

autobimini lite



Installation and User's Manual

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About This Manual

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This manual was created for use by FFI Automation end users and OEM customers. OEM customers are encouraged to use material they deem appropriate for incorporation into their own end-user manual. Contact FFI Automation directly if you have questions, suggestions, or corrections to the manual.

Safety

FFI Automation considers the safety of its customers and end users of prime importance. Please read and follow the warnings and recommendations below to ensure correct and safe operation of the system.

Operate Safely

CAUTION

Before operating autobimini lite, thoroughly inspect the area around autobimini lite to verify that all passengers are in a safe position. Verify that no person is in an area that will interfere with the motion of the autobimini lite as serious injury could result.

Pinch Points

CAUTION

Moving parts, including autobimini lite arms can pinch, cut, or crush. Keep passengers clear and use caution when operating the unit.

Operation Limitations

CAUTION

The autobimini lite actuators are designed to overcome wind loads in order to operate in adverse weather conditions. However, do not operate autobimini lite in excessive high winds or boat speeds. High winds and boat speeds could result in product damage and/or personal injury. Do not attempt disassembly or repair while the boat is in motion.

Maximum Speeds

CAUTION

Observe the autobimini lite maximum operating speed limits. The maximum speeds are relative values inclusive of wind and boat speeds combined.

autobimini lite Position	Maximum Speed
Full UP Position	25MPH
Full UP Position (Front Support Arms down)	35MPH
RADAR Position	50MPH (boot installed)
Full DOWN Position	70MPH (boot/straps installed, highway speed)

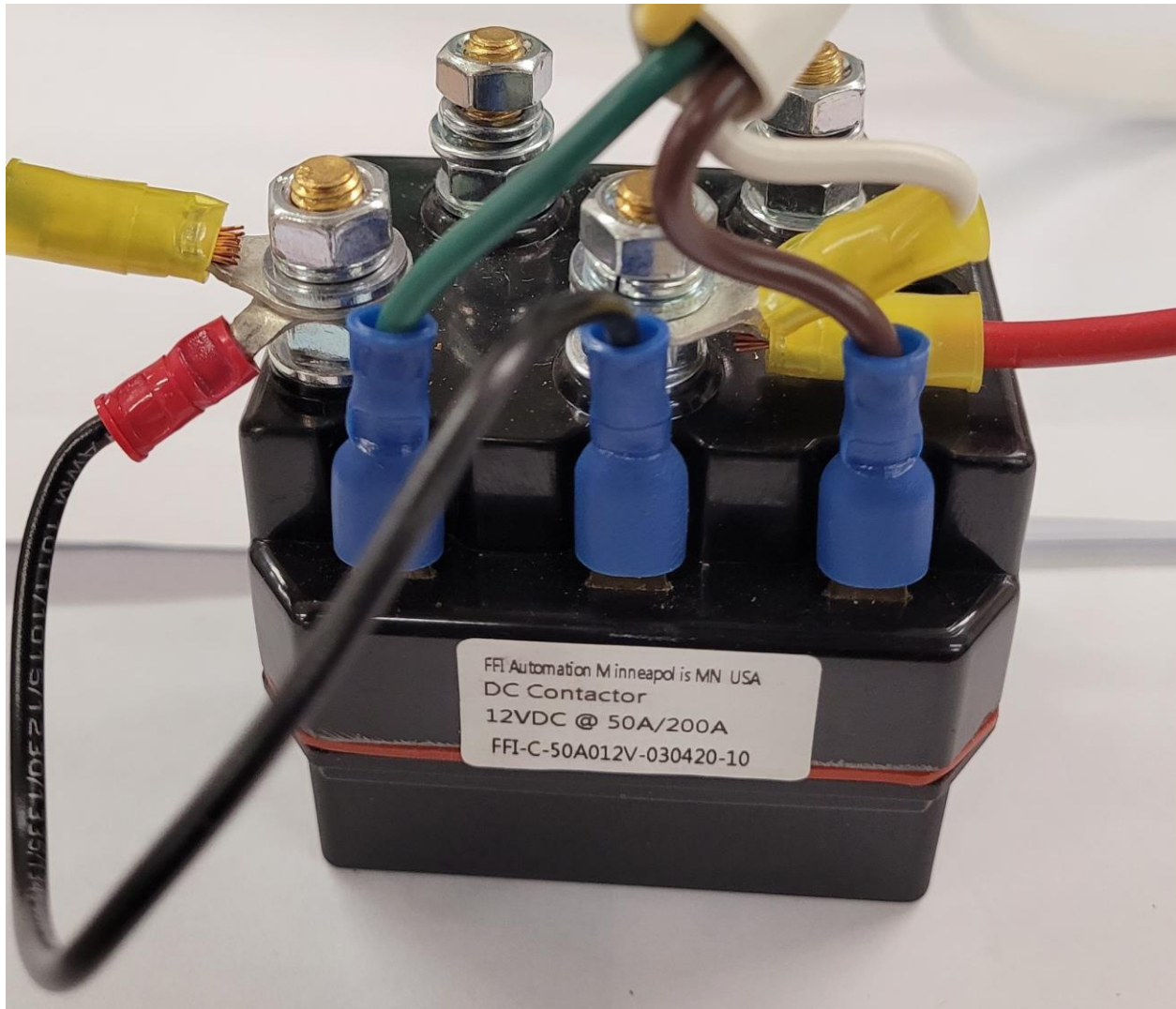
Caution: Do not operate autobimini lite in excessive high winds

Electrical hazards

There are no end-user serviceable components on the autobimini lite contactor or within the actuators. Users should consult their dealer for repairs or replacements if autobimini lite is damaged in any way, including water immersion.

System Components

autobimini lite Contactor



autobimini lite DC Reversing Contactor

autobimini lite 12VDC reversing contactor key features:

- Heavy Duty: 12VDC @ 50A continuous ratings.
- Integral Switch Terminals: The contactor has on-board terminals for connections to momentary console switch.
- Marine Grade Terminals: Brass bolts with nuts, washers and lock washers hold the battery and motor connections.
- Waterproof: IP65 rated construction to handle marine environments

Heavy Duty Marine Grade Construction

- Dual actuators with stainless steel yoke.



autobimini lite actuators available in powder coat black or silver

- Significantly heavier and more durable than competing brands.
- 4-bow sand blasted aluminum frame and stainless-steel fasteners.
- Worm Gear Technology: The built in worm gear inside the smart actuators protects the system from back-driving to ensure safe and reliable operation.
- UHMW: Ultra High Molecular Weight film provides frictionless aluminum frame sliding for years of maintenance free operation.
- UV protected and 600D solution dye canvas with double PTFE Teflon sewing and marine grade zippers.

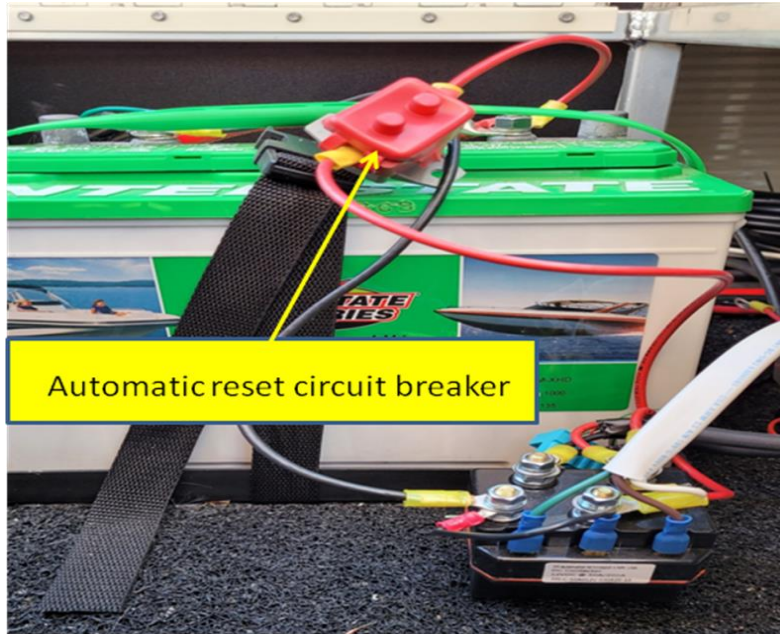


autobimini lite canvas colors (Beige, Black, Burgundy, Forest Green, Navy Blue, Pacific Blue, Silver) Supplied with matching zippered boot.

- Matching storage boot with marine grade zippers.
- Marine grade wiring with tinned copper wire.

Battery Powered: The autobimini lite operates on 12VDC battery power.

Resettable Circuit Breaker: The autobimini lite has built-in automatic reset circuit breaker protection. The circuit breaker will stop motion when the bimini moves to the hard UP and DOWN positions.

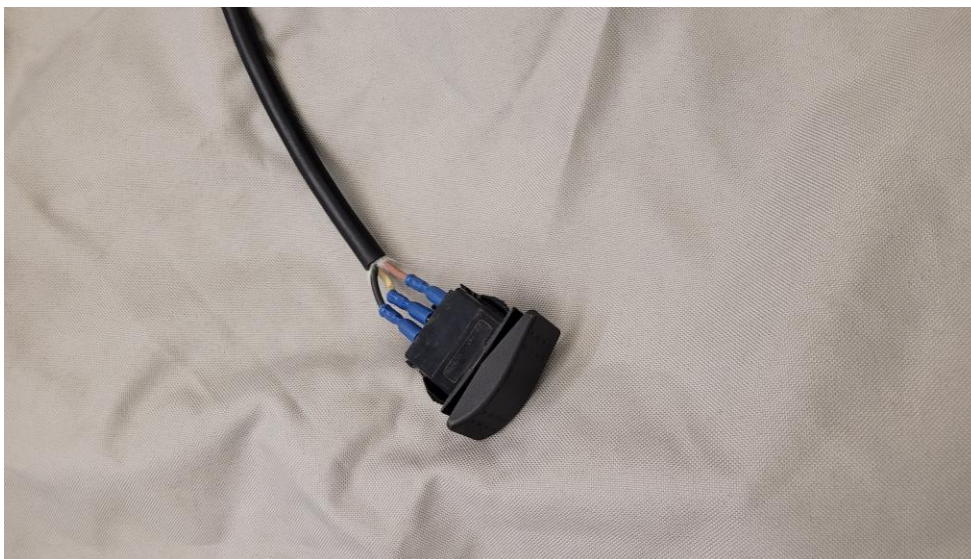


autobimini lite automatic reset circuit breaker

Adjustable Width: Telescoping frame adjusts to fit 92" to 102" wide pontoon or deck boats.

Premium Coverage: UV protected autobimini lite canvas top with generous 10-foot coverage.

Console Switch: Momentary console switch mounted in the helm control panel to operate the contactor that drives the motors up and down.



autobimini lite console switch with marine grade wiring

Front support arms: Two (2) front support arms are standard providing stability to the bimini frame and hard stop up position.



Front support arms are standard on autobimini lite

Installation Planning

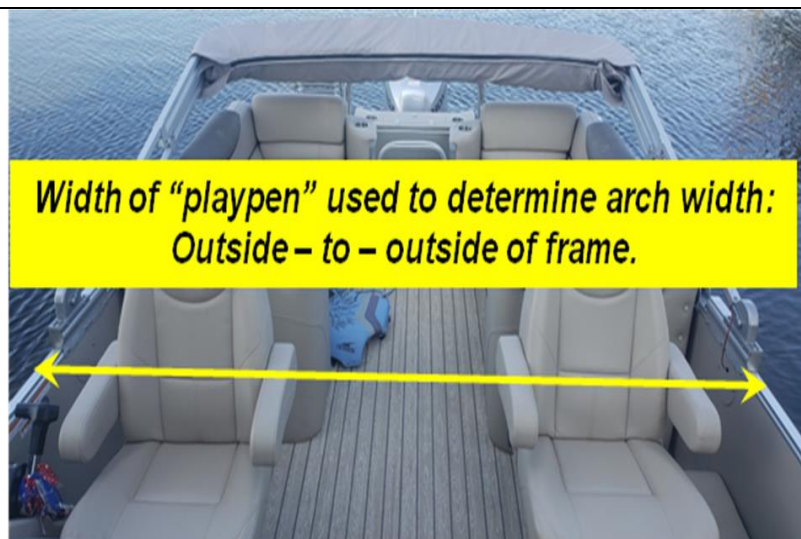
This section describes what the end installation looks like and preparation knowledge.



Installation with component names and relative locations

Planning for installation:

1. The 1st, 2nd, 3rd and 4th **ARCHES** and **RISERS** are assembled into sub-assemblies based on the playpen width. The risers connect to the arches using the supplied connector tubes.



2. The **DOWN POSITION** is where the 4th arch would rest with the rear support foot installed. Pick a location that is clear from passengers and similar to the bimini being replaced as typical.
3. The **NAVIGATION LIGHT** is not provided. The existing navigation light is used and wires routed through the 4th arch and riser. The autobimini lite canvas and boot has provisions (sewn holes) to support the navigation light installation. Cable grommets for wire routing are provided in the aluminum frame.



Navigation light installed on 4th arch. Access holes are built into canvas and boot

4. The autobimini lite **REVERSING CONTACTOR** should be mounted near the battery. The circuit breaker needs to be within 7 inches of the battery positive (+) post based on marine electrical codes.
5. The **REAR ARCH BRACKET** mounting location determines how far the front(1st arch) travels down. The **closer** the rear arch bracket is to the actuator, the **further down** the bimini front or 1st arch will travel. Pontoon boats do not travel “flat”. Thus, the user can select the desired position.
6. Two **ACTUATORS** are provided. The marine grade actuator cable provided has:
 - a. Two (2) motor power wires of sufficient gauge to reduce voltage drop.
 - b. Enough marine grade cable to run inside the playpen and underneath the pontoon to the contactor location. Attention to routing the actuator cable is suggested prior to installation. The marine grade cable doesn’t have to route inside the playpen aluminum.
7. The **CONSOLE SWITCH** is a momentary switch. The console switch allows for pushbutton operation at the control console located in the helm.
8. The most difficult installation tasks are:
 - a. Locating the actuators in the correct position. Clamps can be used to ensure the mounting location is correct before drilling any holes. Wiring and operating the actuators before a final installation is suggested to ensure correct and proper operation before routing all the wires through the pontoon.

Expert Tip: Protective cloth can be used to prevent scratches when mounting the actuators or brackets until the final mounting locations are determined.

- b. Routing the wiring for the actuators and console switch should be reviewed in advance. Typically, the pontoon will have existing wire path ways on both sides of the pontoon from existing electrical wiring and cabling. Investigate the best path to run the wires underneath the pontoon and secure wires near aluminum supports with cable ties (or other wire securing devices). Cable ties or other wire securing devices are not provided.



autobimini lite in full up position

Expert Tip: autobimini lite videos available on our YouTube channel at:
www.youtube.com/channel/UCpATtpEz15J6B5WQWU-PgA

Expert Tip: Additional pictures located at: www.autobimini lite.com/gallery

System Installation

This section describes how to install the system including mechanical assembly, electrical assembly and suggested order of assembly.

The general assembly process is as follows:

1. Gather and identify the components to be installed.
2. Remove any existing bimini.
3. Assemble the autobimini lite aluminum frame.
4. Mount the stern navigation light.
5. Mount the actuators.
6. Clamp the rear arch support brackets and attach 3rd and 4th arches.
7. Locate and wire the autobimini lite reversing contactor.
8. Install console switch.
9. Install arches.
10. Attach the canopy.
11. Set the rear arch support brackets' final locations.
12. Install the rear support feet.
13. Hold-down snap installation.
14. Install front support arms.
15. Wire navigation light
16. Install Canvas Boot Straps during high-speed travel.

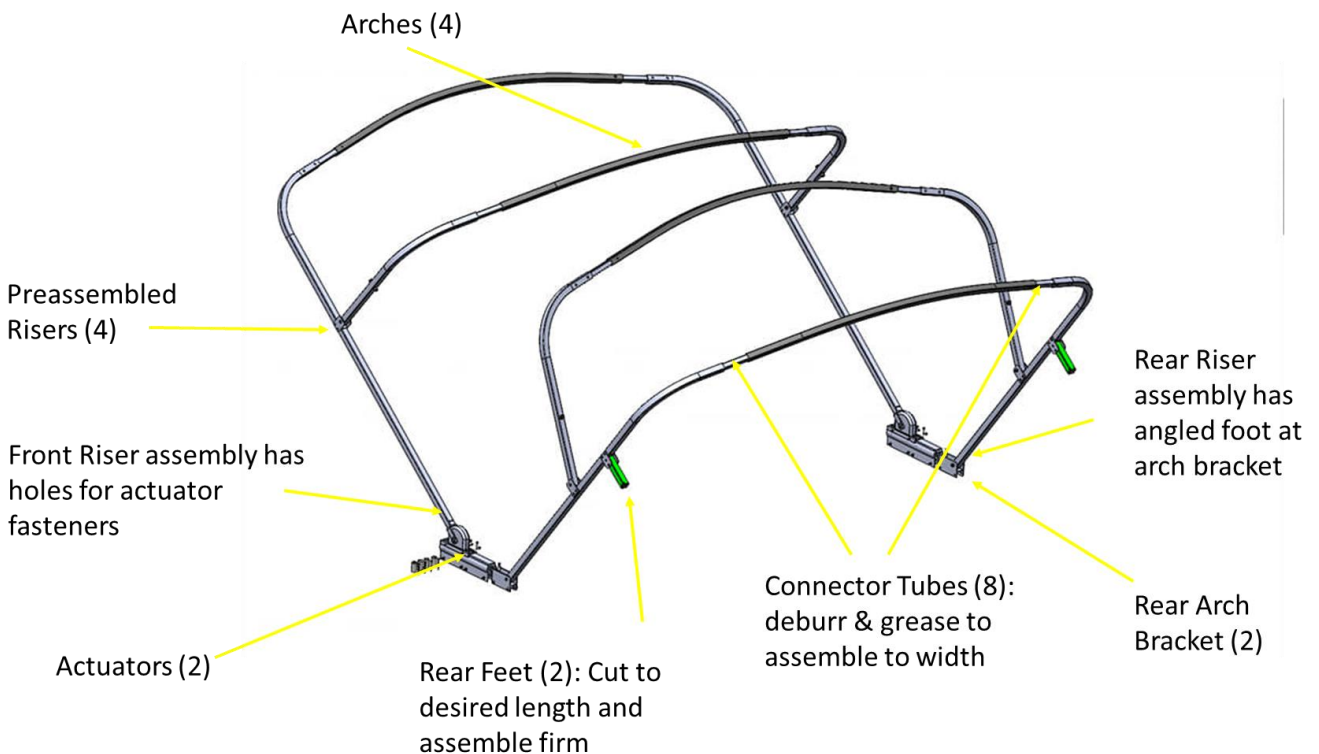


Radar position

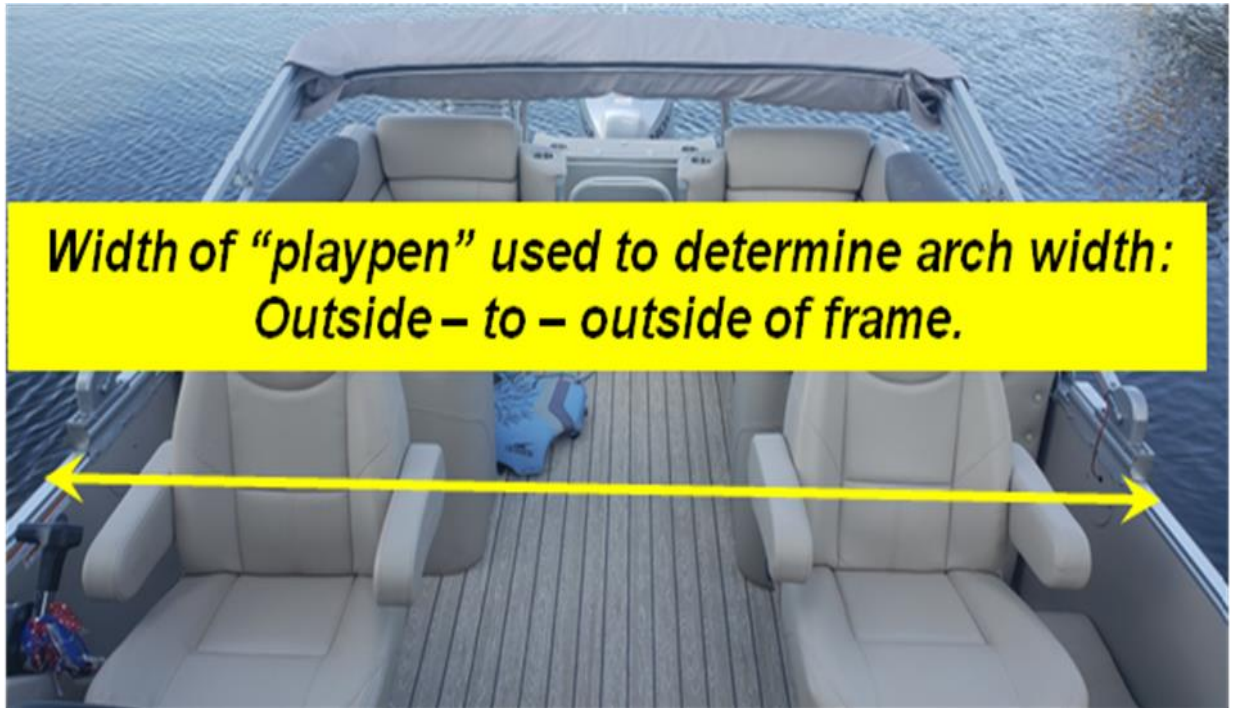
Installation

1. **Gather and identify the components to be installed.** At a minimum this will include:

- Two motor actuators with their mounting brackets and wiring
- Two rear arch mounting brackets
- Four riser arms
- Four bimini arches
- Eight arch connector tubes
- Two front support arms
- One autobimini lite reversing contactor
- Automatic reset circuit breaker and cabling
- Console switch with marine grade cable
- Assembly hardware
- Tools (tape measure, rubber hammer, portable drill, file, lube, socket set, screwdrivers, hacksaw, cloth, wire strippers, pencil)



2. **Remove any existing bimini.** Note the location of the bimini mounting points. This may aid in locating the placement of the new autobimini lite. Measure the width of the “playpen” – outside frame to outside frame – at the points where the new autobimini lite will be attached. See image below.



Measure the width of the pontoon playpen. This determines the aluminum frame arch width for assembly. Shown in down position with arches layered

3. **Assemble the autobimini aluminum frame.**
 - a. The frame assembly is provided with pre-drilled holes for a 99.5-inch-wide pontoon boat installation. New holes can be drilled using the 99.5-inch-wide existing holes as a guide. The pontoon installation may be different from 99.5 inches wide. Pontoon playpens will range from 98 inches wide to 101 inches wide, typically. Adjust the connector tube holes according to the measured width.
 - b. Deburr the outside ends of the insert tubes as well as the inside edges of the riser arm tubes and the inside edges of the arches – this will greatly ease assembly.
 - c. Install the predrilled portion of the connector tube into the riser arm and bolt this connection with one of the 10-24 x 1-1/2" bolts with nylon locknut.
 - d. Create the arch assembly by inserting each side of the riser/insert into an arch (lightly greasing the insert first may aid in smooth insertion). Adjust the insertion depth such that the overall width of the assembly equals the width measured in step 2. The exposed insert tube will usually be approximately 4 inches – see the image below.
 - e. Drill and bolt this connection together using a 3/16" drill bit and the corresponding hardware. There should be four bolted connections per arch.
 - f. Repeat this assembly for each of the four arches, **except for the 4th arch (stern) which will have the navigation light.**



Arches – connector tube - riser arm assembly shown bolted together (make sure all the connector tubes are same width for a square frame assembly)

4. Mount the stern navigation light.

- a. Using the navigation light hardware from previous bimini, attach the navigation light to the rearmost frame arch (4th arch).
- b. Route the wire through the arch, then through the riser frame after drilling the bolt holes but before assembling the arch. This will be the easiest way to route the wire through the frame.
- c. Use a “fishing wire” as necessary to properly route the wire to the bottom of the riser.

Expert Tip: Drill holes in the aluminum tubing before routing navigation wire.



autobimini lite with navigation light installed in 4th arch

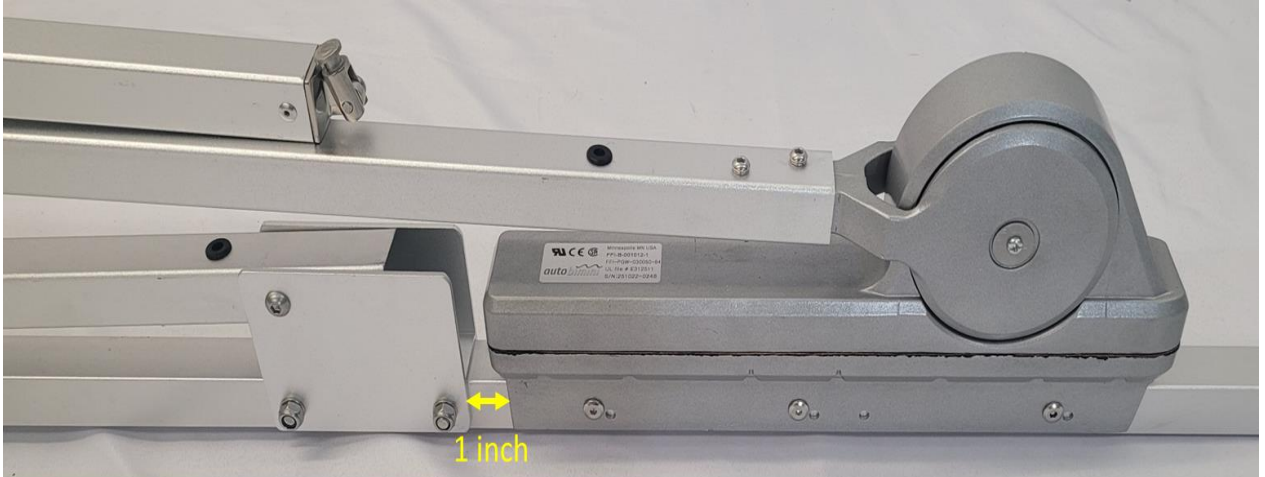
5. **Mount the actuators.**

- a. Place the front arch where it will sit when folded down. Make sure the folded bimini will rest at the desired stern location.
- b. Determine the approximate location of the actuator when the front arch is in the desired position. When possible, choose the actuator position where it is best supported by the pontoon playpen. If the playpen is vertical aluminum tubing structure, choose a location closest to vertical support (see picture).



Ideal location of autobimini lite actuator mounting location supported by aluminum playpen structure vertical support post.

- c. Note the location at the base of the riser where the actuator is connected and mark the boat frame. Make a similar mark on the opposite side of the boat at an equal distance from the stern.
- d. Align the actuator receiver location with the mark made in step 'b' such that the front arch will end up in the desired location.
- e. Determine where the actuator cable will route to the controller. A hole can be drilled in the frame to accommodate where the cable will be routed. The cable can be routed through or around the playpen – each installation will be different. Route the cable accordingly so the actuator mounting holes can be drilled.
- f. Make sure the actuators are tightly pressed to the top of the boat frame.
- g. Using the actuator holes as a guide, drill holes through the boat frame.
- h. Mount the actuators by bolting them to the frame using the provided hardware.



Riser arm slides onto actuator and bolts into position. The rear arch bracket will be located 1 inch from rear of actuator.

Expert Tip: When drilling holes in the playpen frame, check for existing wires before drilling.

6. **Clamp the rear arch support brackets and attach 3rd and 4th arches.**
 - a. Temporarily clamp the front of the rear arch support brackets to the “playpen” about 3 inches from the rear (stern end) of the actuator. Protective cloth can be used to prevent scratching the surface of the playpen.
 - b. Attach the 3rd and 4th aluminum frame assemblies to the rear arch support brackets using the supplied stainless-steel hardware. Do not bolt the rear arch support brackets to the boat playpen at this time. They will be bolted after the final position adjustments have been made.

Important: INSTALL AND DO NOT REMOVE the UHMW frictionless tape on the 3rd risers. This prevents wear between the aluminum frame assemblies when folded down.

7. **Locate and wire the autobimini lite reversing contactor.**
 - a. Locations near the battery are typical for the reversing contactor.
 - b. Run the battery power wires to the autobimini lite contactor using the circuit breaker connection wire.

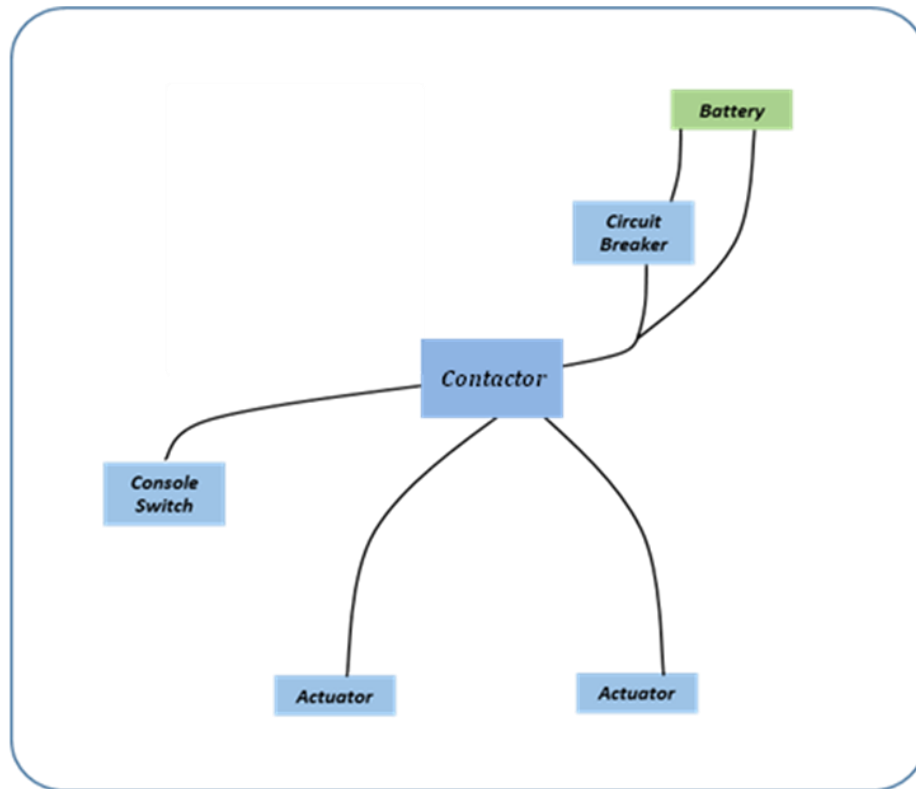
Important: The automatic reset circuit breaker protection must be located within 7 inches of the battery positive (+) post to comply with marine safety guidelines and electrical codes.

Expert tip: Wire the autobimini lite contactor and actuators without routing the wires to learn terminal connections in an easy and open environment.



autobimini lite reversing contactor located near the battery

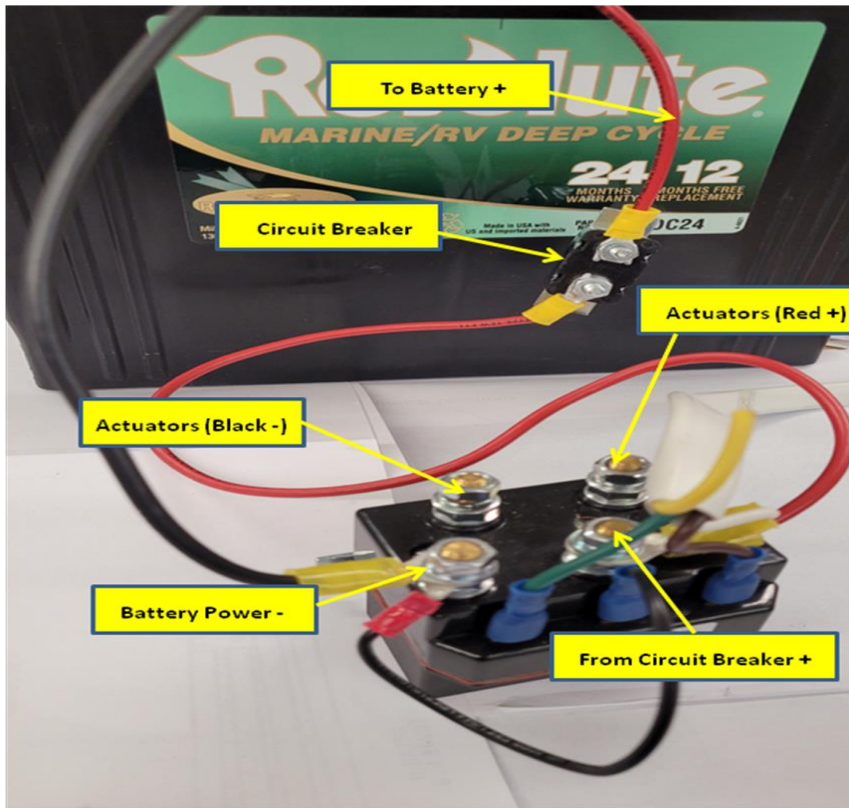
- c. Route the actuator wires from the contactor to the actuators. This will likely require routing across the bottom of the boat platform and through the playpen frame. Choosing how to route the wires is dependent on each individual installation as every pontoon is unique. Use common sense to obtain a safe and clean wire installation free of sharp edges. The actuator wires can be run below, through, or on top of aluminum frame members, using zip-ties as necessary for a clean installation.



autobimini lite wiring block diagram

Contactor Power Wire Connection Table

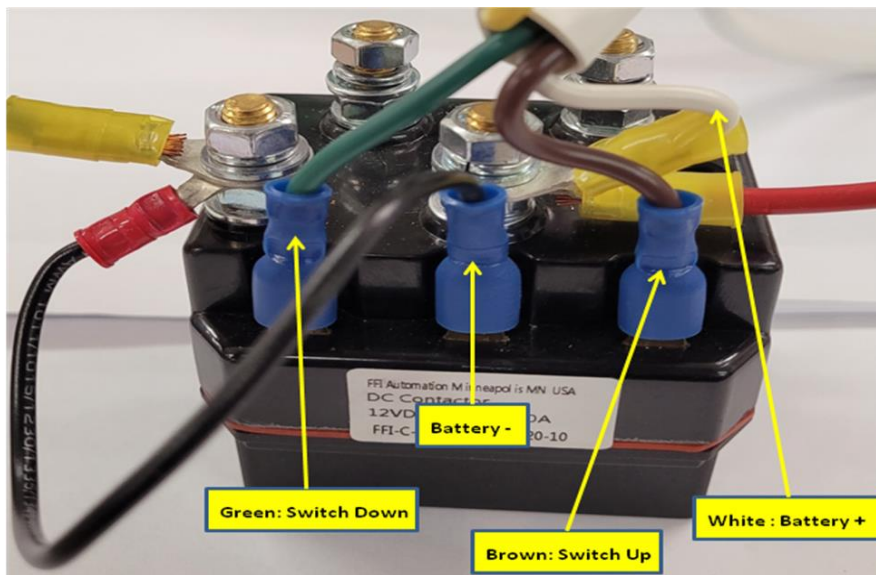
Wire & Function	Wire Color	Device Connected
Contactor Power +	Red	From Circuit Breaker (B+)
Contactor Power -	Black	From Battery (B-)
Contactor Actuator +	Red	From actuator 1
Contactor Actuator -	Black	From actuator 1
Contactor Actuator +	Red	From actuator 2
Contactor Actuator -	Black	From actuator 2



Contactor wiring connections

8. Install console switch.

- a. Insert the free end of the console switch wire through the console, pulling the length through, and snapping the switch in place.
- b. Route the wire appropriately from the console to the contactor location.
- c. Make the electrical connections to the contactor.



Reversing contactor console switch wiring

Important: Loose connections are the #1 cause of problems. Make sure the connections to the reversing contactor and switch are tight and secure.

9. **Install arches.**

- a. Press **DOWN** on the switch, 1 second at a time, until both actuator yokes are resting on the actuator frame creating a hard stop position to synchronize the actuator movements.
- b. Now use **UP** on switch to move the actuator yokes to an approximately vertical position that will permit the 1st and 2nd riser arms to be installed.
- c. Install the aluminum frame assemblies onto the actuator receivers.
- d. Bolt the 1st and 2nd aluminum frame arches to the actuator receivers. Use the supplied stainless steel bolts and nuts.



autobimini actuator installed, shown with wire routed through playpen (hidden)

Expert tip: Install and leave the UHMW tape on the 3rd risers. This allows the aluminum frame to slide frictionless for years of operation without wear.



UHMW (ultra high molecular weight) film allows frictionless sliding



Aluminum frame assembled to the pontoon (shown with canopy installed)

10. Attach the canopy.

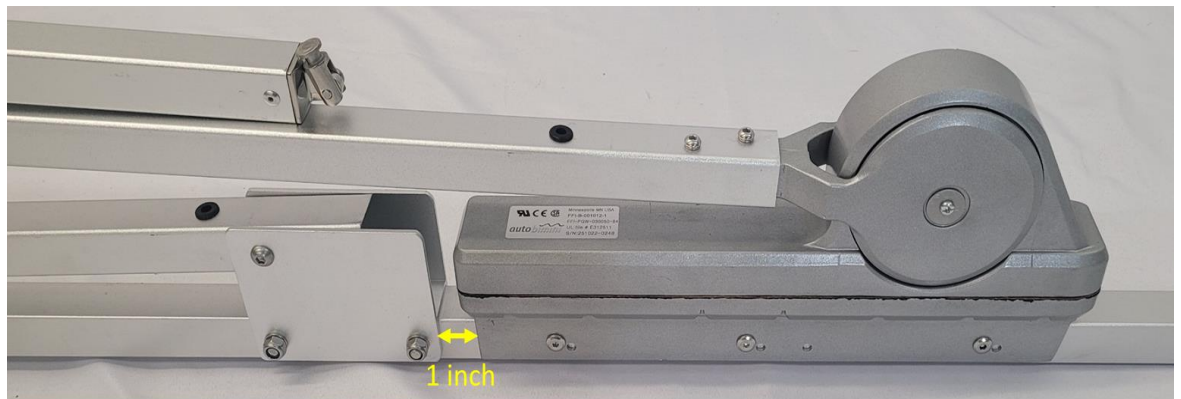
- a. Use the console switch to set the arms about halfway up.
- b. Starting at the front or 1st arch. Attach the canopy by zipping it to the respective aluminum frame members. Subsequently, attach the canopy by zipping it to the 2nd, 3rd and 4th arches. Actuate the arms forward with the switch as necessary to more easily reach all arches.



autobimini lite installation (shown without front support arms installed)

11. Set the rear arch support brackets' final locations.

- a. Raise the autobimini lite to its fully-extended position. **Be careful to not over-extend the canopy since the front support arms are not installed yet. It is possible to damage the canopy or frame if it is over-tightened.**
- b. Make sure the front 1st arch ends up at the final desired location. If it is too far forward, then lower the bimini, move the rear brackets toward the stern and retest. If too far back then lower the binimi and adjust the rear brackets to be closer to the actuators. Repeat this sequence until the front of the bimini ends up in the desired location. The **REAR ARCH BRACKET** mounting location determines how far the front or 1st arch goes down. The **closer** the rear arch bracket is to the actuator, the **further down** the bimini front or 1st arch will travel. Pontoon boats do not travel “flat”. Thus, the user can select the desired position. Keep in mind the desired tightness of the canopy as well.
- c. Drill and bolt the rear brackets to the boat frame using the brackets as the drilling guide.



Rear arch bracket location in close proximity to actuator (1 inch). This ensures the aluminum frame folds up nicely and the canopy boot can be installed over the aluminum frame.

Expert tip: Check the angled foot on the riser where it meets the rear arch bracket. The angled foot makes contact with the bracket surface to assist in tightening the canvas.



Angled foot on 4th aluminum frame riser

12. Install the rear support feet.

- a. Determine an appropriate location for the support posts that won't interfere with boat operation, won't contact seat upholstery, and will minimize any pinch hazard.
- b. **The typical length of the rear support feet is 6-10 inches long. Installing the appropriate length feet ensures the aluminum frame folds up well and the canopy boot fits nicely.**
- c. Bolt the support post brackets in place to the aluminum frame.
- d. Determine the required length of the support post by measuring from the top of the boat frame to the bottom of the post bracket. (The default length is 10 inches.)
- e. Cut the post to length.
- f. Drill 3/16" holes through the support post using the bracket as a drill guide.
- g. Bolt the post to the bracket. **The rear foot post should be secured solid so the foot does not move and can always be used in the down position. The foot creates a hard travel stop for the down position.**
- h. Repeat for the other side of the autobimini lite.



Rear support foot mounted on autobimini lite aluminum 4th riser and positioned to avoid interference with boat upholstery.

Expert tip: Pontoon furniture can be moved to prevent contact wear points. Locate the furniture securing screws and move the furniture appropriately to prevent contact wear.

13. Hold-down snap installation.

There are four snap attachments that can be used: one at each corner. To use them, first determine the appropriate locations for the snap hardware, drill pilot holes for the hardware, and screw the self-tapping snap hardware in place.

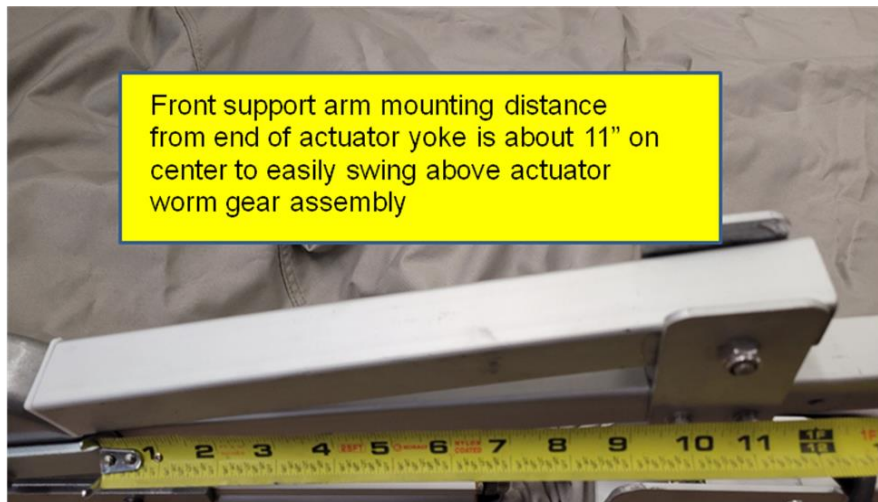
Expert tip: The canopy canvas is designed for 8.5 foot wide boats. If the pontoon or deck boat is only 8 feet wide, the hold down snaps will need to be installed to better secure the canopy.

14. Install front support arms.

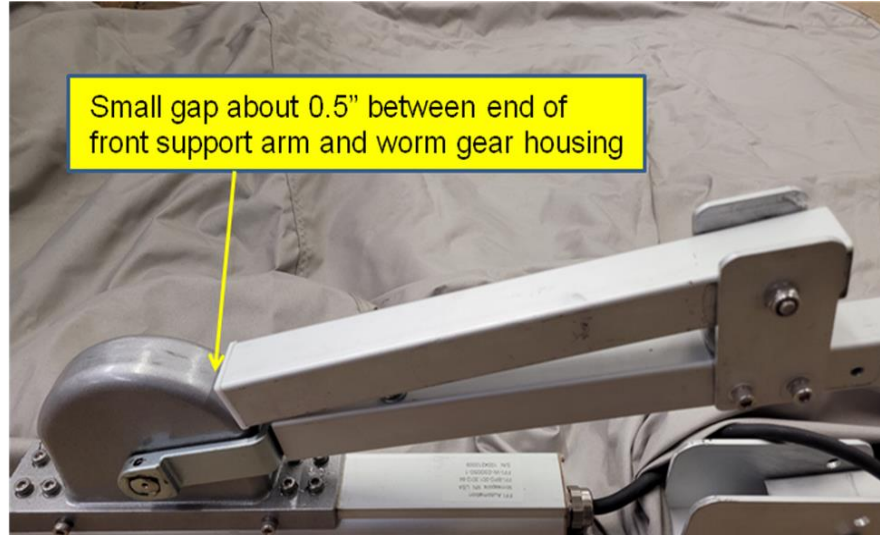
- a. Set the autobimini lite bimini at the up position.
- b. Remove the white protective cap at end of front support arm.
- c. Temporarily attach the front support arm to the front riser arm while the front support arm is tight to the playpen frame. This may require that the support arm be cut to fit the desired location.
- d. The recommended front support arm length is about 12". Any longer and the support arm will not swing into position automatically.



Front support arm length to about 12"



Front support arm mounted approximately 11" on center above actuator yoke



Front support arm gap is approximately 0.5" above worm gear housing

- e. Mount the front support arm bracket, bolting it in place.
- f. Repeat the installation for the other side
- g. Move the bimini off the playpen frame (down).
- h. Reinstall the white protective caps.
- i. Move the bimini up until the circuit breaker trips synchronizing the two actuator positions.

Expert tip: When moving the bimini up, ensure the front support feet engage stopping motion. When moving the bimini down, ensure the rear support feet engage stopping motion. This synchronizes the actuators positions with each cycle up and down to the hard stop locations.



autobimini lite installation with front support arms installed

15. **Wire the navigation light**

- a. Route the navigation wires through the 4th arch and riser
- b. Route or fish the wires through the aluminum frame
- c. The wiring for navigation light is the same as provided from the pontoon manufacturer. It should be re-connected the same way as was disconnected.



Navigation wires routed in rear riser, rear arch bracket and actuator grommet

16. **Install Canvas Boot Straps during travel.**

When autobimini is in the full down position with the boot secured, there are two (2) canvas boot straps that can be installed. The straps will hold the aluminum frame tighter and keep the boot secured to the aluminum frame. The 100cm boot straps are adjustable with built-in buckle.



Canvas Boot Strap installation location (secures frame/boot for high-speed travel)

General Operation

Automatic Bimini Operation:

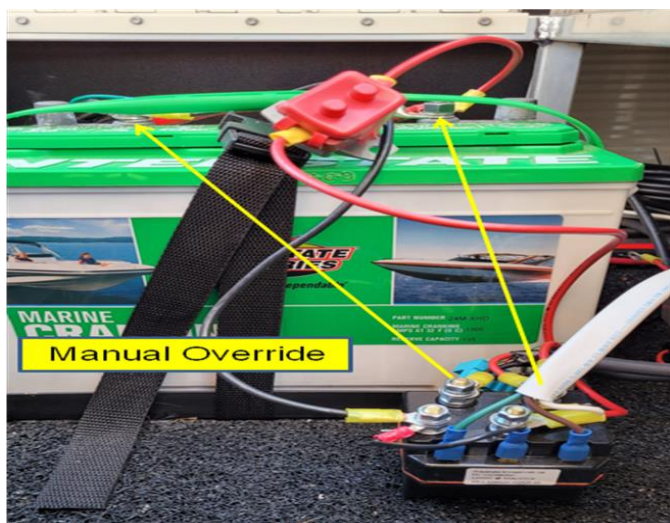
- Press hold the console switch UP to move the bimini UP. Wait until the front feet engage to ensure synchronized actuator position for UP position.
- Press hold the console switch DOWN to move the bimini DOWN. Wait until the rear feet engage to ensure synchronized actuator position for DOWN position.
- With the BOOT attached moving to RADAR position, press and hold console switch UP the desired amount of times to reach desired RADAR position. The circuit breaker may trip multiple times before the desired RADAR position is achieved. This is due to the entire weight of the 4-bow folded frame in the boot.

For safety, the operator must **PRESS and HOLD** the console switch. autobimini lite switches are **MOMENTARY** for safe operation. autobimini lite requires the user to be in control of moving the system at all times. If, at any time, the operator identifies an unsafe condition, the switch can be released and autobimini lite will cease operation.

Expert tip: When moving the bimini up or down, ensure the front or rear support feet engage stopping motion. This synchronizes the actuators positions with each cycle up and down to the hard stop locations.

Manual Override:

1. In the unlikely event the reversing contactor malfunctions, you can directly connect the actuator red + wires and actuator black – wires directly to the battery. Manual override will allow the bimini to be driven down for storage until the contactor can be repaired or replaced. **Caution: As this mode overrides the reversing contactor, it is important to touch both pairs of wires simultaneously to the battery to ensure synchronized operation. Use with caution in emergency situations.**
2. Disconnect the actuator red + wires and actuator black – wires from the contactor.
3. Directly connect to the battery. **Caution: The actuators will move instantly!**



Manual override is only used in emergency situations

Care and Maintenance

Aluminum frame and actuators: The autobimini lite system frame components are designed to be maintenance-free. The aluminum components are light sand blasted designed to look nice and provide protection from the elements. However, the sand blasting can be damaged if cleaned incorrectly with harsh chemicals. The best way to clean the metal elements of your system is to use a neutral cleaner like dish soap in tap water along with a non-abrasive sponge. Non-neutral solutions like bleach or baking powder can damage the aluminum. It is recommended that you test your cleaning method on an inconspicuous section before proceeding to clean the entire unit. You should never use petroleum-based products or abrasive metal cleaners on any part of the autobimini lite.

Canvas canopy: Owners should inspect the canvas at full extension to make sure there are no deteriorating portions of the canvas (canvas rips, broken threads, etc). Additionally, there are some basic steps that should be taken that will prolong the life of your canvas:

- General, light cleaning with a hose on a monthly basis with clear water to remove debris
- A thorough cleaning every 2-3 years, which may include fabric guard and/or mildew treatments. The canopy can be removed using the zippers to permit cleaning off the boat with a soap mixture. Do not put the canopy in a washing machine!
- Conduct an annual inspection of your canvas to ensure that all threading is intact
- Performing a pull test on the threading will determine whether that threading has become dry rotted from the elements

Troubleshooting

If you're having problems with your system, see the table below for potential solutions. autobimini lite is designed to send 12VDC battery power through a circuit breaker and contactor activated via a switch. A voltmeter is a good tool to help diagnose potential issues.

Problem	Possible Cause	Solution
Actuators don't move	Wiring not connected at contactor or connected improperly.	See installation manual for proper connections.
Actuators don't move	Circuit breaker failure.	Replace circuit breaker
Actuators don't move	Dead boat battery or power not reaching actuators.	Check battery voltage through connections with voltmeter. Make tight connections.
Actuators don't move	Contactor not engaged.	Contactor should "click" when engaged by switch. Check wiring.
Actuators don't move	Inoperative contactor.	The contactor should "click" when switch is pressed and 12VDC power at two terminals. Tighten connections or replace contactor.
Actuators don't move	Inoperative console switch.	Activating switch should produce 12VDC at two middle switch terminals. Tighten connections or replace switch.
Actuators not synchronized	One actuator inoperative	Use manual override mode to determine actuator operation. Replace actuator.
Actuators not synchronized	Actuators working, but out of synchronization.	Move to full down position until circuit breaker trips. Make sure circuit breaker trips for every full up or down to hard stop.
Canopy won't fully extend	Obstructions prevent movement	Remove obstructing material(s).