

KARVIN ELECTRIC OUTBOARD MOTOR

SERVICE INSTRUCTIONS

Dear customer,

you just bought a fully integrated outboard motor unit, which will fulfill your requirements fully. The Karvin electric motor is more than an excellent accessory or auxiliary motor; it is a “workhorse”, which can satisfy demands of both amateurs and professionals on the water.

The Karvin electric motor has many features not available even in gasoline outboard motors.

- 3 in 1 - variable operating voltage 24/36/48V for all models
- silent (no transmission) - motor rotates min. 2000 rpm without load
- simple to operate
- light aluminium construction (whole body)
- low maintenance
- very low operating costs
- dependable
- ecologically friendly
- stainless steel screw propeller

Further features and advantages:

- the most effective and fastest suspended electromotor in the present world
- half energy consumption comparing with other DC electro-motors
- engine efficiency 89% (brushless - propulsion)
- high torque
- motor without transmission (no overheating problem)
- possibility of combining with solar panels
- electronic control of the engine
- continuous speed regulation forward and backward
- electronic key automatically switches off the engine in the case of driver's fall overboard and protects the engine from non-authorized use
- large graphical lighted display

Electronic display shows important information, allowing the economical and efficient operation of boat and motor:

- rotation speed (RPM)
- actual current draw
- battery voltage
- running hours
- acoustic and optical signal of critical battery voltage reduction
- gradual change into the economical mode of the engine for safe reaching the shore which prevents deep discharging of the battery

Important warning for the operating person

- Never put the engine into operation when not being in the water.
- Don't connect the battery to the terminal connectors, before the engine is hanged up in its working position and fixed to the boat.

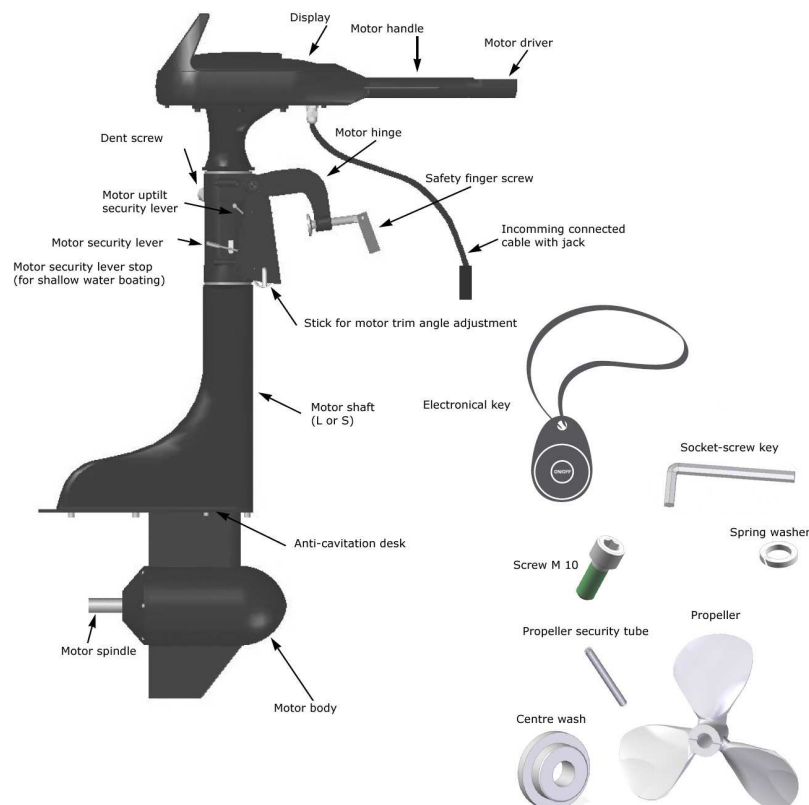
- **Pay your attention to the correct incoming cable connecting polarity to the battery! If it's not the case, the motor electronic control will be destroyed.**
- Control also if the incoming cables isolation is faultless, before you put the engine in operation.
- **Always disconnect the motor from the battery, before you start any control or any eventually cleaning of the propeller.**
- Avoid the complete motor fall in the water. In such a case, water could penetrate into the electronically part of the motor and destroy it. If such a case occurs, don't switch on the motor before the nearest service center makes its control.
- **The complete motor is resistant to humidity and rain, however not to a fall in the water.**
- When not using the motor for any longer period, up tilt it out of the water.
- **Every motor impact can cause its damage.**
- Store the motor in a dry place within the winter season.
- In a case of the indication about the electronic key battery discharge, it's necessary to buy a battery and change it.
- It's recommended to keep the original transport carton for the case of any claim. We strongly recommend to keep the original transport carton for the case of sending motor to service or repair. KARVIN motors company is not responsible for damages caused by the sending of goods in a non-genuine packaging.

Important security warnings:

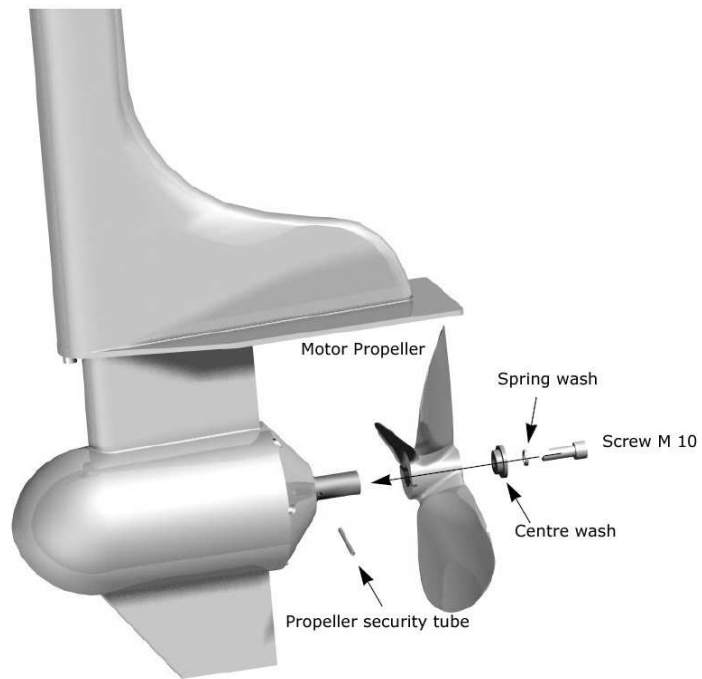
- Never touch the propeller when motor is connected to the battery.
- Don't use your boat on places where it's prohibited to go.
- Keep your watch on persons and objects in the water.
- Children and teenagers can use motor only in a presence of any adult person.

Assembling and motor setting-up

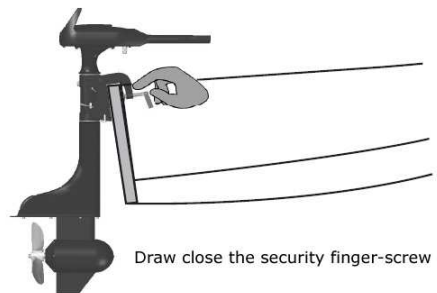
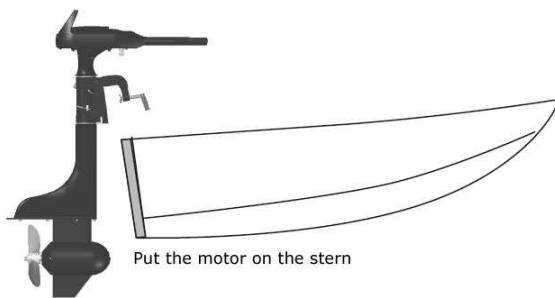
1. Motor and accessories completeness check-in



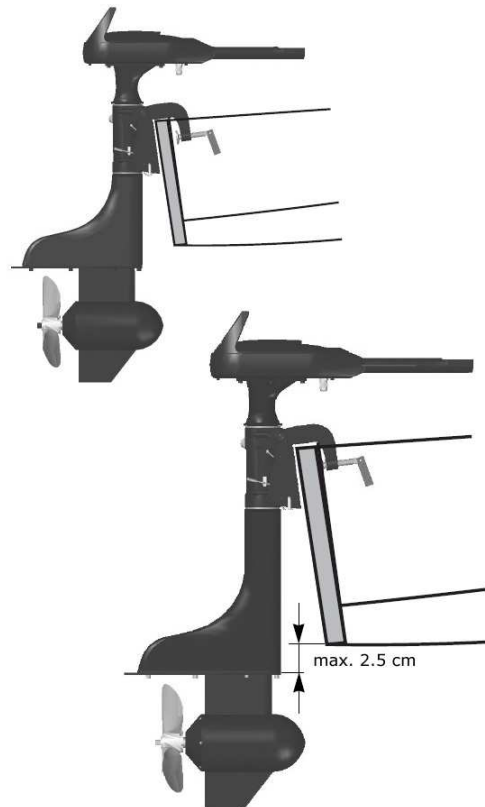
2. Propeller installation on the motor spindle



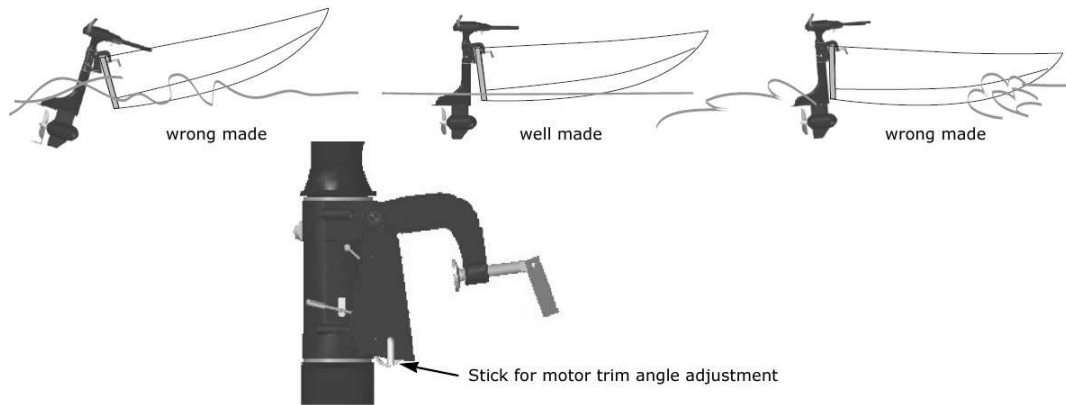
3. Motor fastening to boat



4. Motor shaft correct setting-up

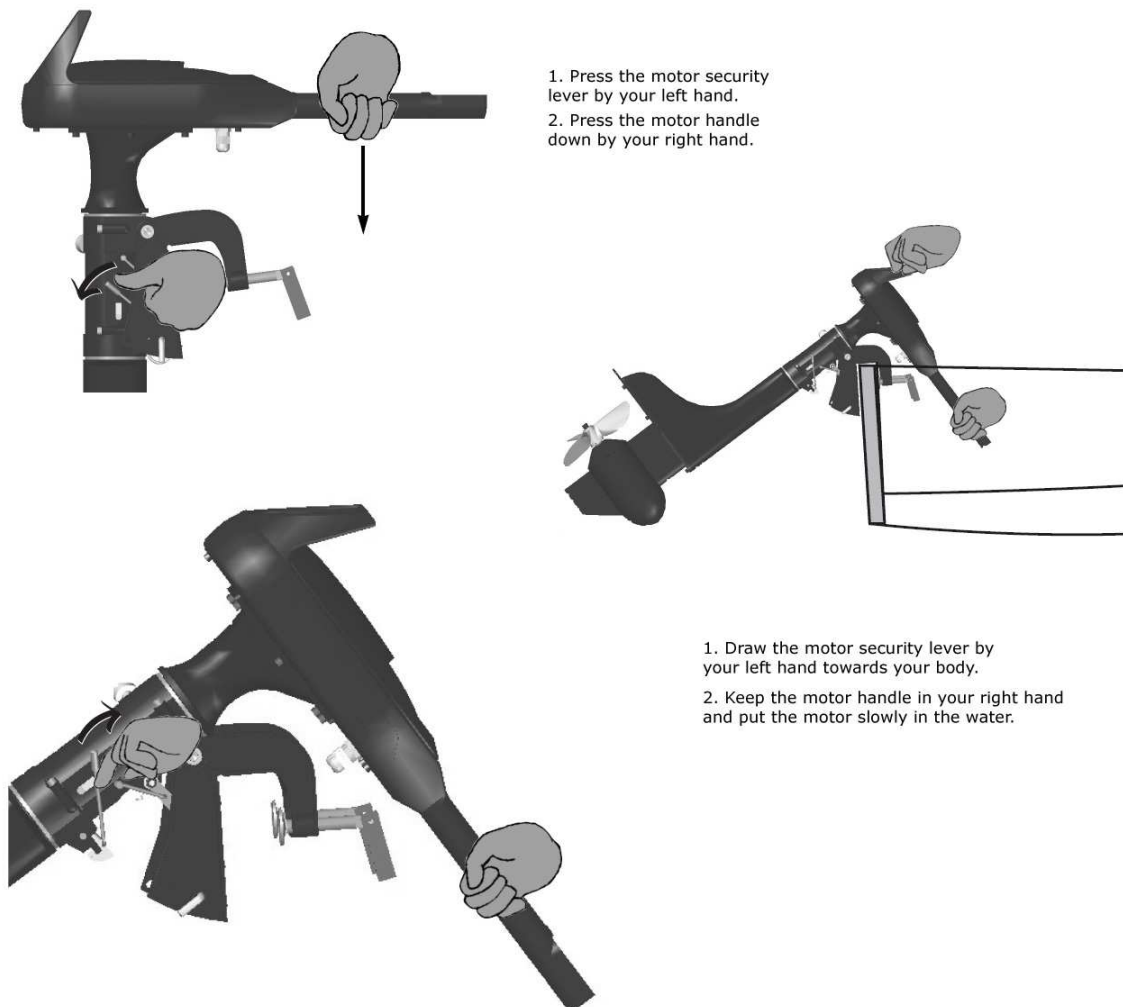


5. Motor position correct setting-up, by means of the stick for the trim angle adjustment

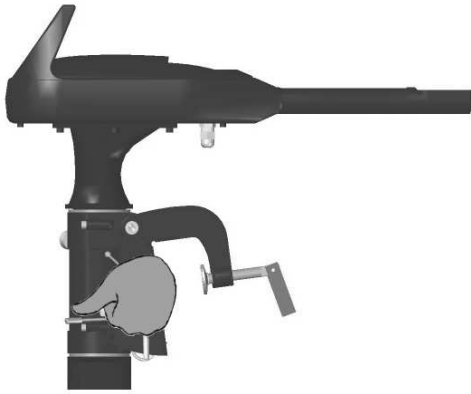


6. Tilt up the engine after reaching the shore

!!! CAUTION !!! - Don't put motor to tilt up position if you transport the motor on trailer or if you use other motor for swimming on boat. Tilt up position can be use only when boat don't sail. If you want to pull out the motor from water please use pantograph. If you swim on petrol engine and electric engine is water (propeller of electric engine rotates), please be sure that electric outboard is connected to batteries, otherwise electronic of motor can be damaged.



7. Security motor lever blocking for boating in unknown shallow water.



Press the security motor lever up to very down and insert it below the security leaf.

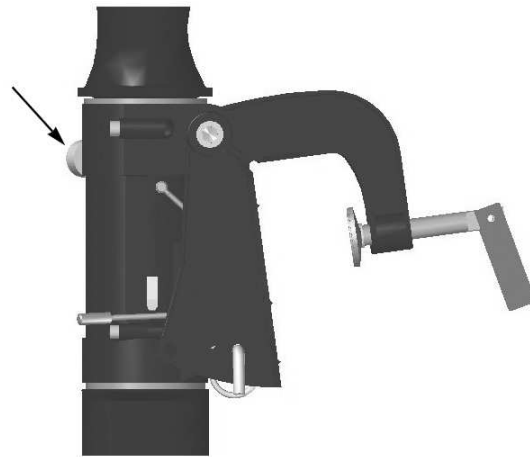
Such an unsupported motor will be tumbled out automatically by any ground impact and will not cause any accident. You can't use any reverse with such unsupported motor.

ATTENTION! Any motor impact could cause its damage

8. Boating direction detent screw

By tightening this detent screw you can provide the boat travel direction.

Detent screw

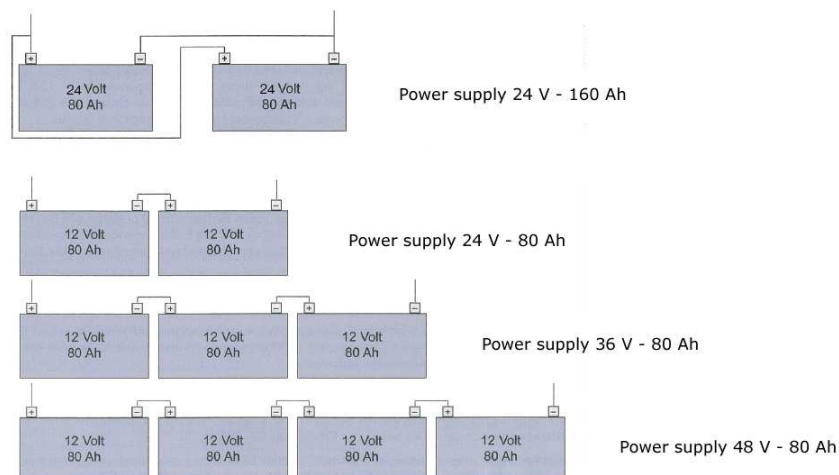


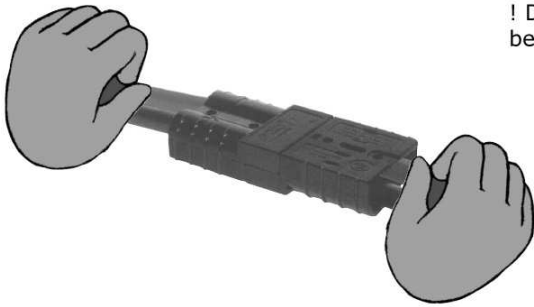
9. Battery connection to the motor

We recommend batteries as: LiFePO4, LiNiMnCoO2 (NMC) or AGM.

!!! ATTENTION !!!

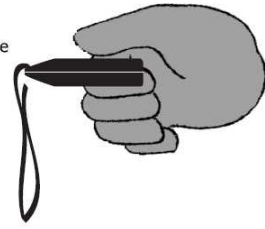
The maximum voltage for 48V battery in charged state is 55V . If you connect a voltage higher than 55V the motor electronics may be damaged. Motor can work only with 3 voltage ranges 24V or 36V or 48.





! Don't connect the incoming feed cables connectors before the motor is installed and set-up !

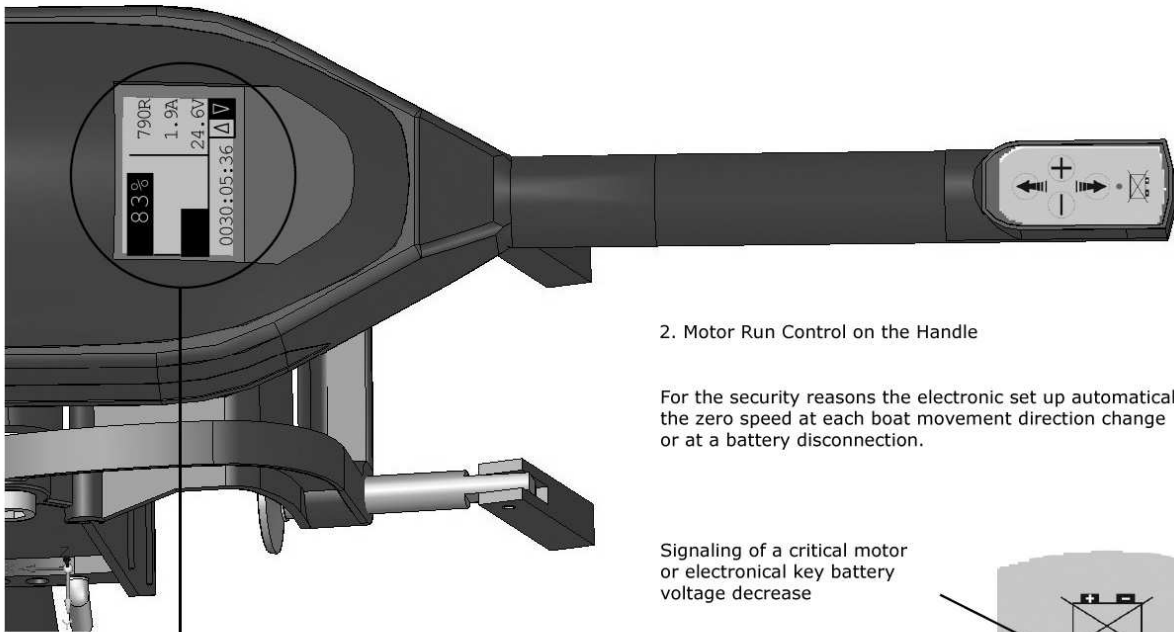
Then press an electrical key switch shortly ON/OFF and the control electronic of the complete motor is activated.



Motor control

1. Steering the outboard motor from handle (type S).

1. The main display on the motor head, displaying important information.



2. Motor Run Control on the Handle

For the security reasons the electronic set up automatically the zero speed at each boat movement direction change or at a battery disconnection.

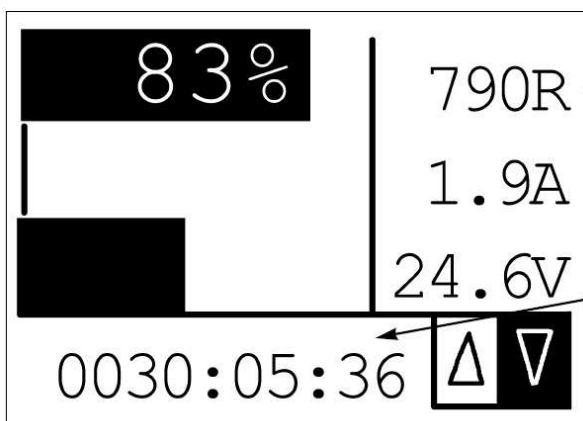
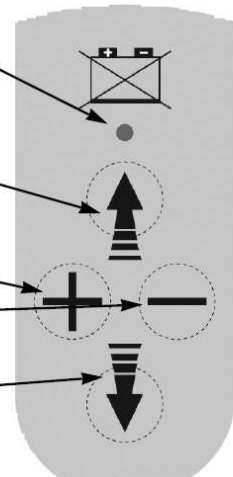
Signaling of a critical motor or electrical key battery voltage decrease

boat's movement forwards

acceleration

retardation

boat's movement backwards



RPM


momentary motor amperage consumption

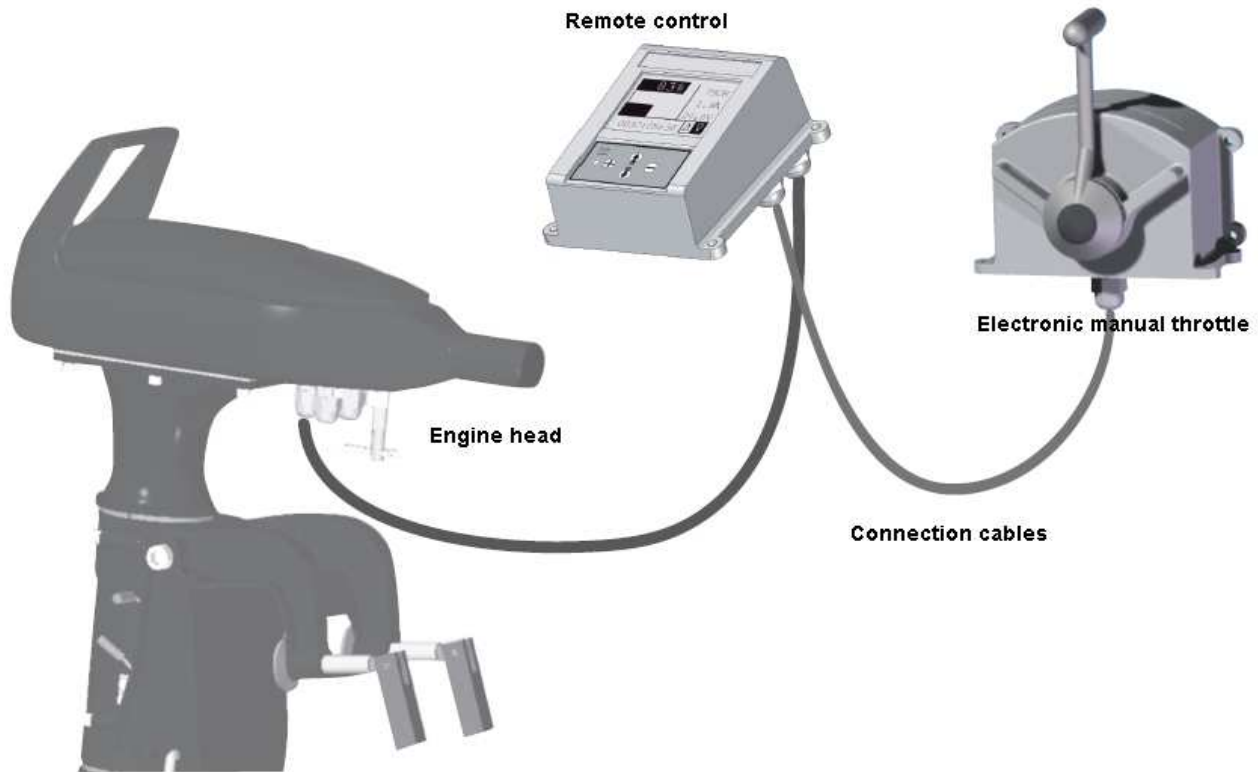
battery voltage

number of operating hours

boat's movement direction

2. Steering from remote control (steering wheel) (type W).

The principle of remote control of motor is similar to the control the motor on handle. The only difference is that, the remote control unit and the display are placed in a box near the steering wheel and connected by cable to the engine. For speed control of Karvin motor can use electronic manual throttle, which can be connected to remote panel control by cable. When the throttle will be connected to control panel then this icon  will show on display. Before you connect the throttle please be sure that throttle is in N position. When you disconnect the throttle or the throttle will break down then you can use remote control panel to control the speed. Steering of the engine is controlled via the steering wheel (link control – not part of engine).



3. Electronic key with immobilizer

- Electronic key is a transmitter, which switches off the engine automatically when departs from the display (control unit) or which doesn't allow to start the motor.
- Carry the key always hanged-up around your neck.
- By short pressing then ON/OFF button you turn on the engine.
- By long pressing (3 seconds) the ON/OFF button you turn off the engine. If you don't plan to sail for long time (2 days and more) please disconnect batteries from motor. This way you safe battery and extend its operating life.
- Never put the electronic key in the water intentionally.
- Don't leave turned on motor (display led) without supervision. When you end the sail please turn off the motor by electronic key.



Motor switch-on ON - 1 sec

Motor switch-off OFF - 4 sec

Battery is an important part of the motor

1. Battery type

We recommend batteries as: LiFePO4, LiNiMnCoO2 (NMC) or AGM.
If you will use AGM batteries we recommend batteries with capacity min. 80 Ah

2. Supply Voltage

Range of voltages for KARVIN 2700 to 6800 – 24V / 36V / 48V (3 voltages in 1 motor)

SUPPLY VOLTAGE IS INDICATED ON THE MOTOR MANUFACTURING LABEL, BY CONNECTION ANY HIGHER VOLTAGE THAN APPOINTED THERE, THE MOTOR CAN BE DESTROYED.

3. Battery protection against its complete discharge

Special electronic indicated on time (audio and lighting signals) any critical battery voltage drop and set up automatically the motor load into an economical mode for safe shore reaching.

4. Battery charging

- We recommend using the original battery charger for concrete batteries type only
- We recommend charging batteries overnight always before each boating.

Motor Servicing

- Karvin electric motor doesn't require any special service.
- Karvin motors has 24 months of warranty even for commercial purpose..
- In case of any pollution, dry it with any wet rubber only.
- In case of propeller and spindle pollution, remove first any eventual water plants and dirt and then wash them with water only.
- Let your motor control after every 800 operating hours in a specialized service center, eventually let overhaul the motor tightness.

! Attention !

- Please do not transport the motor in lifted position (tilted position).
- Please use small amount of glue PERMABOND on M10 screw and strong tight.
- Please do not put glue on propeller.



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