



## USER GUIDE



PLEASE READ THESE INSTRUCTIONS COMPLETELY PRIOR TO USE.



**WARNING**



- BATTERIES CAN PRODUCE EXPLOSIVE GASES - Ensure no sparks or flames are present
- Wear eye protection.
- Follow all battery manufacturer's Warnings and Instructions.
- Battery Isolators are designed for negative ground alternator systems with batteries of the same nominal voltage.
- Batteries of differing voltages cannot be used.
- Beware of moving parts.
- Use caution to prevent electrical shock

# FEATURES

## PA-026 – Battery Isolator

- Easy to Install - The electronic isolator does not require any changes to the vehicle's existing wiring. It can be fitted to all 12V vehicle types.
- Priority Charging for Starting Battery - Ensures that the starting battery is fully charged (13.4v) before connecting the auxiliary battery in parallel.
- Over-Current Protection – Protects the Isolator and charging system from over current damage, which could occur due to a short circuit in the wiring.
- Surge Protection - Provides surge protection for vehicles with electronic ignition/ management systems.

## SPECIFICATIONS

PART NO.	PA-026
VOLTAGE	12V
CHARGING CURRENT	75A/100A peak
CHARGE TYPE	Parallel
CONTROL	Electronic
MOUNTING	Surface/firewall/battery side
CURRENT DRAW	Charging 500mA (Standby 30mA)
VOLTAGE DROP	None
SURGE PROTECTION	Built in

## PA-001SP – Wireless Hyd. Remote Control Module

- Simple two button operation – Button 1 Plow Up, Button 2 Plow Down
- Improved response time. Note: additional wireless remotes can be ordered PA-001R
- Built in "Float" feature allows when plowing in reverse blade to "float" if objects are hit. *Use Caution while plowing and follow warnings on snow plow.*
- Float feature stays on unless button 2 is depressed twice. Note: after 10 minutes "float" feature shuts off, so as not to draw down battery.
- Buttons (1,2) on module perform same functions a remote control.
- Power on/off button on module
- Extra remote controls available Note: need unit serial number to order part no. PA-001R

## BATTERY



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  - Follow all battery makers warnings
  - Use caution to prevent electrical shock
- 
- Only deep cycle marine batteries are recommended, AGM or “spiral cell” batteries are preferred. The *Optima*® *D-34M* “Blue Top” (PA-025) battery is what SuperPlow® recommends and performs all testing with. Use of other batteries may change your plowing results, and *additional safety precautions may be needed*



- Any battery purchased should be fully charged by you after purchase, and before use. Note: batteries do not come fully charged from retailers, and less than full charge prior to use will impact your results.
- If charging battery between uses, *charging must be performed in a well ventilated area*, and battery box cover should be “off” Note: there is a battery cover holding clamp on the lift arm to hold cover while charging, all battery connections should be removed prior to charging and a “smart” (auto shut off ) battery/trickle charger *must* be used. SuperPlow® has auto battery float available. (PA-027)
- Battery dimensions must not exceed 11”w X 7.5”d X 8”h and should have 2- 5/16” threaded charging studs.

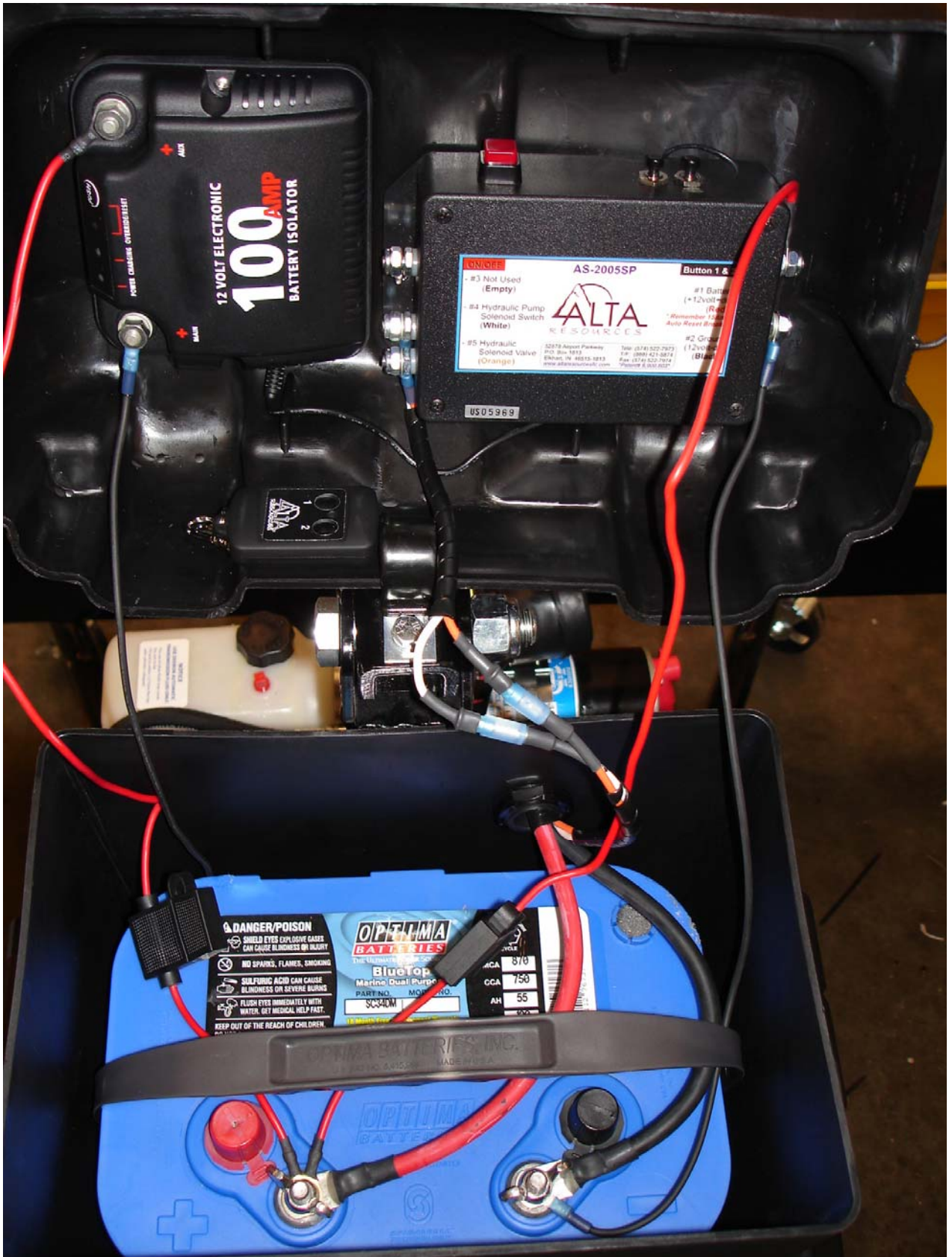


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## INSTALLATION – CONNECTION OF PLOW BATTERY

NOTE: some of these connections may be made at the factory.

1. Ensure vehicle is not running "OFF" The host vehicle starting battery should be checked for full charge (min. 13.4v) Note: If vehicle battery is weak or alternator does not perform correctly this may cause plow battery not to charge properly.
2. Connect 14ga. Black wire from terminal box that comes through the back of the battery box to 'MAIN' (+) terminal on battery Isolator. Note: The 7 blade RV style connector from snow plow to vehicle must be inserted for proper charging while plowing.
3. Connect 1/4" lug 14ga. Red wire provided to 'AUX' (+) then connect 5/16" lug 14ga. Red wire with in-line 15 amp fuse to 'POS' (+) battery terminal. Do not over-tighten the terminal studs on the electronic isolator.
4. Connect the isolator's 'Earth' wire (small black wire with ring terminal) to 'NEG' (-) terminal on remote control module. (PA-001SP)
5. Connect the 5/16" lug 6ga.red wire from hydraulic motor, and the 5/16" 14ga. red wire from remote control module to the 'POS' (+) battery terminal. Then connect the white and orange male bullet connectors from the remote control module to female bullet connectors. (see picture) Note: white wire controls the motor solenoid switch, and orange controls the solenoid valve coil.
6. Connect the 5/16" lug 6ga. black wire from hydraulic motor, and the 5/16" 14ga. Black wire from the remote control module to the 'NEG' (-) terminal of the battery post.
7. Mount snow plow on vehicle.
8. Insert the 7 blade RV connector into place, turn the ignition of the vehicle 'ON', the isolator should now flash the red 'power' LED.



ISOLATOR STATUS	LED OPERATION	AUX BATTERY	OPERATING CONDITIONS
<b>NORMAL AUTOMATIC OPERATION</b>			
<b>Standby</b>			Both batteries are above 7.5V indicating correct connection and the isolator is monitoring the starting battery.
<b>Start Charging</b>			When the starting battery is above 13.4V indicating that the engine is running & the auxiliary battery is above 3V (i.e. properly connected) the isolator starts charging the auxiliary battery.
<b>Stop Charging</b>			<p>When the starting battery drops below 12.8V for more than one minute indicating that the engine is turned off, the isolator will disconnect the auxiliary battery and return to standby mode.</p> <p>Note: If the engine is turned off and the batteries are not running any appliances, it may take a few hours for the battery voltage to drop below 12.8V. This is normal and will not cause any problems to the operation or charging of your dual battery system.</p>
<b>OVERRIDE OPERATION</b>			
<b>Start Override</b>			Press the 'override/reset' button to manually connect the auxiliary battery to the starting battery. Both batteries must be above 7V for this mode to operate.
<b>Stop Override</b>			The override mode can be stopped manually by pressing the push button at any time. The override will also automatically stop after 3 minutes or when the unit detects that the starting battery is above 13.4V indicating that the engine has started.
<b>FAULT</b>			
<b>Auxiliary Battery Fault</b>			The power LED will flash indicating that the Aux battery is either: 1. Deeply discharged (below 3V) 2. Reverse connected 3. Not connected or there is a wiring fault
<b>Charging Over-current</b>			Excessive current <b>flowing</b> while in charging mode. Over-current can be reset by pressing the 'Override/reset' button or will automatically reset when the starting battery is below 12.8V indicating that the engine has stopped.
<b>Override Over-current</b>			Excessive current <b>flowing</b> while in override mode. Over-current can be reset by pressing the 'Override/reset' button or will automatically reset when the starting battery is above 13.4V indicating that the engine has started.

## BATTERY ISOLATOR - TESTING FOR NORMAL OPERATION

1. With the installation complete and the engine 'On' only the red 'Power' LED should be on.
2. Within a few seconds the blue 'Charging' LED will turn on indicating that the starting battery is above 13.4V and the isolator will start charging the auxiliary battery. Note: if plow side battery is above 13.4v the charging will not start until senses charging is required.
3. If the isolator does not go into 'Charging mode' within a few seconds, increase the engine RPM to a fast idle. This will allow the alternator to generate more current.
4. Once the Isolator is in 'Charging mode,' turn the engine 'Off', then switch the headlights and other accessories 'On'. The isolator will now detect that the batteries are being used. 60 seconds after the voltage falls below 12.8V, the blue 'Charging' LED will turn off and the isolator will disconnect the two batteries from each other.

## BATTERY ISOLATOR - OPERATION

### AUTOMATIC

Once the Battery Isolator has been correctly installed and tested it will function automatically to charge the auxiliary battery.

## BATTERY ISOLATOR - FREQUENTLY ASKED QUESTIONS

Q. Is the Battery Isolator waterproof?

A. Battery isolators are designed to be dust and shower proof. Normal use including river crossings and light engine washing will not pose any problem. Direct high pressure washing of the battery isolator or if the vehicle is submerged for a period of the time may cause some water damage and this will not be covered under warranty.

Q. Why does the positive cable from the Isolator to the Auxiliary battery need to be fused?

A. 12V batteries can produce large amounts of power and are capable of melting cable insulation in the case of a short circuit. Since a dual battery system contains two batteries connected together, the cabling needs to be protected for short circuit at each battery. The battery isolator has inbuilt over-current protection which will protect the cable from the starting battery. To protect the cable from the auxiliary battery an inline fuse or fused battery terminal is needed.

Q. Is the battery Isolator safe to use with modern 'electronic' vehicles?

A. The battery isolators have been designed to work with all vehicles, especially new vehicles with onboard computers. In fact the isolator itself has a small microprocessor that intelligently controls the charging. The isolator has in-built surge suppression and over-current protection for extra safety.

Q. Can I turn the isolator off? (disable)

A. Since the Isolator is fully automatic there is no way to turn the unit off. If you need to disable the dual battery system, this can be achieved by disconnecting the 7 pin connector, or the auxiliary battery, or disconnecting the small black earth wire from isolator to the remote module.

## HYDRAULIC MOTOR



- HYD. MOTOR USES HIGH VOLTAGE FROM BATTERY USE CAUTION
- Wear eye protection.
- Disconnect battery before working on hydraulic motor.
- Keep hands and feet away from moving parts.

### PA-002 (MO,MT) – 12v DC Hydraulic Motor Assembly

- SuperPlow<sup>®</sup> may use Hydraulic motors from different suppliers. (Monarch or MTE)
- Simple power up and gravity down operation.
- Use *only* Dexron III<sup>®</sup> automatic transmission fluid in the reservoir.
- Plow uses 1 hydraulic cylinder 6in stroke, 1.5in. bore. (PA-011)
- Power on/off by button on remote control module. (PA-001SP)
- Motor Control Solenoid Switch (PE-030MO/MT) mounted on top of motor. Note: main power from battery via 6ga. Red wire, switch is operated by 14ga. White wire from remote control module.
- Solenoid Coil (PA-002C) flow valve control is powered via 14ga. Orange wire (bullet connector) from remote control module

### SPECIFICATIONS

PART NO.	PA-002 (MT,ME)
VOLTAGE	12V DC
CURRENT DRAW MOTOR	100/125A peak
CURRENT DRAW SOL	Float 4mA
PRESSURE	2100-2500psi
MOTOR SIZE	3 in.
FLOW CONTROL	Internal/External (1mm) Flow Restrictor

## MAINTENANCE

Performing recommended maintenance will ensure that your SuperPlow® will last for many years

### Fall Season Maintenance

- Lubricate all pivot points, and cart wheels. Use a “dry” lubricant, Superplow® recommends Fluid Film® brand lubricant.
- Check all terminals and connectors for corrosion, and remove.
- Remove Solenoid coil and lubricate shaft and coil cavity with dielectric grease.
- Drain hydraulic fluid, and replace with fresh Dexron III® automatic transmission fluid. Note: dispose of used fluid properly per makers recommendations.
- Look for corroded metal areas, remove rust and apply touch up black or yellow paint. (KT-004, yellow paint kit)
- Battery should be fully charged and maintained during “off season”
- Install battery as previously described.
- Check to see that nuts, bolts are secure.
- Mount and dismount SuperPlow® several times to re-familiarize installation. Exercise plow up and down several times to check systems.
- Replace any damaged high visibility safety tape on edges of plow. (CS-002)
- Keep plow covered to help prevent corrosion. Protect pivot points, motor, and lift cylinder from exposure to elements.

### Plowing Season Maintenance

- Check for ice and snow build up on plow and remove between plow uses.
- Check for ice and snow build up in hitch receiver and remove before mounting plow.
- **ALWAYS** attach hitch safety chain while plowing
- Check battery voltage when plow has not been used and charge battery fully before use.
- Check nuts, bolts & hitch pin are secure before and after plowing.

## Spring Season Maintenance

- Lubricate all pivot points, and cart wheels before storage. Use a “dry” lubricant, Superplow® recommends Fluid Film ® brand lubricant.
- Check all terminals and connectors for corrosion, and remove.
- Look for corroded metal areas, remove rust and apply touch up black or yellow paint. (KT-004, yellow paint kit)
- Keep plow covered to help prevent corrosion. At minimum protect pivot points, motor, and lift cylinder from exposure to elements.
- Check to see that nuts, bolts are secure.
- Battery should be fully charged and maintained during “off season”

## SAFETY PRECAUTIONS -

Use Safety Precautions at ALL times.

SuperPlow EZ has many built in safety features that should be followed

- Use caution when plowing
- Do not plow at excessive speeds (5-10m.p.h)
- Always attach hitch safety chain when plowing
- Always attach “over the road” safety chain when transporting or mounting on cart
- Lower blade whenever vehicle is unattended
- Use warning flashers when blade is attached
- Keep hands and feet clear from blade
- Check nuts, bolts, and hitch pin before & after plowing
- Remove battery connections when charging battery while not plowing.
- Remove battery cover while charging battery for ventilation.

## Limited Warranty to Consumers

### Coverage

SuperPlow, LLC warrants to each purchaser of a SuperPlow® snowplow for personal, family or household use that the snowplow will, for a period of three (3) years after original purchase, be free from defects in material and workmanship. SuperPlow, LLC warrants pumps, electrical accessories, service parts and components purchased separately for a period of one (1) year after original purchase to be free from defects in material and workmanship. SuperPlow, LLC does not authorize any party, including its authorized distributors or dealers, to offer any other warranty on behalf of SuperPlow, LLC. Upon expiration of the warranty periods, SuperPlow, LLC will have no further liability related to the snowplow, except with respect to warranty claims arising during the warranty periods.

**THIS WARRANTY IS OFFERED IN LIEU OF ANY OTHER EXPRESS WARRANTY; AND, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ALL IMPLIED WARRANTIES, INCLUDING (BUT NOT LIMITED TO) THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.**

Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

### **WHAT IS NOT COVERED**

THIS WARRANTY DOES NOT COVER COMMERCIAL USE.

This warranty shall not apply to finish or any parts not furnished by SuperPlow, LLC or any damage caused by such parts, nor does it cover any snowplow subjected to misuse, neglect, accident, other than ordinary recommended use or service, improper installation, maintenance or storage, or repair or alteration by anyone except SuperPlow, LLC. Further, attachment of a SuperPlow® snowplow to a vehicle, including any necessary modification of the snowplow and/or the vehicle, is entirely at the purchaser's risk and expense and compliance with applicable motor vehicle regulations is the responsibility of the installer. SuperPlow will not be responsible for any expense related to parts or labor which is unrelated to defects in material or workmanship of a SuperPlow® snowplow.

### **REMEDY FOR DEFECTIVE SNOWPLOW**

Upon receipt by SuperPlow, LLC or an authorized distributor or dealer of any defective snowplow covered by this warranty, SuperPlow, LLC will, at its option, repair or replace the defective snowplow at its expense including labor costs at its standard rate incurred while repairing said snowplow, provided that the purchaser of that snowplow has followed the procedure for obtaining warranty performance set forth below. The snowplow so repaired or supplied as a replacement will be shipped to the purchaser of the defective snowplow, with transportation charges being the responsibility of the purchaser. Any damage in transit will be the responsibility of the carrier or at the risk of the purchaser.

**PURCHASER'S REMEDIES FOR A DEFECTIVE SNOWPLOW, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ARE LIMITED TO THE REMEDY PROVIDED BY THIS WARRANTY; AND, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, SUPERPLOW, LLC WILL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE SNOWPLOW, WHETHER BASED ON SUPERPLOW, LLC BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE OR STRICT LIABILITY.**

Some states do not allow the exclusion of limitation of consequential or incidental damages, so the above limitation or exclusion may not apply to you.

### **PROCEDURE FOR OBTAINING WARRANTY PERFORMANCE**

Within ten (10) days after any defect in a snowplow arising during the warranty period becomes known, the purchaser of the snowplow must notify an authorized distributor or dealer of the claim defect, in writing, and provide proof of original purchase. If the authorized distributor or dealer requests, the purchaser must return the snowplow, with all transportation charges prepaid, to the authorized distributor or dealer. Any damage in transit will be the responsibility of the carrier or at the risk of purchaser.

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## Limited Commercial Warranty

### Coverage

SuperPlow, LLC warrants to each purchaser of a SuperPlow® snowplow for other than personal, family or household use that the snowplow will, for a period of one (1) year after original purchase, to be free from defects in material and workmanship. SuperPlow, LLC warrants pumps, electrical accessories, service parts and components purchased separately for a period of one (1) year after original purchase to be free from defects in material and workmanship. SuperPlow, LLC does not authorize any party, including its authorized distributors or dealers, to offer any other warranty on behalf of SuperPlow, LLC. Upon expiration of the warranty periods, SuperPlow, LLC will have no further liability related to the snowplow, except with respect to warranty claims arising during the warranty periods.

**THIS WARRANTY IS OFFERED IN LIEU OF ANY OTHER EXPRESS WARRANTY; AND, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ALL IMPLIED WARRANTIES, INCLUDING (BUT NOT LIMITED TO) THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.**

Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state

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This warranty shall not apply to finish or any parts not furnished by SuperPlow, LLC or any damage caused by such parts, nor does it cover any snowplow subjected to misuse, neglect, accident, other than ordinary recommended use or service, improper installation, maintenance or storage, or repair or alteration by anyone except SuperPlow, LLC. Further, attachment of a SuperPlow® snowplow to a vehicle, including any necessary modification of the snowplow and/or the vehicle, is entirely at the purchaser's or installers risk and expense, and compliance with applicable motor vehicle regulations is the responsibility of the installer. SuperPlow will not be responsible for any expense related to parts or labor which is unrelated to defects in material or workmanship of a SuperPlow® snow plow.

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**PURCHASER'S REMEDIES FOR A DEFECTIVE SNOWPLOW, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ARE LIMITED TO THE REMEDY PROVIDED BY THIS WARRANTY; AND, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, SUPERPLOW, LLC WILL IN NO EVENT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES ARISING OUT OF THE USE OF, OR INABILITY TO USE, THE SNOWPLOW, WHETHER BASED ON SUPERPLOW, LLC BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE OR STRICT LIABILITY.**

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## INSTALLING PLOW

USE CAUTION: KEEP HANDS AND FEET AWAY FROM PLOW BLADE

### Mounting Plow on Vehicle

1. Install fully charged battery per instructions.
2. Wheel plow to hitch. Inspect hitch & plow end (part that slides into hitch) for ice and debris. Remove if necessary. Insert plow into receiver. If plow will not slide freely into receiver, raise plow **one click at a time** with ratchet strap. At the same time, add pressure pushing plow forward into receiver.
3. Insert hitch pin, and 7 pin charging connector.
4. Unhook hitch safety chain from plow cart and attach to the vehicle.
5. Remove cart:
  - o Release ratchet strap tension and remove hook from plow. Note: this is done by pressing the ratchet strap handle downward.
  - o Raise plow and remove cart
6. Remove over the road safety chain snap.
7. You are now ready to begin plowing.

### Removing Plow from Vehicle

1. Raise Plow
2. Attach “over the road” safety chain.
3. Place cart under plow as far as possible, centering on plow
4. Lock cart wheels.
5. Lower the plow onto the cart, **Note: Push hydraulic cylinder ram completely down (failure to do this will make it nearly impossible to remove plow) Press remote control button 2 again to shut off float feature.** Note: if button 2 is not depressed the “float” feature will stop in 10 minutes automatically.
6. Unplug charging cable, and remove hitch pin.
7. Remove hitch safety chain from vehicle and attach to cart.
8. Hook ratchet strap to plow in ring provided.
9. Unlock cart wheels
10. Ratchet up one click at a time.
11. After each click pull on cart until plow slides freely, remove plow.