ELECTRIC PROPULSION OUTBOARD

User's Guide for LEISURE SERIES

VERSION1.1

WWW.GOLDENMOTOR.COM

Dear customer,

We are delighted that you have chosen EZ outboard. In terms of drive technology and efficiency, your EZ outboard is cutting-edge technology. It has been designed and manufactured with the utmost care and with a special focus on comfort, user-friendliness, safety, and has been extensively tested before delivery.

Please take the time to read this operating manual carefully so that you can use the outboard properly and enjoy it for a long time.

We constantly strive to improve the outboard. Should you have any comments on the design or use of our products, please do not hesitate to contact us.

We hope you have a lot of fun with this product.

Your EZ outboard team

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To the User

EZ outboards are designed to operate safely and reliably as long as they are used according to the User's Guide. Please read this manual carefully before you start the motor. Ignoring these instructions can cause property damage or personal injury. Golden Motor accepts no liability for any damage caused by actions that contradict this guide.
In the User's Guide particularly important information is distinguished in the following ways.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards.
Obey all safety messages that follow this symbol to avoid possible injury or death.

A WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

A CAUTION indicates special precautions that must be taken to avoid damage to the electric outboard or other property.

TIP:

A TIP provides key information to make procedures easier or clearer.

Note

We continually seek advancements in product design and quality. Therefore, while this manual contains the most current product information available at the time of printing, there may be minor discrepancies between your product and this manual. If there is any question concerning this manual, please consult your EZ outboards dealer. To ensure long product life, we recommend that you use the product and perform the specified periodic inspections and maintenance by correctly following the instructions in the guide. Some countries have laws or regulations restricting users from taking the product out of the country where it was purchased, and it may be impossible to register the product in the destination country. Additionally, the warranty may not apply in certain regions. When planning to take the product to another country, consult the dealer where the product was purchased for further information. If the product was purchased used, please consult your closest dealer for customer registration, and to be eligible for the specified services.

1 Safety Information

1.1 Outboard motor safety

1.11 Propeller

People can be injured or killed if they come in contact with the propeller. The propeller can keep moving even when the motor is in neutral, and sharp edges of the propeller can cut even when stationary. Stop the motor when a person is in the water near you. Keep people out of reach of the propeller, even the motor is off.

1.12 Rotating parts

Hands, feet, hair, jewelry, clothing, PFD (personal flotation device) straps, etc. can become entangled with internal rotating parts of the motor resulting in serious injury or death. Keep the top cowling in place whenever possible. Do not remove or replace the cowling with the motor running. Only operate the motor with the cowling removed according to the specific instructions in the manual. Keep hands, feet, hair, jewelry, clothing, PFD straps, etc. away from any exposed moving parts.

1.13 Electric shock

Do not touch any electrical parts while starting or operating the motor. They can cause shock or electrocution.

1.14 Modifications

Do not attempt to modify this outboard motor. Modifications may reduce safety and reliability, and render the outboard unsafe or illegal to use.

1.2 Boating safety

This section includes a few of the many important safety precautions that you should follow when boating.

1.21 Alcohol and drugs

Never operate after drinking alcohol or taking drugs. Intoxication is one of the most common factors contributing to boating fatalities.

1.22 Personal flotation devices

Have an approved personal flotation device (PFD) on board for every occupant. we recommend that you must wear a PFD whenever boating. At a minimum, children and non-swimmers should always wear PFDs,. Everyone should wear PFDs when there are potentially hazardous boating conditions.

1.23 People in the water

Always watch carefully for people in the water, such as swimmers, skiers or divers whenever the motor is running. When someone is in the water near the boat, stop the motor immediately.

1.24 Passengers

Consult your boat manufacturer′s instructions for details about appropriate passenger locations in your boat and be sure all passengers are positioned properly before accelerating.

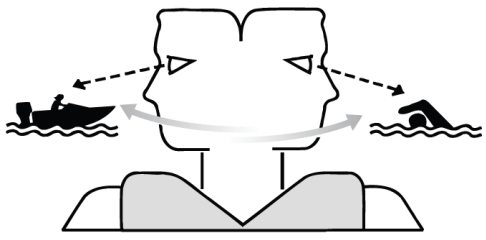
Standing or sitting in non-designated locations may result in being thrown either overboard or within the boat due to waves or sudden changes in speed or direction.
Even when people are positioned properly, alert your passengers if you must make any unusual maneuver. Always avoid jumping waves.

1.25 Overloading

Do not overload the boat. Consult the boat manufacturer for maximum weight and number of passengers. Be sure that weight is properly distributed according to the boat manufacturer's instructions. Overloading or incorrect weight distribution can compromise the boats
handling and lead to an accident, capsizing or swamping.

1.26 Avoid collisions

Scan constantly for people, objects and other boats. Be alert for conditions that limit your visibility or block your vision of others.



Operate defensively at safe speeds and keep a safe distance away from people, objects and other boats.

· Do not follow directly behind other boats or Water skiers.
· Avoid sharp turns or other maneuvers that make it hard for others to avoid you or understand where you are going.
· Avoid areas with submerged objects or shallow water.
· Ride within your limits and avoid aggressive maneuvers to reduce the risk of loss of control and collision.
· Take early action to avoid collisions.
Remember, boats do not have brakes, and stopping the motor or reducing throttle can reduce the ability to steer. If you are not sure that you can stop in time before hitting an obstacle, apply throttle and turn in another direction.

1.27 Weather

Stay informed about the weather. Check weatherforecasts before boating. Avoid boating in hazardous weather.

1.28 Passenger training

Make sure at least one other passenger is trained to operate the boat in the event of an emergency.

1.29 Laws and regulations

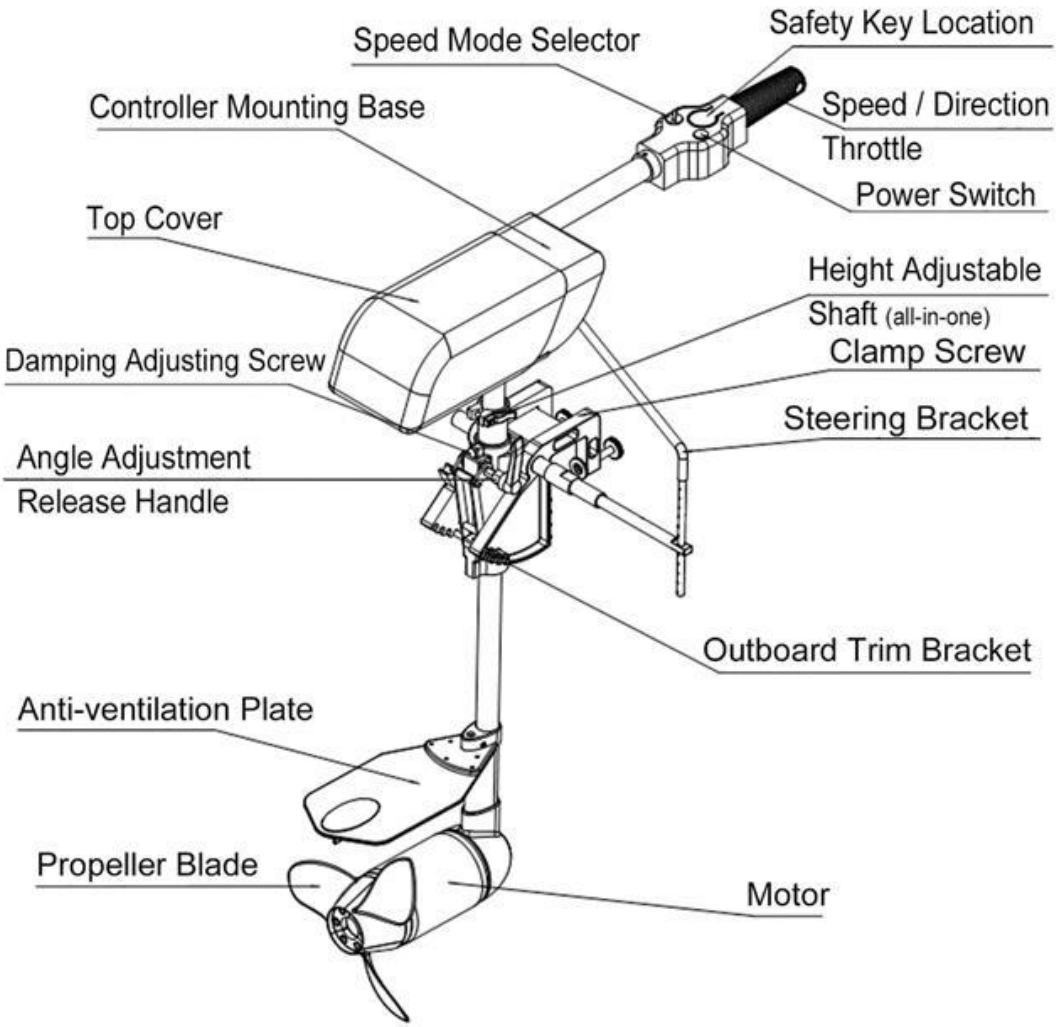
Know the marine laws and regulations where you will be boating and obey them. Several sets of rules prevail according to geographic location, but all are basically the same as the International Rules of the Road.The motor controllers are programmable via smart-phones to setup speed limit, maximum current, lower voltage limit as you desire to meet your needs and local authority's regulations.

2.1 Specifications

Product Model	L03	L05	L10
Rated Voltage (Vdc)	48	48	48
Input Power (kW/A)	2.8 / 60	4.3 / 90	6.5 / 135
Comparable Petrol Engine (hp)	3~5	5~7	8~12
Maximum Propeller Speed (RPM)	1250	1350	1500
Static Thrust Force (lb)	165	195	260
Propeller Size (inch)	12	12	12
Control	Tiller or Remote	Tiller or Remote	Tiller or Remote
Tilting	Manual	Manual	Manual
Net Weight (kg)	17	18.5	22

Leisure Series for those who want slower boat speeds, larger thrust force and less batteries required, very light in weight(15kgs - 22kgs) for easy hand carry and quick setup (30 seconds only), their propeller speeds are between 1200-1600rpm.

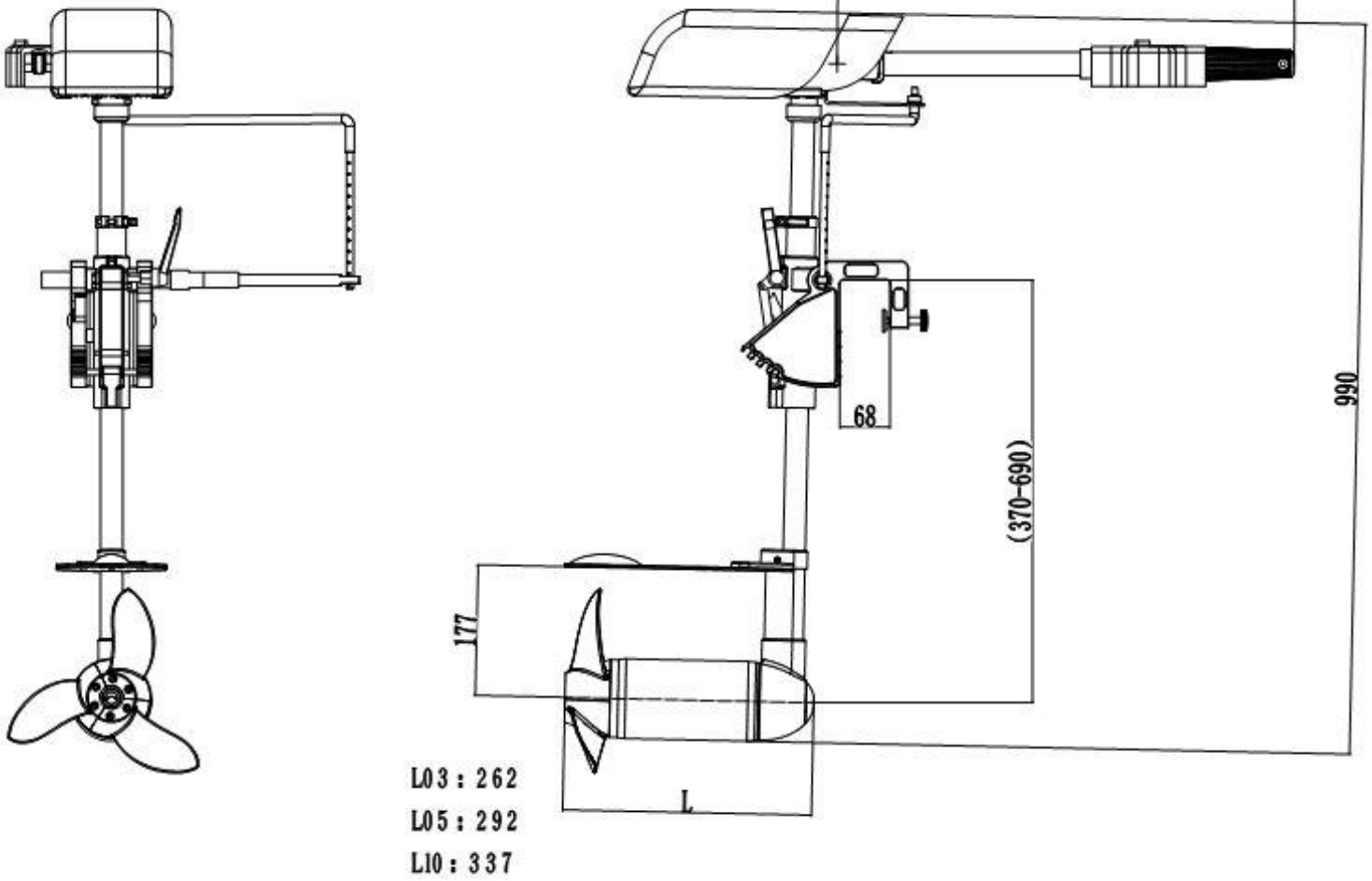
2.2 Components



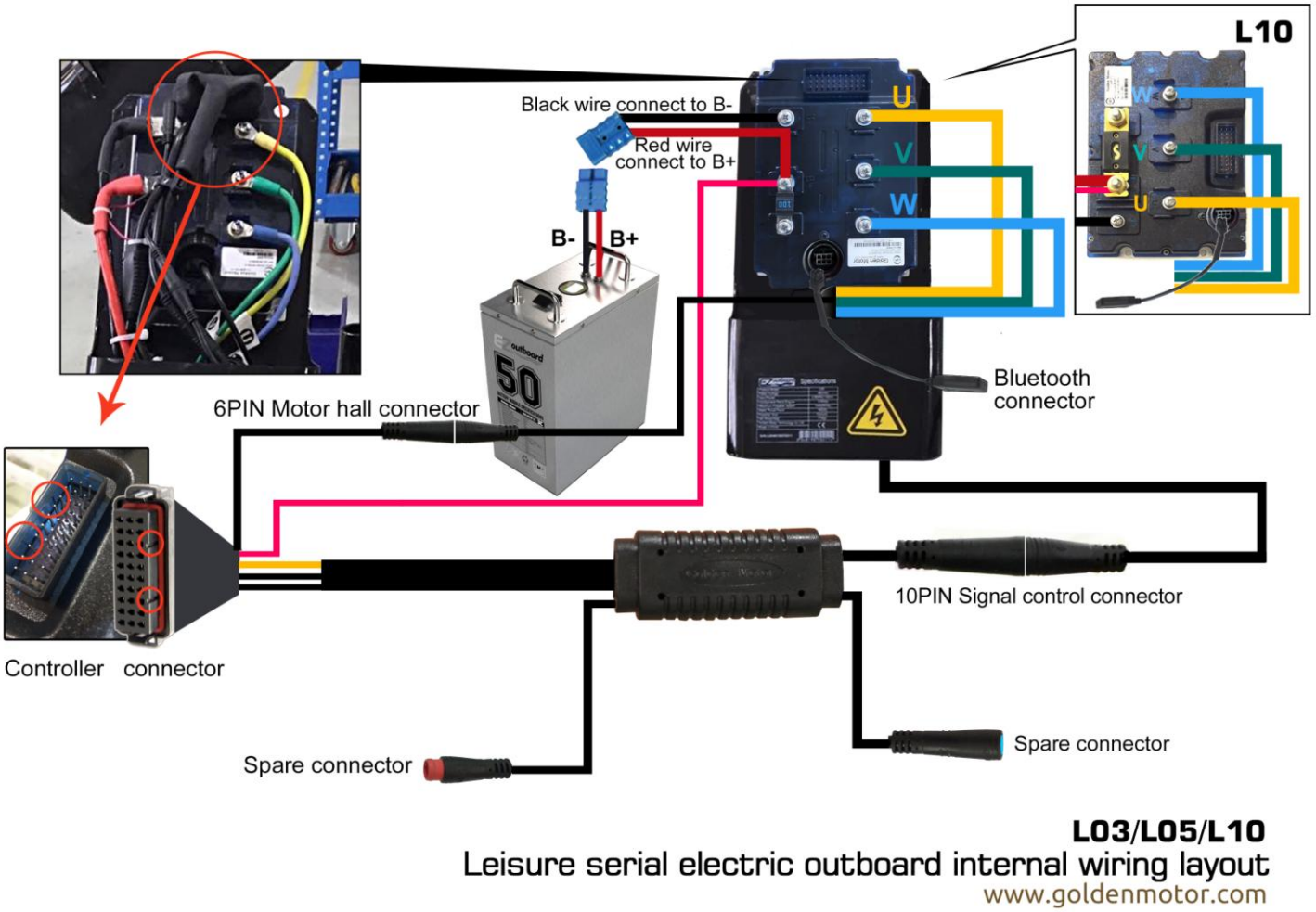
2.3 Main Features

- Brush-less, gear-less, direct drive without speed reduction gear
- Shaft length is All-in-One size, user adjustable between long and short
- Support both tiller steering control, and remote steering control
- Take less than 30 Seconds to Setup Outboard
- Support blue-tooth connection to Android smart phones

2.4 Dimensions (Unit:mm)



2.5 Wiring Diagram



2.6 Specifications

Model / Parameters	Measurement Units	EZ--L03T/R	EZ--L05T/R	EZ--L10T/R
Equivalent Gasoline Engine Power	HP	3~5	5~7	8~12
Norminal Voltage	V	48	48	48
Input Current	A	60	90	135
Max Propeller Speed	r/min	1250	1350	1500
Packing Length	mm	97	97	97
Packing Width	mm	22	22	22
Packing Height	mm	43	43	43
Transom Height	mm (in.)	381-508 (15-20)	381-508 (15-20)	381-508 (15-20)
Propeller Spec	in.	12	12	12
Net Weight	kg	17	18.5	22
Gross Weight	kg	23.5	25.2	27.8
Thrust	lb	165	195	260
Trim and Tilt System		Manual	Manual	Manual
Control System		Tiller/Remote	Tiller/Remote	Tiller/Remote

2.7 Battery Selection

How do I determine the capacity of the battery pack needed?

Battery is the new form of "fuel" for electric propulsion outboards, you never need to go to gasoline station to refuel your outboard anymore. You only need to recharge your batteries at home or docking place.

Once you've chosen an electric outboard that properly fits the weight and efficiency of your loaded boat, the next task is to size the battery bank that will store the energy to drive it. The size of the battery bank will depend on the amp draw you plan to regularly place upon it and the range of miles you desire to travel. It is not easy to know the current draw before you try it as each boat is different from others in hull shape, length, load, speed and daily operation hour you want, not like electric cars which is fixed for each car model in factory. Our expandable battery module will make your life much easier to determine how big the battery bank you need to meet your purpose. You can just invest one battery module first to test boat performance with electric propel outboard and find out accurate amp draw for your special boat setup in different speed. After initial boat trial testing, then you can easily figure out how many such battery modules required to get the boat speed and travel duration you want. You can easily parallel connect multiple expandable battery modules to form a larger capacity battery bank. Each battery module is light weight for one person to carry around. You can always buy more standalone modules as you need them. Each module has its own battery management system (BMS) and charger.

We choose the most safe LiFePO4 battery cells for our expandable battery modules, the materials used inside cell will not cause any fire or explosion. The quality of cell is very consistent and can last more than 2000 charging cycles. Its C-rating is 3 times, that means a single 48V50AH module can output 150A continuously. That's why you can just buy one or two battery modules to test the outboard motor performance and amp draw.

Why we choose 48V system for outboard motor and battery pack, because it is safe for human and easy to pass local government regulations.

Of course, you can always use other type of batteries you can find locally, as long as its output voltage is 48V, and capacity is enough to drive the electric outboards.

2.8 System Protection Characteristics

When the outboard fails, the light on the three-speed button will blink, the linking times shows the error.		
System protection features		**LED blinking times**
Over-voltage protection	Battery voltage is higher than default value.	1
Under-voltage protection	Battery voltage is lower than default value.	2
Motor over-current protection	Motor phase is short-circuit or phase to B+ is short-circuit.	3
Stall/Block protection	Motor stall/Block time exceeds default value	4
HALL protection	HALL input is abnormal.	5
MOSFET protection	MOSFET detect abnormal.	6
Phase winding disconnect protection	One of motor phase wires is disconnect.	7
Self-detect error protection	Protection system internal self-defect abnormal	10
Controller over-heat protection	Controller operation temperature is higher than default value	11
Throttle protection	Throttle input abnormal	12
Motor over-heat protection	Motor temperature is higher than default value.	13
Throttle signal is not in zero/original position	When power on, controller detect throttle signal is not in zero position, It may be that the throttle sensor or the controller do not match, or the throttle is damaged.	14
Controller brake	The controller is in brake status	15
Controller power supply signal not stable	Controller power signal not stable	16

3 Installation and Operation

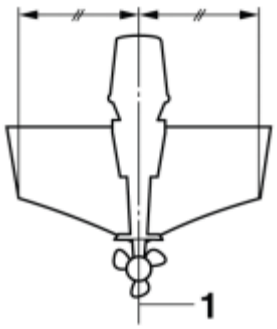
3.1 Installation

3.11 Installation indication

Your dealer or other person experienced in proper outboard motor mounting should show you how to mount your outboard motor.

There is **no more long shaft and short shaft differences**, as EZ outboard products are user adjustable in transom length to cater for different boat installations, or boat loads which may change from time to time. This feature makes boat builders, owners and outboard dealers life much easier, no more confusion on shaft lengths, no more excessive stock for long, medium and short shaft outboards!

The outboard motor should be mounted so that the boat is well balanced. Otherwise, the boat could be hard to steer. For single-motor boats, mount the outboard motor on the center line (keel line) of the boat.

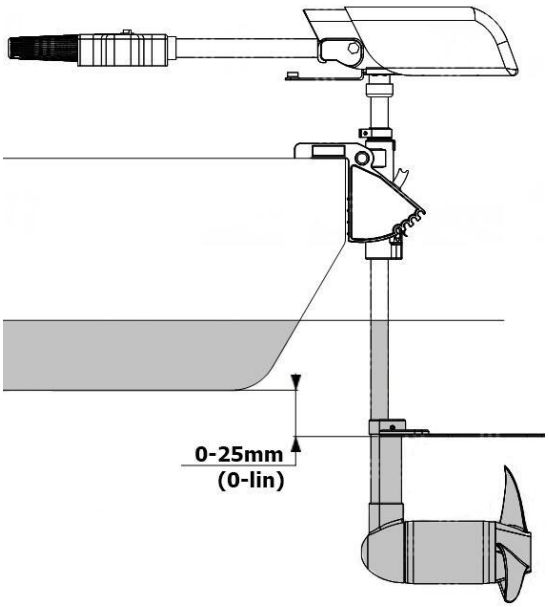


Center line (keel line)

3.12 Mounting height

To run your boat at optimum efficiency, the water resistance (drag) of the boat and outboard motor must be made as little as possible. The mounting height of the outboard motor greatly affects the water resistance. If the mounting height is too high, cavitation tends to occur, thus decreasing the propulsion; and if the propeller tips cut the air, the motor speed will rise abnormally and cause the motor overheat. If the mounting height is too low, the water resistance will increase and thereby reduce motor efficiency. Mount the outboard motor so that the anti-cavitation plate is between the bottom of the boat and a level 25 mm (1 in) below it.

Test runs at different heights can help determine the optimum mounting height. Consult your dealer or boat manufacturer for further information on determining tnting height.



3.13 Installation Instructions

1. When you receive the goods, you will see this wooden box.

2. Use screw driver to open the wooden box carefully.

3. Open the wooden box carefully, do not damage it.

4.Overview of the outboard in opened wooden box.

5. After opening the box, check parts below:

① Motor Drive Unit

②Controller Unit With Tiller

③Propeller Blades with Screws

④Anti-ventilation Plate with Screws

⑤Safety Key Set

⑥Anderson Connectors for Battery

⑦Hexagon Spanner& Screw driver

① **Motor Drive Unit, Warranty voided if disassembled**

②. Safety Key Set shoud be attached to operator's arm, In case the operator falls over boat, it can put off the power to prevent boat from running away under power, or hurting

6. Popeller Installation

Align the hole position and tighten the screws.

7. Anti-ventilation Plate Installation

Make sure the side of five countersunk holes downward. Align the hole position and tighten the five countersunk head screws.

8. Outboard Assembly

L3 / L5

①Lift the controller parts, and align the hole position, then plug into the motor parts.

②Tighten the big silver nut.

When align the hole position, make sure the controller mounting base is parallel to the motor.

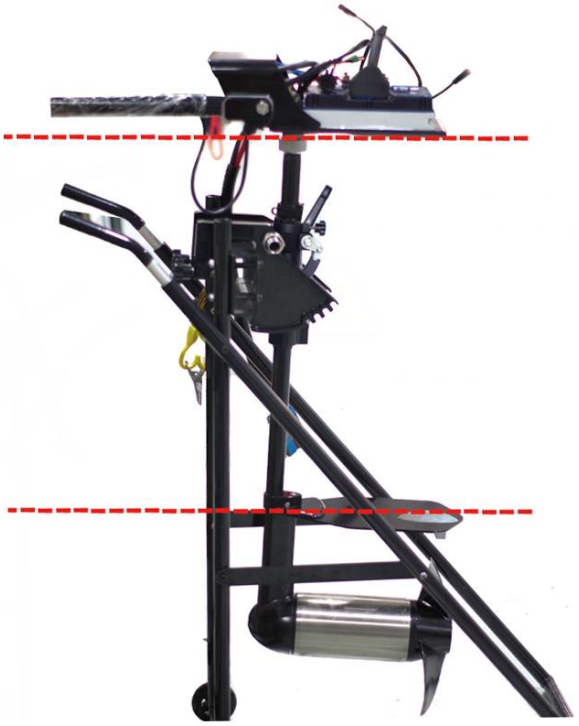
L10

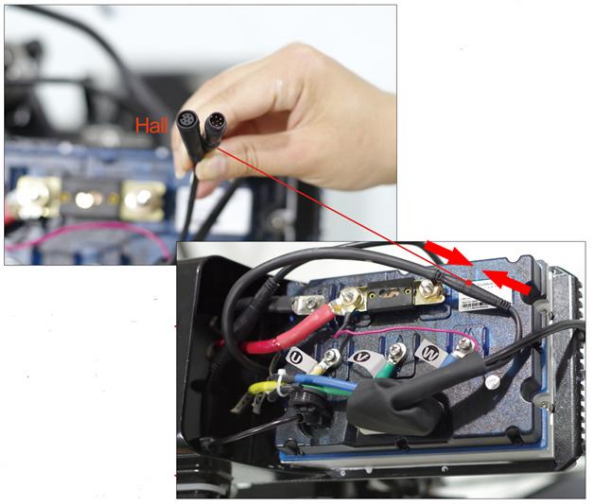
①Open the top cover, and put the four cables(U, V, W, and hall cable) into the hole.

②Align the hole position, then plug the controller unit into the motor unit and tighten the big silver nut.

③Wire U, V, W to the controller and connect the hall cable to the black connector, then close the top cover.

WARNING When align the hole position, make sure the controller mounting base is parallel to the motor.

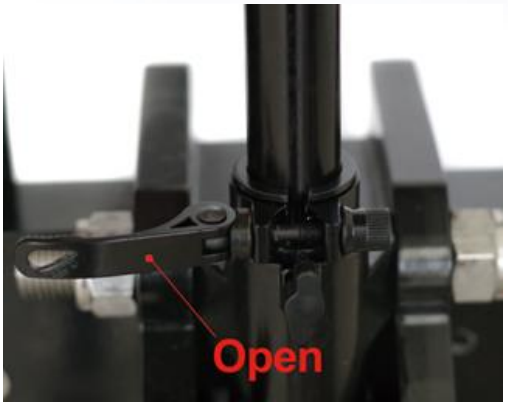


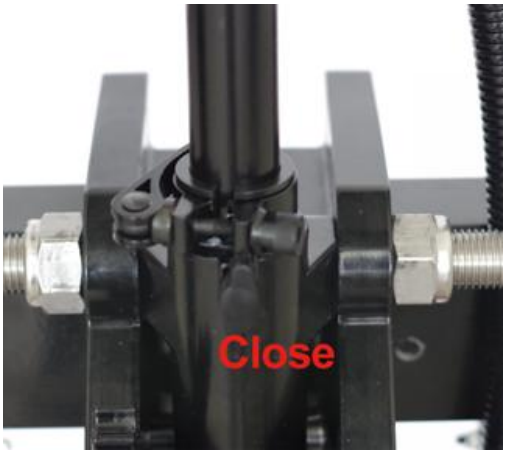


9. Shaft Length Adjustment

Open the quick release clip, and adjust the shaft up and down to the length you need, then close the quick release clip.

WARNING Make sure you adjust the shaft length according to your boat transom height before lifting to boat.





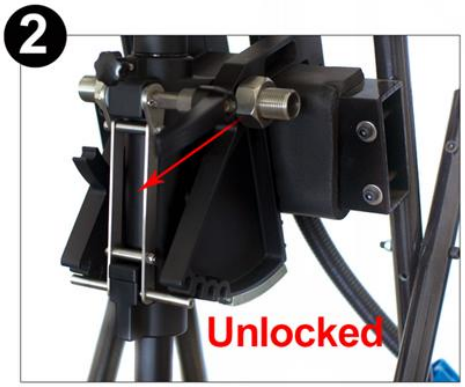
10. Outboard Trimming

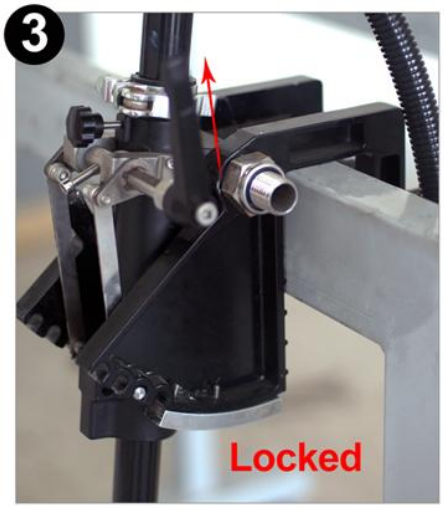
There are 4 holes provided in the bracket to adjust trim angle.

Open the angle adjustment release handle to adjust the outboard to a desired angle position, then close the angle adjustment release handle.

WARNING Power off before adjusting the trim angle.

Use caution when trying a trim position for the first time, improper trim angle can cause loss of energy and reduce motor speed.





10. Outboard Tilting Up and Down

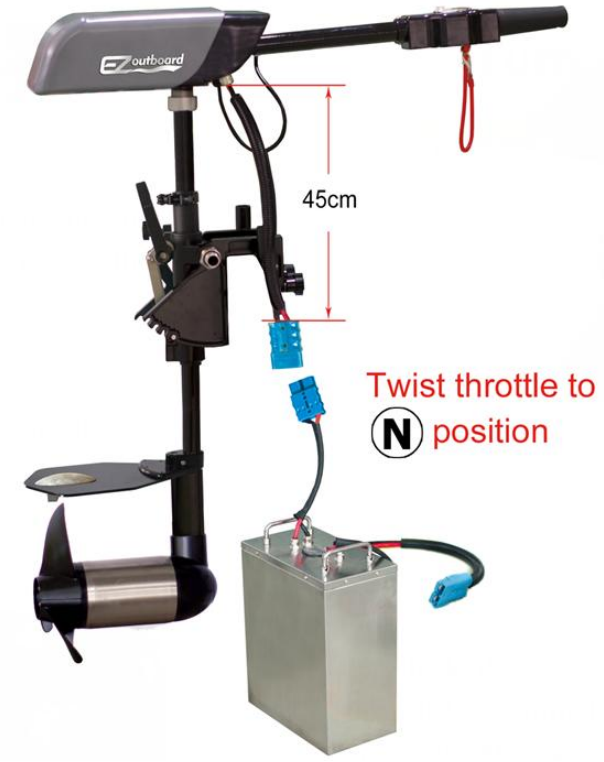
Tilting up: Open the angle adjustment release handle, then hold the controller mounting base and slowly turn it backwards until you hear " click".

WARNING Make sue the quick release is parallel to the motor or the popeller when you tilting up.

Tilting down: Pull the silver switch out, and tilt down the outboard slowly, then close the angle adjustment release handle.

WARNING When you pull the silver switch out, please hold the controller mounting base and turn it slightly backwards first.

12.Check if battery nominal voltage matches outboard's nominal voltage before connecting battery to outboard.



3.2 Operation

The information presented in this section is intended as reference only. It is not possible to provide complete instructions for every possible boat and motor combination. Proper mounting depends in part on experience and the specific boat and motor combination.

3.21 Caution

• Check the status and function of the outboard motor before each use.

• Only operate the motor while the propeller is submerged in water. If the motor is running in air for a longer period of time, the shaft seals are getting damaged which seal the motor at the drive shaft against water intrusion. Additionally, the motor might overheat.

• If you are running the motor at full throttle in high ambient temperatures, the motor may reduce speed automatically to reduce motor and battery temperature.

• Familiarize yourself with all the motor controls. For instance, you should be able to stop the motor quickly if necessary.

• Only allow adults who have been instructed on how to operate the motor to run it.
• Stop the motor immediately if someone goes overboard.

• Never operate the motor if someone is in the water close to the boat.

• Follow the boat manufacturer's instructions on the permissible motorization of your boat. Do not exceed the capacity limits.

• Overpowering a boat could cause severe instability. Do not install an outboard motor with more horsepower than the maximum rating on the capacity plate of the boat. If the boat does not have a capacity plate, consult the boat manufacturer.

• Improper mounting of the outboard motor could result in hazardous conditions such as poor handling, loss of control or fire hazards. For permanently mounted models, your dealer or other person experienced in proper rigging should mount the motor.

3.22 Operation

①. Make sure throttle is at N position before operating. If throttle twist to F/R, it will stop working and keep beeping to show error.

②. Put the safely key at its grooved place on throttle set, if it's removed, the outboard will lose power and don't working.

③. Select speed mode you like (Sports,Normal ,ECO). Normally in Sports mode to reach best performance, ECO mode to save energy at slow boat speed.

④. Press the power button, it will light up when power is on.

⑤. Twist throttle lever slowly to F (Forward) or R (Reverse), then outboard starts working and boat starts running!

Control Panel and Speed Throttle

Power Button

Press the button to switch on/off the motor.

Selectable Speed Modes

S: Sports Mode
N: Normal Mode
E: ECO Mode

Turn the knob to select your desired speed mode.

Safe Key Location

The "key" should be attached to operator's clothing, arm or leg. In case the operator falls overboard, it can cut off the power to prevent the boat from running away under power.

Speed Throttle

Forward: twist throttle anticlockwise, motor goes forward.

Reverse: twist throttle clockwise, motor reverses.

Neutral: twist throttle to "N" position, motor stops.

4 Storage and Maintenance

4.1 Storing outboard motor

If your outboard is going to be stored for more than 2 months, it's advised to have the outboard Cleaned, checked prior to storage.

1. Make enough protection before transport and storage. And ensure the propeller receives no pressure if the propeller is installed on the propeller shaft
2. Store the outboard in a try, well ventitated place without direct sun exposure

4.2 Replacement parts

EZ **gear-less and shaft-less** design makes it very unique, quiet, reliable, efficient and less vibration. The new design also takes consideration of compatibility of installation, teleflex remote control and exchangeable propellers with ordinary gasoline outboards. The BLDC motors are optimally tuned for electric outboards with motor speeds (2000rpm-2500rpm) matching to common propellers without speed reduction gears, so you can get the same boat speeds as by gasoline outboards with similar horse powers. If replacement parts are necessary, use only genuine outboard parts or parts of equivalent design and quality. Any part of inferior quality may malfunction, and the resulting loss of control could endanger the operator and passengers. Outboard genuine parts and accessories are available from your dealer.

5.Warranty

How the warranty applies

As the makers, we warranty against possible material or construction defects, provided the following conditions are satisfied :

- ❖ Proof of purchase. The warranty starts on the date of purchase.
- ❖ Only the first owner is entitled to the warranty.
- ❖ 2 years for the frame,, all mechanical and electrical parts, except normal wear and tear items.

Motor Drive Unit, Warranty voided if disassembled

Keep the product label in intact state and record the serial number on the label, Never tear the lable off the product.
EZ outboard without ogriginal product label will not be applicable to warranty services provided by Golden Motor.

How the warranty does not apply

- ❖ Inadequate maintenance.
- ❖ Unauthorized alteration, modification or misuse.
- ❖ Damage through abuse, neglect or accident.
- ❖ Assembly in disregard of instructions in this manual.
- ❖ Repairs by persons other than Golden Motor Authorized Dealers. (If you need local repair and a Golden Motor dealer is not nearby, contact us for assistance in authorizing repair).

CAUTION **Unauthorized changes/modification or tampering with any part of this product, or operation in any way other than as detailed in this User Manual, will render manufacturer's warranty void.**

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