



# Motorized Gemini Owner's Manual

Model Number: MGA81G16--3

## Important Startup Instructions

1. Read the Owners Manual thoroughly before first use.
2. Charge the Motorized Gemini for six hours before using it for the first time. If the battery completely discharges, recharging may take up to 18 hours. See pages 5-6 for battery and charging information.

Date of Purchase: \_\_\_\_\_

Serial Number: \_\_\_\_\_

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## Warranty

Magliner products have a one (1) year warranty unless otherwise specified from the date of purchase against defects in workmanship or material. Any part or component, except items covered by warranties of other manufacturers, returned to the factory or service center freight prepaid by the owner, found upon examination by Magline, Inc. to be defective or the result of improper workmanship by the factory will be repaired or replaced without charge and returned to the owner freight prepaid by Magline, Inc.

Alterations of Magliner products void any warranty or liability on the part of Magline, Inc.

Magline, Inc. does not guarantee product capacity if alterations are made.



**Thank you for your purchase!** If you have any questions regarding your new Magliner product please call our customer service department at 1-800-MAGLINE (624-5463) or (989) 512-1000. Please read this manual thoroughly to become familiar with the safe operation and maintenance of your new Motorized Gemini.

## General Safety Instructions

- Inspect before each use for damaged and loose fasteners/connections.
- Inspect the unit for cracks, wear or damage. Replace damaged components immediately.
- Keep hands and feet away from all moving parts.
- When unattended, leave the power switch in the off position.
- Operate at a safe speed; go only as fast as safety considerations allow.
- Do not use this product to transport people.
- When using a lift gate, turn the power switch to the OFF position and lock the caster brakes.
- Do not drive off curbs or ledges higher than one inch. An aluminum walk ramp must be used to overcome obstacles over one inch.
- Never use on a moving vehicle.
- Always stand beside the machine walking forward while operating in reverse. Never walk backwards with machine.
- Never exceed rated capacity, especially on ramps or hills. Damage to the Gemini and personal injury could result.
- Do not operate when the battery charger is plugged in.
- Never attempt to open the battery. If the battery is cracked or leaking, do not recharge it - it must be replaced.
- Always use a Magliner battery charger to charge your battery.

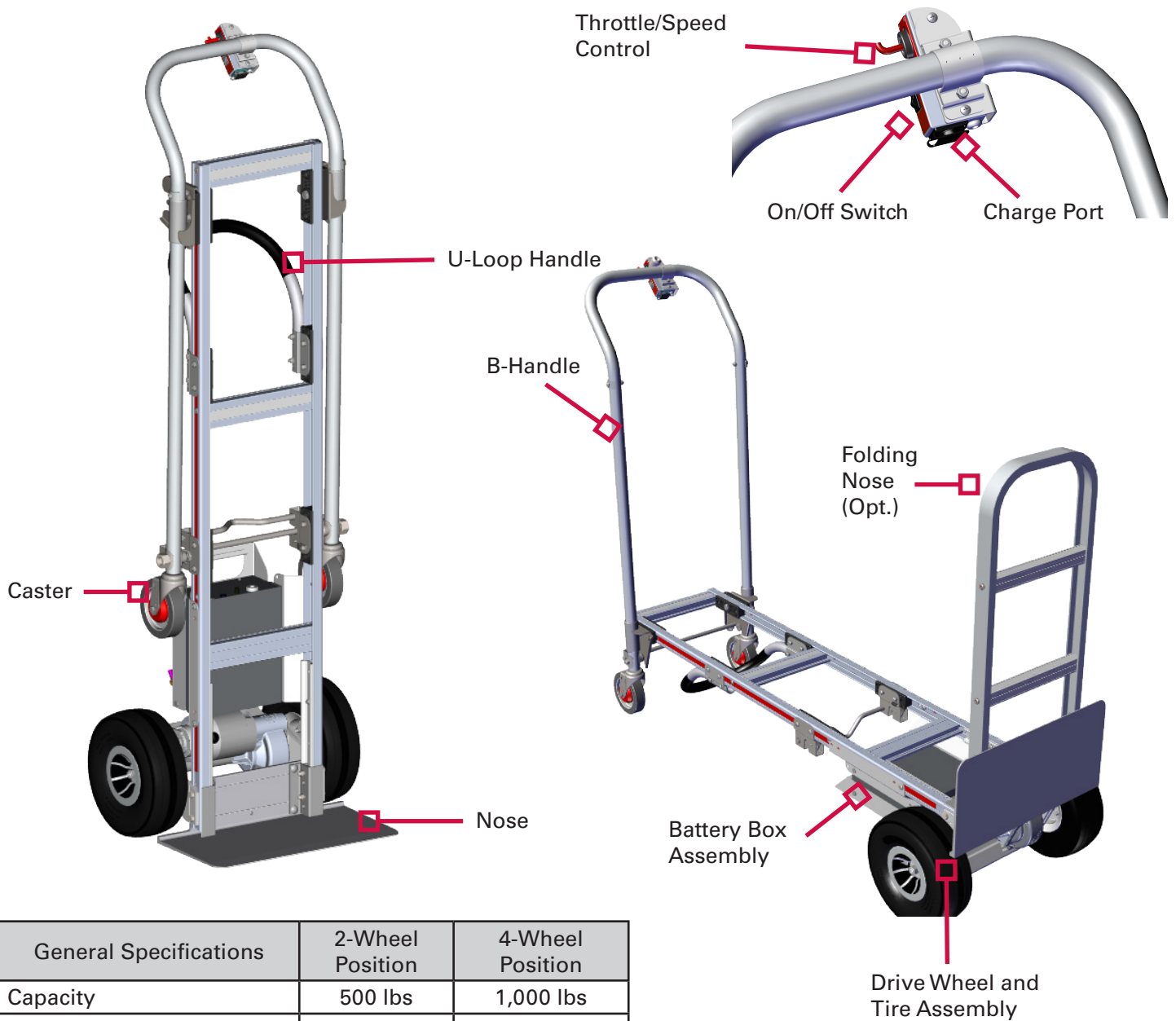
## General Machine Care

- Charge the machine in a dry place, preferably at 50 degrees F or warmer
- Wash machine with warm soapy water. Do not use pressure washers.
- Do not drive Gemini through more than 2" of water, and never submerge drive system or battery box.
- Drive system is lubricated for life, so no maintenance is required for drive system.

## Startup Instructions

1. Fully charge battery before first use, and charge the battery after each use to prevent total battery discharge and to maximize battery life.
2. Read manual thoroughly before first use.

## Motorized Gemini



General Specifications	2-Wheel Position	4-Wheel Position
Capacity	500 lbs	1,000 lbs
Max speed	-	4.3 mph
Weight	100 lbs	100 lbs
Overall height	66.5 inches	49 inches
Overall width	20.75 inches	20.75 inches
Overall depth	18 inches	62.25 inches
Usable platform length	-	50.5 inches
Operating temperature*	-20 to 120°F	-20 to 120°F

### Battery Specifications

Voltage	24v (two 12v battery cells)
Battery cells	Sealed lead acid - maintenance free

\*NOTE: When the outside temperature is below 30°F the Gemini Convertible Truck should not be left inside the truck overnight and should never be left inside a freezer or a cooler for extended periods of time. Extended exposure to subfreezing temperatures will adversely affect Gemini performance and reduce battery cycle and battery life.

## Battery

This product contains two non-spillable AGM lead-acid batteries. The battery must be charged for a minimum of six hours before using it the first time. If the battery completely discharges, recharging may take up to 18 hours. When not in use, it is recommended to keep the battery plugged in to maintain a maximum charge and extend the battery life. The charger will not overcharge the batteries.



### General Battery Warnings

- Do not connect accessories to the battery; this will cause premature battery failure.
- Unauthorized modification could create a hazardous condition and result in serious injury.
- Batteries contain sulfuric acid, which can burn eyes, skin, clothes, etc. Use caution! Always wear gloves when working with batteries. If contact occurs, flush immediately with water and get medical attention. Protect surfaces from battery damage by placing batteries on rubber or acid-safe plastic surfaces.
- Never place a battery near an open flame or heat.
- To prevent electrical shock, do not touch non-insulated parts of the charger output connectors, battery connectors or battery terminals. Do not use connectors that are cracked, corroded, or do not make adequate electrical contact. Use of damaged or defective connectors could result in fire or electrical shock.
- Keep sparks, flame and smoking materials away from batteries.
- Batteries can supply a large amount of current. Do not wear jewelry or watches when working on the batteries.



### General Charging Warnings

- Use only the Magliner 24V charger designated for use with the Motorized Gemini. Charge using a 110V electrical outlet.
- Do not operate the unit when the battery charger is plugged in.
- Turn the unit Off while charging.
- Do not expose charger to rain or snow.
- Store the charger in a dry, clean place.
- Use the charger only in a dry, well ventilated room without flammable fluids or explosive gases.
- Make sure the cord is located such that it will not be a trip hazard or otherwise subject to damage or stress.
- Do not operate a charger with a damaged cord or plug – replace immediately.
- Unplug the charging unit from the AC power supply source before attempting any maintenance or cleaning.
- Always use battery chargers supplied by Magline, Inc. Other battery charging units could cause damage to your batteries or personal injury.
- To avoid damage to battery charger connectors and cords, disconnect by grasping the plug body and pulling it straight out of the outlet or receptacle. DO NOT pull on the cord. DO NOT twist, rock, or pull the connector sideways.
- The metal tip on the end of the plug may be hot when it is first unplugged.

## Battery Life

The Motorized Gemini is powered by a 24V system using two non-spillable 12V AGM lead acid batteries connected in series.\* A fully-charged battery pack will last at least one typical day; however, extreme temperature ranges and extreme loads can have an effect on the amount of power available during one charging cycle. You will know that your batteries need replacing when you notice diminished range or operational time.

## Battery Care

- Store and charge the Motorized Gemini at temperatures between 50 and 100 degrees F.
- Always keep the machine on charge. Batteries stored for long periods of time will self-discharge and may get so low, that the charger cannot recharge them.
- Keep the terminals clean and tight.
- Handle the batteries with care.
- The batteries may require 4-10 charge/discharge cycles until batteries charge up to their full potential.
- DEEP DISCHARGE ON A CONTINUAL BASIS WILL SHORTEN THE SERVICE LIFE OF THE BATTERIES.
- Battery performance may be reduced when operating in temperatures less than 40 degrees F. You should anticipate a range reduction by 50% or more when operating at temperatures below 32 degrees F.

## Charging the Battery

The Motorized Gemini is provided with an off-board 24V charger. To charge the machine, plug one end of the charger into a 110V wall outlet, and the other end into charger port. An LED light on the charger will blink (or turn amber or red) while the unit is charging. When the unit is completely charged, the light will turn solid green. For optimum performance, charge in temperatures from 50-100 degrees F.

**NOTE: The battery must be charged within 3 months of storage to prevent self-discharge. If the battery is not charged within 3 months of storage, permanent loss of capacity may occur.**

**If the Motorized U-Boat will be used regularly, it is recommended that the unit be kept on a charger whenever it is not in use; the batteries will not overcharge. If the Motorized U-Boat is going to be stored and/or not in regular use, the batteries must go through a full charge cycle every 2 weeks to ensure battery life and duty cycle.**

Before use, unplug the charger from the Motorized Gemini by carefully pulling the connector out of the charger port in the throttle. Install the dust cover boot over the plug connector on throttle to keep the charger port clean.



\*Battery has a warranty of six (6) months

## Converting Between 2- and 4-wheel Positions

Note: Be sure to allow adequate room on a flat, clear surface for converting the convertible truck between 2- and 4-wheel positions.



**Caution:** While converting the truck between the 2- and 4-wheel positions, take care to keep hands out of the way of moving parts.

### *From 2-wheel to 4-wheel:*

1. Hold the truck securely with one hand on the B-handle and the other hand on the top frame cross member; press release latch (see Figure 1).
2. Keeping the B-handle as perpendicular to the ground as possible, slide the frame down the B-handle until the handle plate rests on the spreader rod (see Figures 2 and 3).
3. You are now ready to use the convertible truck in the 4-wheel position.



Figure 1



Figure 2



Figure 3

### *From 4-wheel to 2-wheel:*

1. Place one hand securely on the B-handle and the other hand on the top frame cross member
2. Keeping the B-handle as perpendicular to the ground as possible, begin to slide the frame up the B-handle (see Figure 5). Continue lifting the frame to the top of the B-handle as you orient the frame so that it becomes perpendicular to the ground (see Figures 5 and 6).
3. With the truck wheels and nose resting squarely on the ground, swing the bottom of the B-handle toward the cart frame so that the spreader rod locks firmly in place with the latch/lock assembly (see Figure 6)
4. You are now ready to use the convertible truck in the 2-wheel position



Figure 4



Figure 5



Figure 6

## Motorized Gemini Drive System

### Automatic Electronic Braking

The drive system features regenerative braking by which the electronic controller uses the motor to slow down the machine in both forward and reverse directions. To slow down the machine, reduce throttle input, or release the throttle lever, and the machine will brake to a stop.

While driving downhill, this feature allows direct control over the speed of the machine, as long as the load on the machine does not exceed the design parameters. In addition, the drive system is equipped with an electromechanical park brake, which is automatically engaged when throttle input is zero. This locks the machine in place until there is throttle input from the operator, or the operator manually overrides it in manual mode (see below).

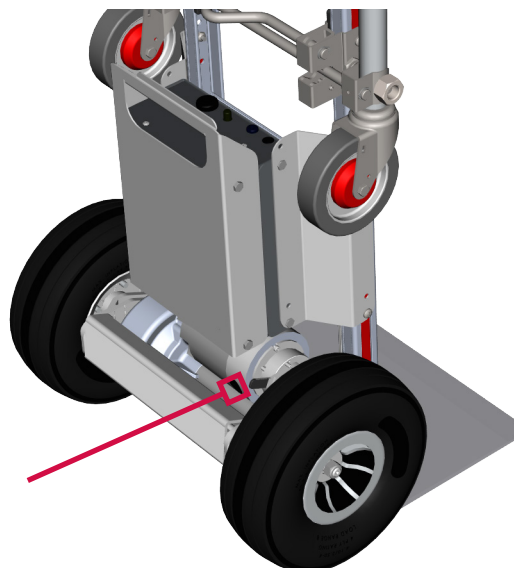
### Manual Mode (Free Wheeling)

The drive system is equipped with a lever that overrides the electromechanical brake for manually pushing the Motorized Gemini. This option should only be used if the batteries are too low to drive the system, or if the drive system becomes inoperable. To disengage the brake, push the lever down until it clicks into the disengaged position.

With the brake in the disengaged position, the ON/OFF switch **MUST** be turned off, or the drive system will not move freely. The controller **WILL NOT** operate the motor when the brake is disengaged. This is a safety lock-out that prevents the operation of the machine when the electromechanical brake on the transaxle has been manually released.



**NOTE:** A safety feature called “push too fast” will aggressively slow the machine down if the machine begins to move too quickly with the brake released and the power switch off. Its purpose is to avoid a run-away situation if the operator forgets to re-engage the brake.



Brake Lever  
(at the end of the  
transaxle on RH side)



## Reverse Operation

While operating the Motorized Gemini in reverse in the 4-wheel position, DO NOT stand behind the unit driving it toward you looking over your shoulder. The proper way to operate the unit in reverse is to STAND BESIDE THE UNIT. DO NOT operate the Motorized Gemini in reverse while in the 2-wheel position



## Pre-Trip Inspection

1. Before each use, check for damaged or missing components. Replace damaged or missing components immediately with Magliner replacement parts.
2. Check all fasteners, and make sure to tighten or replace loose or missing hardware.
3. Unplug the charger from the Motorized Gemini by carefully pulling the connector out of the charger port in the throttle. Install the dust cover boot over the plug connector on throttle to keep the charger port clean. Store the charger in a dry, clean place.
4. Always check that the propulsion system is functioning properly before beginning the day; with the unit On, test that the unit moves forward and backward with propulsion.
5. With the unit turned Off, release the park brake and push or pull the Motorized Gemini to make sure it is functioning properly in manual mode. Then reengage the transaxle.

## Storage and Transportation

The Gemini can be stored in any position as the batteries are sealed and there are no fluids to leak out. The most common (and suggested) storage orientation is unloaded (empty) in the 4 wheel position and placed on charge. Leaving the Gemini loaded for an extended period of time is not suggested.

The most common orientation for transporting a Gemini onboard a truck is in the 2-wheel position while secured to the truck BEFORE any transportation takes place.

## Slopes and Inclines

The Motorized Gemini can carry up to 1,000 lbs. max under propulsion up to an 8 degree incline or decline. If the degree of incline is steeper than 8 degrees under full load, you can simply assist the climb with a slight push to assist the drive system.

The use of Motorized Gemini on self-contained or portable truck ramps requires extreme caution and care. The Motorized Gemini is capable of climbing the curb of most ramps used in these applications which could result in damaged product, damage to the Motorized Gemini, and/or an operator injury. The Motorized Gemini is also capable of carrying loads in excess of most ramps rated capacities. Such a condition may create ramp overloading which may cause ramp failure resulting in damaged product, damaged equipment, and the potential for personal injury. Ramps must be correctly and securely attached to the truck or trailer body. The absence of a smooth transition between ramp and trailer may cause the operator to lose control or the Motorized Gemini to perform improperly.

Ramp use requires special attention to the operating environment. Inclement weather and foreign substances on the ramp may affect the performance and ability to operate safely. This is especially true in restaurant deliveries where a potential exists of substances being transferred to the ramp surface.

Battery life will be diminished when used to climb ramps fully loaded. The additional current draw will affect overall battery life.

The following list of recommended operating methods is not intended to cover all instances or applications, but rather address general practices to consider when using a Motorized Gemini in conjunction with trucks and truck ramps. Your own personal experiences and the specific terrain at each delivery site or location should dictate the specific operating methods employed.

Ascending	
Do:	Discontinue throttle use if wheels contact side rail of ramp.
	Secure load to Motorized Gemini.
	Be sure Motorized Gemini is aligned with ramp upon entering for ascent. This will help prevent the Motorized Gemini from running off ramp when entering the ramp.
	Use throttle to maintain a safe speed at all times.
	Ensure casters are aligned for forward travel.
	Make sure combined weight of operator and loaded Motorized Gemini does not exceed manufacturer's ramp capacity. The Motorized Gemini weighs 100 lbs.
	Use extra caution in inclement weather or when the ramp may be slippery.
	Be sure ramp and exit area is clear of any obstruction.
	Be sure apron of ramp is flat on ground.
	Make sure ramp is properly secured to truck trailer per ramp manufacturer instructions.
	Be sure footwear is appropriate for inclined surfaces.
	Be sure load is evenly distributed or load is more toward drive wheels (see the Models section).
	Always be aware of the location of the end of the ramp.
	Avoid loose or sagging bundles as they may catch on the curb ends of the ramp.
	Drive wheel should always lead in direction of travel (see Specifications section).
Don't:	Change direction while on ramp.
	Switch to neutral freewheel while in middle of ramp.
	Stop abruptly while on ramp.
Descending	
Do:	Be sure transaxle is engaged before descending ramp.
	Discontinue throttle use if wheels contact side rail of ramp.
	Secure load to Motorized Gemini.
	Be sure Motorized Gemini is aligned with ramp upon entering for descent. This will help prevent the Motorized Gemini from running off ramp when entering the ramp.
	Make sure combined weight of operator and loaded Motorized Gemini does not exceed manufacturer's ramp capacity. The Motorized Gemini weighs 100 lbs.
	Use extra caution in inclement weather or when the ramp may be slippery.
	Be sure ramp and exit area is clear of any obstruction.
	Be sure apron of ramp is flat on ground.
	Be sure footwear is appropriate for decline surfaces.
	Be sure load is evenly distributed or load is more toward drive wheels (see the Specifications section).
	Always be aware of the location of the end of the ramp.
	Avoid loose or sagging bundles as they may catch on the curb ends of the ramp.
	Drive wheel should always lead in direction of travel (see Specifications section).
Don't:	Change direction while on ramp.
	Switch to neutral freewheel while in middle of ramp.
	Exceed the open height of the trailer when loading Motorized Gemini.
	Stop abruptly while on ramp.

## Using the Motorized Gemini

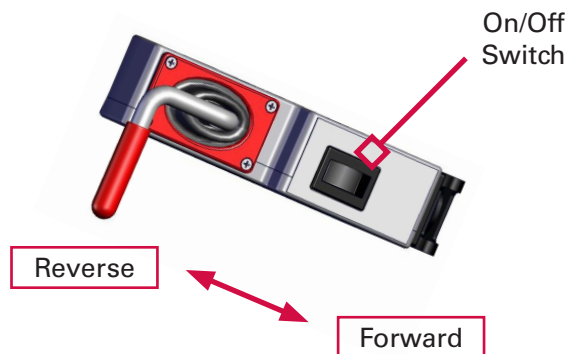
### On/Off Switch

1. Turn the rocker switch to ON position.
2. If the switch is left on for approximately 20 minutes without use, the controller goes into a power save mode (sleep mode).
3. To wake the controller, cycle the rocker switch to the off position for 2 seconds, and then back to the on position.

### Variable Speed Control

Moving the throttle lever increases speed in proportion to how far you pull or push it – the further you move away from home position, the faster you go forward or reverse. The maximum speed is approximately 4.3 mph.

Releasing the lever will automatically return it to zero, commanding the controller to slow down and stop the machine, locking it in place.



### Moving with Propulsion

1. To use propulsion, be sure that the motor's brake lever is in the up position to engage the transaxle.
2. Turn the unit On. Check to be sure surroundings are clear.
3. Pull the throttle lever toward you to move in reverse; push the throttle away from you to move forward.
4. To increase the speed, push or pull the throttle lever further away from home position.
5. To slow the unit, move the throttle lever closer to home position.
6. When you release the throttle lever, the unit will slowly come to a complete stop and the park brake will engage.
7. The Motorized Gemini will slow to a stop and park in place even on an incline, as long as the load on the Motorized Gemini does not exceed capacity.

### **Considerations When Using Propulsion**

- It is recommended to get comfortable operating the truck with and without a load. Care should be taken with a load to become comfortable and aware of how the added weight responds to acceleration, deceleration, slopes and turning corners.
- When turning tight corners, keep the unit close to the turn in the direction of travel; for example, when turning right, keep the unit close to the turn on the right. When turning left, keep the unit close to the turn on the left.
- Always operate the Motorized Gemini only as fast as safety considerations allow.
- Extra stopping distance may be required with a load.
- Use extra caution when moving loads on ramps or moving loads in reverse as described on pages 9-11.
- Do not drive the Motorized Gemini through more than 2 inches of water, and never submerge the drive system or battery box.
- Do not drive off curbs or ledges higher than one inch. An aluminum walk ramp must be used to overcome obstacles over one inch.
- While unattended, turn the unit off.

### **At the End of the Day**

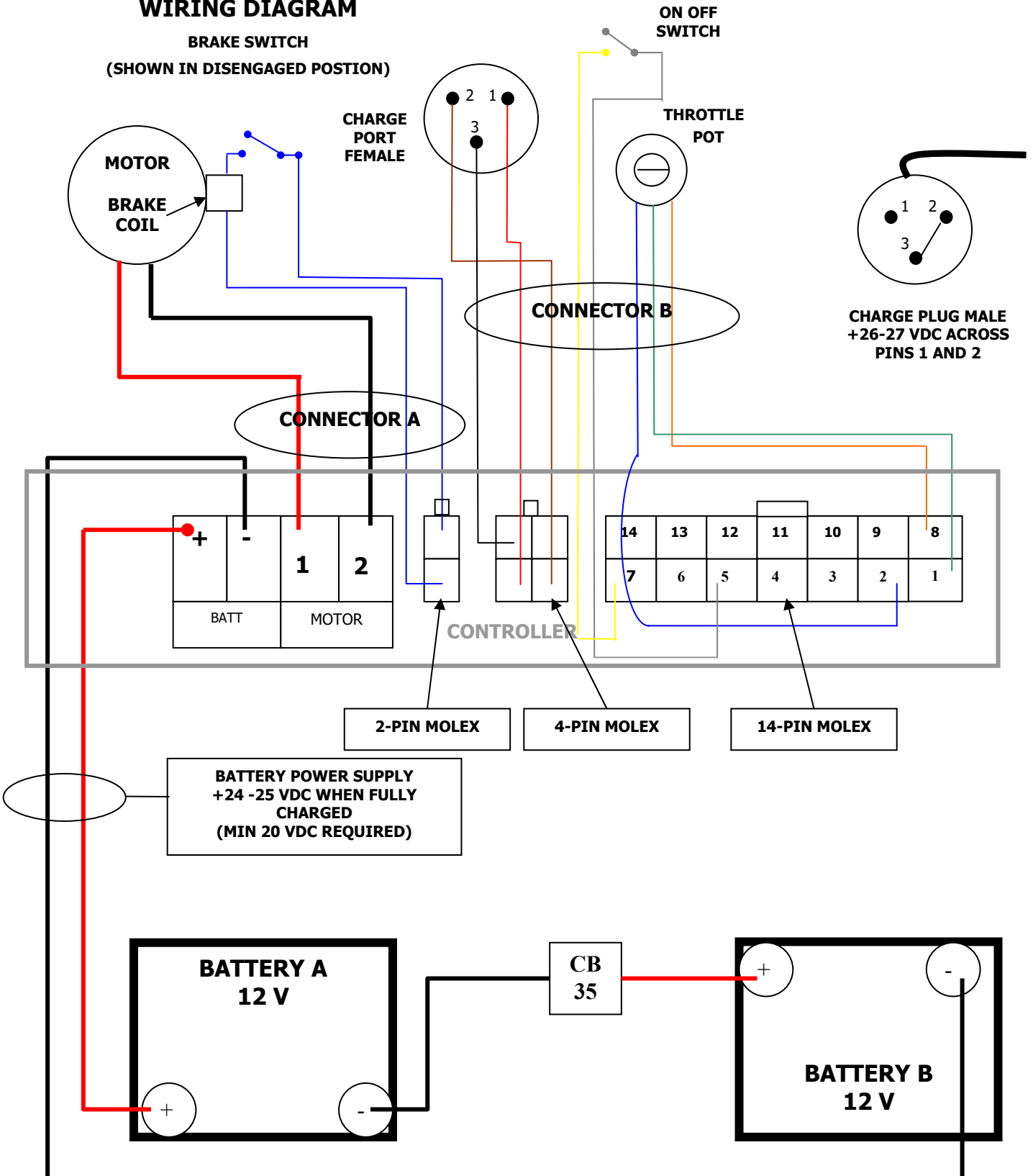
1. Make sure the Motorized Gemini is unloaded.
2. While unattended, turn the unit Off.
3. The Motorized Gemini when batteries are installed should be stored and charged indoors and in a dry environment. To maximize battery life and minimize charge time, temperatures should be between 50 to 100 degrees Fahrenheit.
4. Charge the batteries as soon as possible upon returning with the Motorized Gemini from use. Charge daily or after every use in a dry, well ventilated area away from sparks, heat and flames. Do not use an extension cord if possible, and do not use the charger if the cord is damaged.

## Preventative Maintenance

Area	Inspection Frequency	Procedure/Normal Condition
Drive Wheels	Daily	Inspect wheels and tires for wear and cracks.
Fasteners	Daily	Tighten any loose hardware.
Electrical	Daily	Check coiled control cord for any damage.
Electrical	Daily	Check for loose electrical connections.
Battery Charging	Daily	Red, amber or green charging light should turn on when charging.
Casters	Daily	Inspect for wear; clean dirt and debris.
Transaxle	Daily	Transaxle should be kept free and clear of debris.  When stored, the transaxle lever should be kept in powered mode with the power OFF to keep unit from rolling freely.
Drive Wheels	As needed	Apply thin film of anti-seize to transaxle wheel shafts with wheels removed.

## Wiring Diagram

### 24V SYSTEM WIRING DIAGRAM



## Troubleshooting

Problem	Possible Causes	Remedy
Motor does not run	<ul style="list-style-type: none"> <li>Power switch in OFF position</li> <li>Controller in sleep mode</li> <li>Batteries are drained</li> <li>Motor brake lever released on drive system</li> <li>Electrical fault</li> </ul>	<ul style="list-style-type: none"> <li>Turn switch to ON position</li> <li>Cycle switch, OFF 2 sec, then ON</li> <li>Recharge batteries</li> <li>Re-engage motor brake on drive system</li> <li>Unplug, then plug in both motor and throttle connectors</li> </ul>
Motor shuts off during use/abruptly stops	<ul style="list-style-type: none"> <li>Circuit breaker has tripped</li> <li>Controller trip due to thermal overload (weight and/or climb angle may exceed controller capacity)</li> <li>Broken motor wire or connector</li> </ul>	<ul style="list-style-type: none"> <li>Push circuit breaker to reset</li> <li>Release throttle, allow controller to cool down at least 30 seconds. Unload some weight, cycle power switch, operate machine again.</li> <li>Check motor wires and brake wires to make sure none are broken, and also check connector to make sure wires are secure in connector</li> </ul>
Insufficient range	<ul style="list-style-type: none"> <li>Hilly or soft terrain</li> <li>Batteries not "broken in"</li> <li>Cold batteries</li> <li>Battery not fully charged</li> <li>Damaged, old batteries</li> </ul>	<ul style="list-style-type: none"> <li>Push to assist drive system</li> <li>Charge and discharge 4-10 times before optimum range</li> <li>Keep batteries warm</li> <li>ALWAYS keep machine on charge when not in use</li> <li>Replace batteries</li> </ul>
Machine slows down aggressively while in manual release mode	<ul style="list-style-type: none"> <li>"Push too fast" safety feature</li> </ul>	<ul style="list-style-type: none"> <li>Do not push machine so fast while in manual release mode (see Manual Mode section)</li> </ul>
It is difficult to transition between 2- and 4-wheel positions	<ul style="list-style-type: none"> <li>B-handle may be bent</li> <li>Burrs on the B-handle</li> <li>Pivot sockets are damaged</li> </ul>	<ul style="list-style-type: none"> <li>Replace B-handle if damaged</li> <li>File or sand the B-handle smooth or replace the B-handle</li> <li>Replace pivot socket(s) if damaged</li> </ul>
The Gemini will not latch when in the 2-wheel position	<ul style="list-style-type: none"> <li>Latch components or latch rod are damaged</li> <li>Latch component mounting screws are loose.</li> </ul>	<ul style="list-style-type: none"> <li>Replace worn, damaged or missing components</li> <li>Tighten any loose hardware</li> </ul>





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