

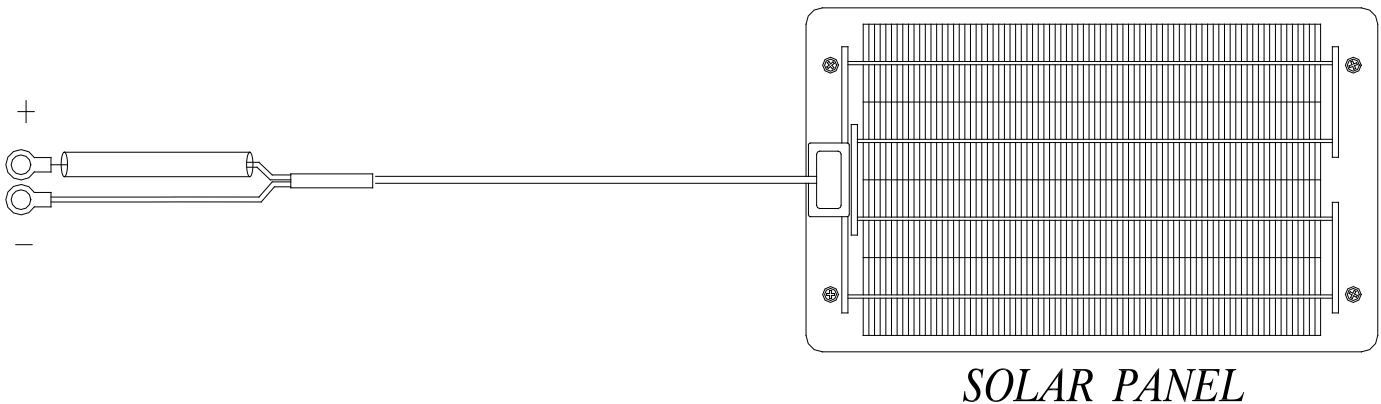


SOLAR PANEL

12 & 24 VDC

INSTRUCTIONS

(Applies to P/Ns 4110020 & 3641357)



1 SPECIFICATIONS

1.1 TECHNICAL DATA

Model	4110020	3641357
Solar Panel Operating Voltage	12VDC	24VDC
Solar Panel Weight	3 lbs.	3 lbs.
Solar Panel Power	10 Watts	10 Watts
Current at PMax	.58A	.29A
Voltage at PMax	17.3V	34.6V
Short Circuit Current	.66A	.33A
Open Circuit Voltage	21.3VDC	42.6VDC
Mounting Screws	(4) included	(4) included
Overall Dimensions	10.5" x 17.5"	10.5" x 17.5"

1.2 OPTIONAL EQUIPMENT

The following options are available which enable you to customize your railway for your particular operation. Installation instructions are provided as part of each option kit.

1. Solar panel controllers or Regulators are used in a solar system to control the charging of the battery(s) by the solar panel.

2 INSTALLATION AND SETUP

2.1 SOLAR PANEL MOUNTING

The solar panel must be mounted in a suitable location. Mount the solar panel so that it faces toward the south and angled toward the afternoon sun. Route the plug end of the solar panel through the flexible cable boot in the back of the control box or battery box.

2.2 MAKING POWER CONNECTIONS 12V SOLAR PANEL

1. Refer to figure 2-1. Attach the white solar panel lead to the positive battery terminal, and the black lead to the negative terminal. Tighten each wing nut with a pair of pliers, as even a slightly loose connection can cause the battery terminals to heat up. Keep battery terminals clean with a corrosion protective coating.



WARNING:

FOLLOW THE SAME SAFETY RULES WHEN WORKING INSIDE THE POWER SUPPLY BOX AND AROUND THE BATTERY THAT APPLY TO ANY CAR OR BOAT BATTERY. A BATTERY CAN EXPLODE AND CAUSE PERSONAL INJURY AND/OR EQUIPMENT DAMAGE.

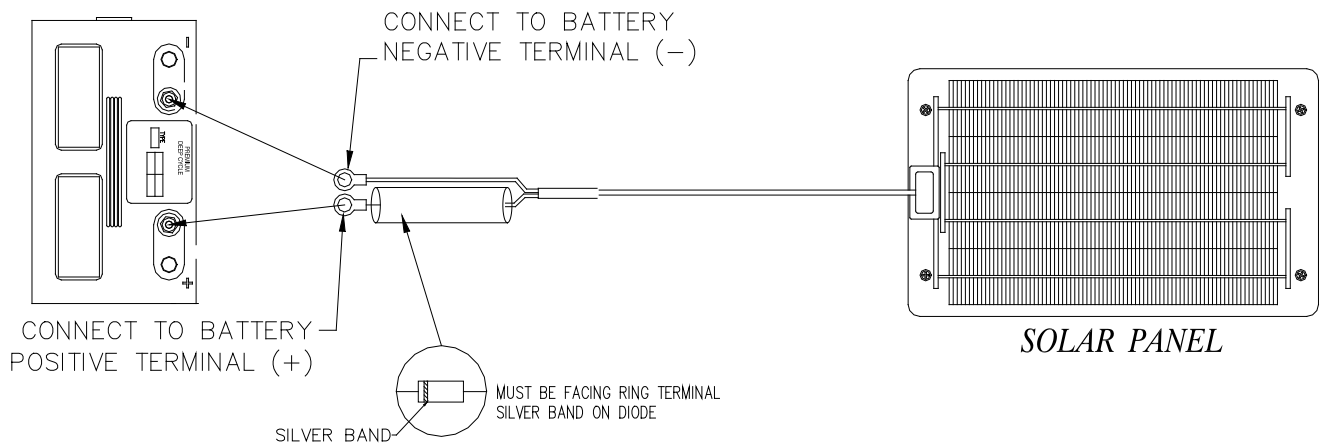
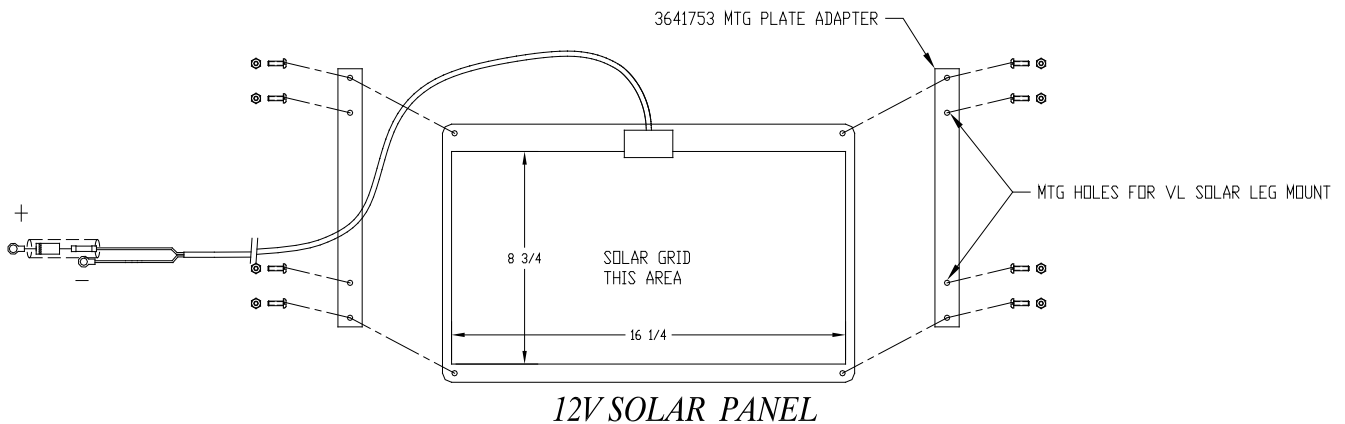


Figure 2-1
12V SOLAR PANEL W/RING TERMINALS



4110021 HL/HVL 12V SOLAR PANEL (ALTERNATE)

2.3 MAKING POWER CONNECTIONS 24V SOLAR PANEL

1. Refer to figure 2-2. Attach the white solar panel lead to the positive battery terminal, and the black lead to the negative terminal. Tighten each wing nut with a pair of pliers, as even a slightly loose connection can cause the battery terminals to heat up. Keep battery terminals clean with a corrosion protective coating.

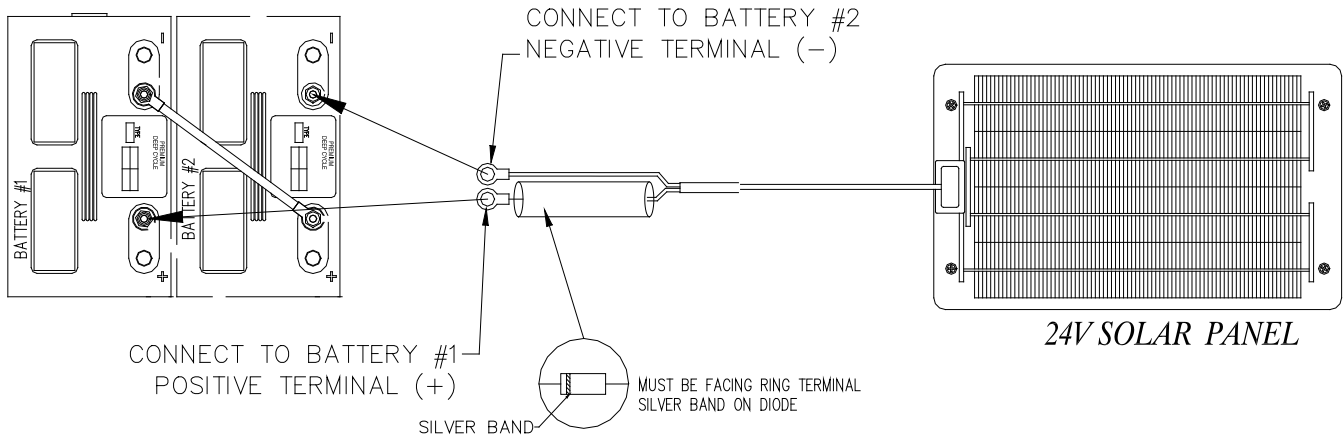


Figure 2-2
24V SOLAR PANEL W/RING TERMINALS

3 TROUBLESHOOTING

The following chart is intended to assist with troubleshooting your hydraulic lift. While not all inclusive, the chart outlines the most common causes of a problem and the recommended course of action.



CAUTION:

IF THE PROBLEM WITH THE SOLAR PANEL IS NOT CERTAIN, ALWAYS FOLLOW THE MANUFACTURER’S WARRANTY POLICY BEFORE ANY OTHER REPAIR OR MAINTENANCE IS ATTEMPTED.



WARNING:

NEVER ALLOW ANYBODY TO WORK IN OR ON THE BOAT WHEN IT IS SUSPENDED ABOVE THE WATER ON THE LIFT.



WARNING:

DO NOT SERVICE THE LIFT WITH YOUR BOAT ON THE LIFT. DO NOT SERVICE THE HYDRAULIC LIFT WITH LOAD TUBES IN THE RAISED POSITION. DO NOT DISCONNECT ANY HYDRAULIC LINES UNLESS THE LIFT IS COMPLETELY LOWERED.

SYMPTOM	CAUSE AND CORRECTIVE ACTION
Battery does not keep a charge.	<p>Check the battery fluid levels, age, and time of last booster charge. The battery must be booster charged at the beginning and end of the season using a 10A charger.</p> <p>Verify solar panel or AC charger is plugged in correctly.</p> <p>Check the voltage output of the solar panel. With solar panel unplugged, output should be about 14-18 volts (12V solar panel) or 28-36 volts (24V solar panel) when exposed to light.</p> <p>Verify that the polarity (positive or negative) of the solar panel matches the battery’s polarity.</p>
Battery terminal becomes hot.	Verify cable is clean and tight on battery terminal
Solar Panel- no output.	<p>Verify that the solar panel gets an adequate amount of light and the lift usage is within the monthly seasonal limits. The solar panel may be mounted up to 50 feet away from the battery if necessary.</p> <p>Verify the solar panel has a voltage output. Unplug solar panel and check voltage at plug with voltmeter. The voltage should be between 17-21V (12V panel) or 34-42V (24V panel) in direct sunlight. If not, the solar panel, cable or diode could be damaged.</p>

SOLAR PANEL TEST

Test #1- Open Circuit Voltage

1. Remove solar panel from the battery terminals.
2. Refer to figure 3-1. Using a multimeter, set the meter to read 'Volts DC'. Check voltage across the two solar panel terminals. A +17 to +21V (12V solar panel) or +34 to +42V (24V solar panel) should be present when solar panel is in the sunlight. If not, the blocking diode in the positive cable is bad. Go to Test #2- Diode test.

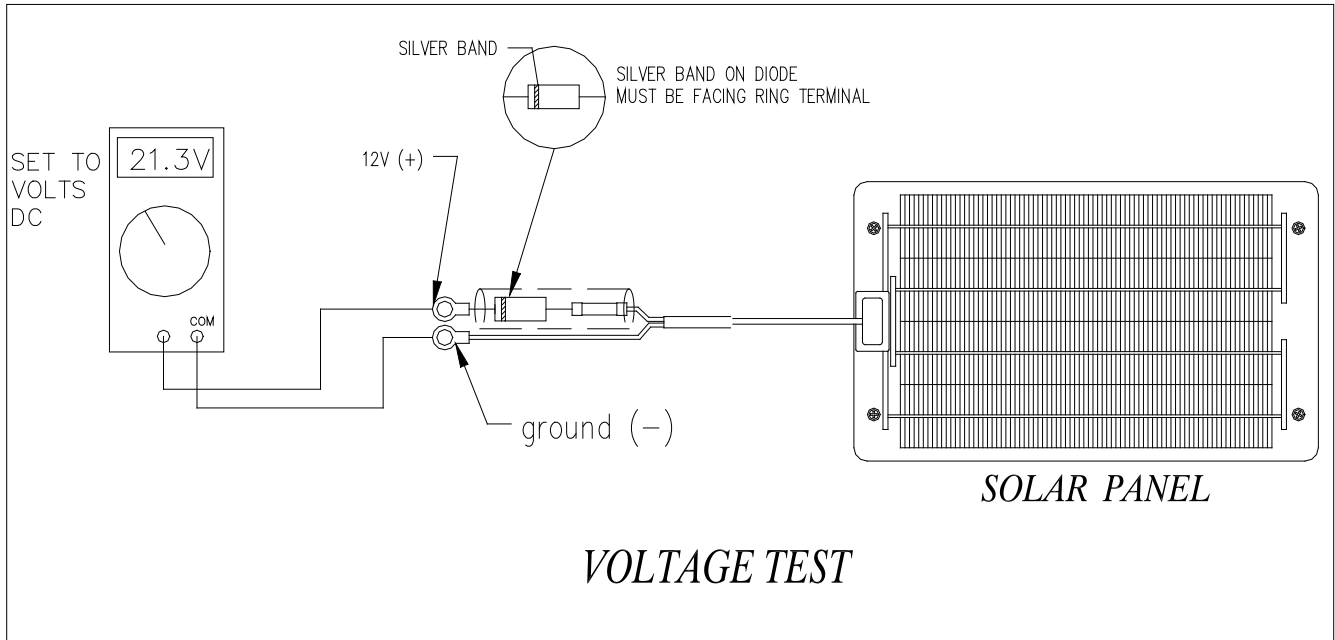


Figure 3-1

Test #2- Blocking Diode

1. Remove solar panel from the battery terminals.
2. Refer to figure 3-2, Diode test #1. Using a multimeter, set the meter to read 'Ohms'. The 'COM' probe must be placed on the diode as shown in Diode Test #1. Check ohms resistance across the blocking diode. A zero or low ohms reading should be present across the diode. If not, reading a high resistance, the diode is bad or diode is installed backwards.
3. Refer to figure 3-2, Diode test #2. This test is similar to step #2 but the meter probes are reversed. The 'COM' probe must be placed on the diode as shown in Diode Test #2. Check ohms resistance across the blocking diode. A high resistance ohms reading should be present across the diode. If not, reading a zero or low, the diode is backwards.

Note:

- If in Diode test #1 the resistance is zero or low and in Diode test #2 the resistance is high, then the diode is good and installed correctly.
- If in Diode test #1 the resistance is high and in Diode test #2 the resistance is zero or low, then the diode is good but installed backwards.
- If in Diode test #1 the resistance is high and in Diode test #2 the high resistance is high, then the diode is bad and must be replaced.
- If in Diode test #1 & Diode test #2 the resistance is zero or low, then the diode is bad or missing.

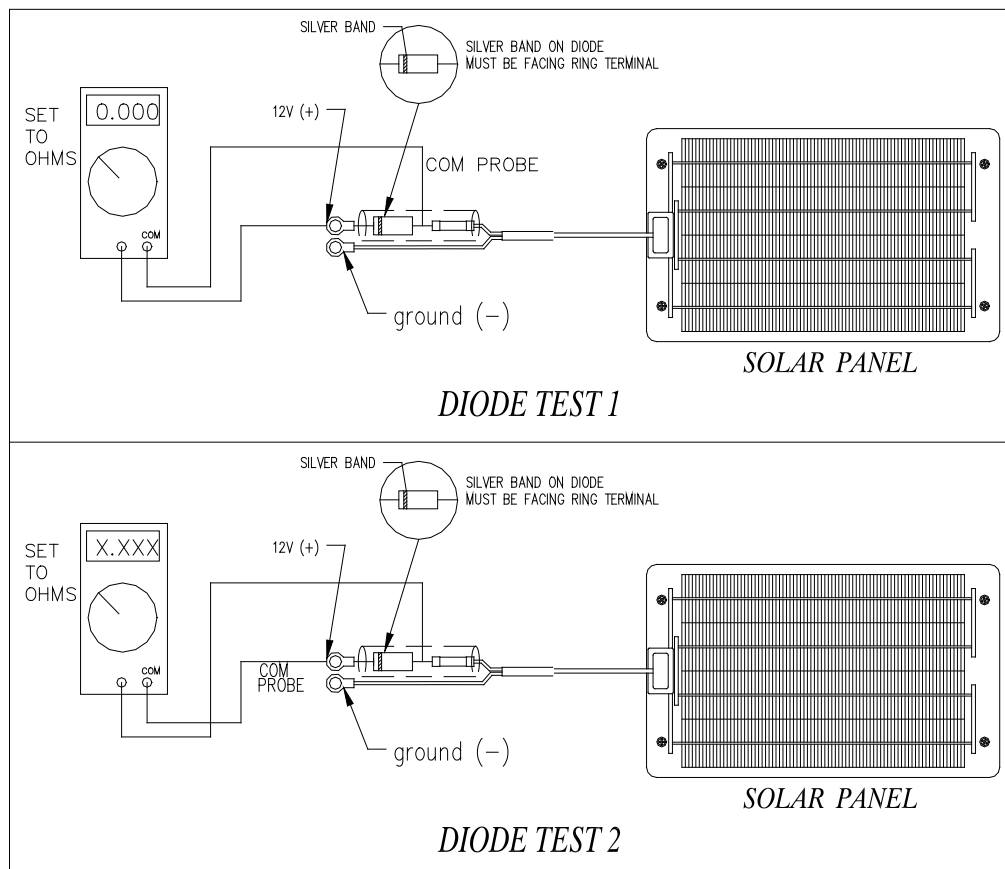


Figure 3-2

LIMITED PRODUCT WARRANTY

Reimann & Georger Corporation Marine Products

RGC Marine products, hereafter referred to as the “Manufacturer”, extend this limited warranty to the original purchaser of this product. The original purchaser, hereinafter referred to as the “Buyer”, is defined as the first legal owner of this product other than an authorized distributor or dealer who has bought the product from the Manufacturer for resale to the public. **The Buyer must complete and return the Warranty Registration section of the provided Warranty Card to make this limited warranty effective.**

CONSUMER PRODUCT PROVISIONS

I. ARTICLE I—CONSUMER PRODUCT PROVISIONS: THE FOLLOWING PROVISIONS SHALL BE APPLICABLE IF THIS PRODUCT IS BEING PURCHASED FOR PERSONAL, FAMILY OR HOUSEHOLD PURPOSES.

THE CONSUMER PRODUCT PROVISIONS CONTAINED IN THIS ARTICLE I SHALL APPLY UNLESS THIS PRODUCT IS BEING PURCHASED SOLELY FOR COMMERCIAL OR INDUSTRIAL USE, IN WHICH EVENT THE PROVISIONS CONTAINED IN ARTICLE II BELOW SHALL APPLY AND THE PROVISIONS CONTAINED IN THIS ARTICLE I SHALL BE INAPPLICABLE.

A. 1-YEAR LIMITED WARRANTY

The Manufacturer warrants to the Buyer that all supplied parts shall be free of defects in material and workmanship for a period of one (1) year from date of original purchase. This limited warranty covers the cost of all parts and labor needed to repair any item that is found to be defective in material and workmanship. Items covered include hydraulic unit, cylinders, hoses, bearings and remote control.

B. 15-YEAR LIMITED WARRANTY ON HL SERIES ALUMINUM FRAME EXTRUSION

The Manufacturer warrants to the Buyer that the frame and extrusions shall be free of defects in material and workmanship for a period of fifteen (15) years from date of original purchase. This limited warranty covers the cost of all parts and labor needed to repair any item that is found to be defective in material and workmanship.

C. MANUFACTURER’S OBLIGATIONS

The Manufacturer’s sole obligation under either of these limited warranties is the replacement or repair, at the Manufacturer’s discretion, of parts found to be defective.

D. NO SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES

IN NO EVENT SHALL THE MANUFACTURER BE LIABLE TO THE BUYER OR ANY PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL LOSSES OR DAMAGES CONNECTED WITH THE USE OF THE PRODUCT UNDER WARRANTY. SUCH DAMAGES FOR WHICH THE MANUFACTURER SHALL NOT BE RESPONSIBLE INCLUDE, BUT ARE NOT LIMITED TO, LOST TIME AND CONVENIENCE, LOSS OF USE OF THE PRODUCT, THE COST OF A PRODUCT RENTAL, COSTS OF GASOLINE, TELEPHONE, TRAVEL, OR LODGING, THE LOSS OF PERSONAL OR COMMERCIAL PROPERTY, AND THE LOSS OF REVENUE.

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

E. NO LIABILITY IN EXCESS OF PURCHASE PRICE

IN NO EVENT SHALL THE MANUFACTURER’S OBLIGATIONS UNDER THIS LIMITED WARRANTY EXCEED THE PURCHASE PRICE OF THE PRODUCT.

F. NO EXTENSION OF STATUTE OF LIMITATIONS

ANY REPAIRS PERFORMED UNDER EITHER OF THESE WARRANTIES SHALL NOT IN ANY WAY EXTEND THE ONE-YEAR AND FIFTEEN-YEAR STATUTES OF LIMITATIONS CONTAINED IN THIS LIMITED WARRANTY.

G. PROCEDURE FOR WARRANTY PERFORMANCE

If the product fails to perform to the Manufacturer's specifications, the Buyer must contact the dealer from whom the product was purchased. The Buyer must provide the dealer with the applicable model and serial numbers, the date of purchase, and the nature of the problem.

H. PREAPPROVAL OF LABOR COSTS

All labor costs related to a dealer's performance of the warranty obligations under this limited warranty must be pre-approved by Reimann & Georger Corp. Marine Products.

I. NO OTHER EXPRESS WARRANTIES

THE MANUFACTURER IS NOT SUBJECT TO ANY EXPRESS WARRANTIES OTHER THAN THOSE SET FORTH ABOVE.

J. LIMIT ON DURATION OF IMPLIED WARRANTIES

THE DURATION OF ANY IMPLIED WARRANTIES UNDER APPLICABLE STATE LAW RELATING TO THE PURCHASE OF THIS PRODUCT SHALL BE LIMITED TO A PERIOD OF ONE (1) YEAR FROM THE DATE OF PURCHASE.

Some States do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

K. QUESTIONS REGARDING LIMITED WARRANTY

Any questions regarding this limited warranty or the procedure which the consumer should follow in order to obtain performance of any warranty obligation may be addressed to either the dealer from whom this product is purchased or to Reimann & Georger Corp. Marine Products, P.O. Box 681, Buffalo, NY 14240.

L. EXCLUSIONS FROM LIMITED WARRANTY. THIS LIMITED WARRANTY DOES NOT COVER ANY OF THE FOLLOWING:

1. Equipment which has been abused, damaged, used beyond rated capacity, or which is damaged or has defects caused by repairs or service completed by persons other than authorized service personnel.
2. Costs of repairing damage caused by environmental factors which include, but are not limited to, airborne fallout, chemicals, tree sap, salt, ocean spray, and water hazards.
3. Damage caused by acts of God which include, but are not limited to, hailstorms, windstorms, tornadoes, sandstorms, lightning, floods, and earthquakes.
4. Damage under conditions caused by fire or accident, by abuse or negligence, by improper installation, by misuse, by incorrect operation, by "normal wear and tear", by improper adjustment or alteration, by alterations not done by the Manufacturer, or by failure of product parts from such alterations.
5. Costs of repairing damage caused by poor or improper maintenance, costs of normally scheduled maintenance, or the cost of replacing any parts unless done as the result of a repair covered by your one-year limited warranty.
6. Costs of modifying the product in any way once delivered to the Buyer, even if such modifications were added as a production change on other products made after the Buyer's product was built.

M. RIGHT TO MODIFY PRODUCT

The Manufacturer has the right to modify this product at any time without incurring any obligation to make the same or similar modifications on products previously purchased.

N. NO AUTHORITY TO ALTER WARRANTY

No agent, representative, distributor or dealer has any authority to alter the terms of this warranty in any way.

O. SPECIFIC LEGAL RIGHTS

This warranty gives you specific legal rights and you may also have other rights, which vary, from State to State.

COMMERCIAL PRODUCT PROVISIONS

II. ARTICLE II—COMMERCIAL PRODUCT PROVISIONS: THE FOLLOWING PROVISIONS SHALL BE APPLICABLE ONLY IF THIS PRODUCT IS BEING PURCHASED SOLELY FOR COMMERCIAL OR INDUSTRIAL USE. IF THIS PRODUCT IS BEING PURCHASED FOR PERSONAL, FAMILY OR HOUSEHOLD PURPOSES, THE PROVISIONS CONTAINED IN THIS ARTICLE II SHALL NOT BE APPLICABLE AND THE PROVISIONS CONTAINED IN ARTICLE I ABOVE SHALL APPLY.

A. 1-YEAR LIMITED WARRANTY

The Manufacturer warrants to the Buyer that all supplied parts shall be free of defects in material and workmanship for a period of one (1) year from date of original purchase. This limited warranty covers the cost of all parts and labor needed to repair any item that is found to be defective in material and workmanship. Items covered include hydraulic unit, cylinders, hoses, bearings and remote control.

B. 5-YEAR LIMITED WARRANTY ON HL SERIES ALUMINUM FRAME EXTRUSION

The Manufacturer warrants to the Buyer that the frame and extrusions shall be free of defects in material and workmanship for a period of five (5) years from date of original purchase. This limited warranty covers the cost of all parts and labor needed to repair any item that is found to be defective in material and workmanship.

C. MANUFACTURER'S OBLIGATIONS

The Manufacturer's sole obligation under either of these limited warranties is the replacement or repair, at the Manufacturer's discretion, of parts found to be defective.

D. NO SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES

IN NO EVENT SHALL THE MANUFACTURER BE LIABLE TO THE BUYER OR ANY PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL LOSSES OR DAMAGES CONNECTED WITH THE USE OF THE PRODUCT UNDER WARRANTY. SUCH DAMAGES FOR WHICH THE MANUFACTURER SHALL NOT BE RESPONSIBLE INCLUDE, BUT ARE NOT LIMITED TO, LOST TIME AND CONVENIENCE, LOSS OF USE OF THE PRODUCT, THE COST OF A PRODUCT RENTAL, COSTS OF GASOLINE, TELEPHONE, TRAVEL, OR LODGING, THE LOSS OF PERSONAL OR COMMERCIAL PROPERTY, AND THE LOSS OF REVENUE.

E. NO LIABILITY IN EXCESS OF PURCHASE PRICE

IN NO EVENT SHALL THE MANUFACTURER'S OBLIGATIONS UNDER THIS LIMITED WARRANTY EXCEED THE PURCHASE PRICE OF THE PRODUCT.

F. NO EXTENSION OF STATUTE OF LIMITATIONS

ANY REPAIRS PERFORMED UNDER EITHER OF THESE WARRANTIES SHALL NOT IN ANY WAY EXTEND THE RESPECTIVE STATUTES OF LIMITATIONS CONTAINED IN THIS LIMITED WARRANTY.

G. WAIVER OF OTHER WARRANTIES

THESE EXPRESS WARRANTIES ARE IN LIEU OF AND EXCLUDE ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

H. PROCEDURE FOR WARRANTY PERFORMANCE

If the product fails to perform to the Manufacturer's specifications, the Buyer must contact the dealer from whom the product was purchased. The Buyer must provide the dealer with the applicable model and serial numbers, the date of purchase, and the nature of the problem.

I. PREAPPROVAL OF LABOR COSTS

All labor costs related to a dealer's performance of the warranty obligations under this limited warranty must be pre-approved by Reimann & Georger Corp. Marine Products.

J. EXCLUSIONS FROM WARRANTY. THIS LIMITED WARRANTY DOES NOT COVER ANY OF THE FOLLOWING:

1. Equipment which has been abused, damaged, used beyond rated capacity, or which is damaged or has defects caused by repairs or service completed by persons other than authorized service personnel.
2. Costs of repairing damage caused by environmental factors which include, but are not limited to, airborne fallout, chemicals, tree sap, salt, ocean spray, and water hazards.
3. Damage caused by acts of God which include, but are not limited to, hailstorms, windstorms, tornadoes, sandstorms, lightning, floods, and earthquakes.
4. Damage under conditions caused by fire or accident, by abuse or negligence, by improper installation, by misuse, by incorrect operation, by "normal wear and tear", by improper adjustment or alteration, by alterations not done by the Manufacturer, or by failure of product parts from such alterations.
5. Costs of repairing damage caused by poor or improper maintenance, costs of normally scheduled maintenance, or the cost of replacing any parts unless done as the result of a repair covered by your one-year limited warranty.
6. Costs of modifying the product in any way once delivered to the Buyer, even if such modifications were added as a production change on other products made after the Buyer's product was built.

K. RIGHT TO MODIFY PRODUCT

The Manufacturer has the right to modify this product at any time without incurring any obligation to make the same or similar modifications on products previously purchased.

L. NO AUTHORITY TO ALTER WARRANTY

No agent, representative, distributor, or dealer has any authority to alter the terms of this warranty in any way.

M. SPECIFIC LEGAL RIGHTS

This warranty gives you specific legal rights, and you may also have other rights, which vary, from State to State.