensure that brake is engaged before leaving machine unattended.

Electrical system

- Electrical system contains three levels of DC Voltages; 12, 24 and 36V.
- Main electronic controller controls both, pad drive motor at 36V DC and transaxle output at 24V DC, the transaxle 24V DC is supplied internally from within the controller.
- Pad drive head lifter (electric ram) runs totally independent from main controller, as per electrical diagram. 24V DC power is tapped from the bank of batteries through 15A fuse to operate control circuits of an electric ram.
- Pad pressure bar graph is powered by 12V DC that is tapped from bank of batteries as per electrical diagram. This circuit is also independent from main controller.

24V DC Omron Double pole Relay

- These two relays reverse the polarity to electric ram for UP or Down action.

24V DC Automotive change - over / NO single contact Relay

- These two relays interlock each other to protect clashing two opposite polarities.

Limit switches

- Limit switches operate and control electric ram. Switches have three functions.

1. Controls maximum Up position of the head.
2. Controls Down first automatic preset stop position.
3. Controls micro Up or Down position after head has stopped at automatic first preset position. This mode will increase or decrease pad pressure.

- Switches are adjustable and only factory trained personnel should attempt to readjust them when required.
- These switches are electrically isolated from main chassis.
- The limit switches are located on the left hand side of the machine under the main machine cover.

⚠ ***Caution!*** *To disconnect power from the battery machine, be sure you disconnect negative cable from the battery post. This way it will disconnect all three voltages 12, 24 and 36V.*

- *Disconnecting positive cable will not guaranty total power disconnection.*

⚠ ***Caution!*** *During reconnection of power or batteries, a brief sparks will occur due to capacitors charging in controllers filter. This is all in order.*