OWNERS

MANUAL

EV4 GREMLIN

AERO-SERVICE Jacek Skopiński
Dereniowa 4/69
02-776 Warsaw
POLAND

VERSION 1.00

Index

Warning! Please read this manual before first use and observe safety regulations first. To ensure proper operation of the vehicle for a long time, follow the maintenance instructions carefully.

If you are left with any questions after reading this manual, AERO-SERVICE will gladly answer them.

1. PRELIMINARY INFORMATION

1.1. Content and addressees of this manual

This technical publication is a manual for EV4 GREMLIN manufactured by AERO-SERVICE.

The manual refers to „main application of the device", together with all the technical information about exploitation, assembly and maintenance of the device. This manual is addressed to all users of the EV4 vehicle.

In case of loss or a case where it will no longer be usable it is recommended to order a copy of the manual from the producer.

The manufacturer reserves the right to these materials and intellectual property rights and prohibits, even in part, copying and/or disclosure of the content of the documentation without the manufacturer's permission.

1.2. Symbols

To ensure safety of the users, and to avoid any interference in operation, safety instructions must be followed. These symbols will help you achieve that:

SYMBOL	MEANING	DESCRIPTION
	Danger	This symbol indicates situations of grave danger, neglect of which can seriously jeopardize the risk of loss of health and safety of persons.
	Danger	This symbol indicates serious electrical hazards which may negatively impact health or even cause death.
	Warning	This symbol indicates the need for warning or attention to key functions or important information.

1.3. Cooperation with the user of EV4

The manual reflects the equipment and the technical condition of the machine at the time of commissioning. Any change in this manual will result in the shipment of a copy of the manufacturer's new instruction to each customer and such documentation should be stored with this manual.

1.4. Compliance with safety requirements

AERO-SERVICE declares with all responsibility, that this product is compliant with following standards:

- PN-EN ISO - 12100:2012 Safety of machines -- General design principles -- Risk assessment and risk reduction.

EV4 GREMLIN meeets the requirements of the following European Directives:

- The Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 concerning machinery and certain parts of machinery.
- Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.

The devices have been CE marked and have been issued a declaration of conformity for them - due to the requirements set out in the above directives.

Nameplate attached to the device:

2. Vehicle description

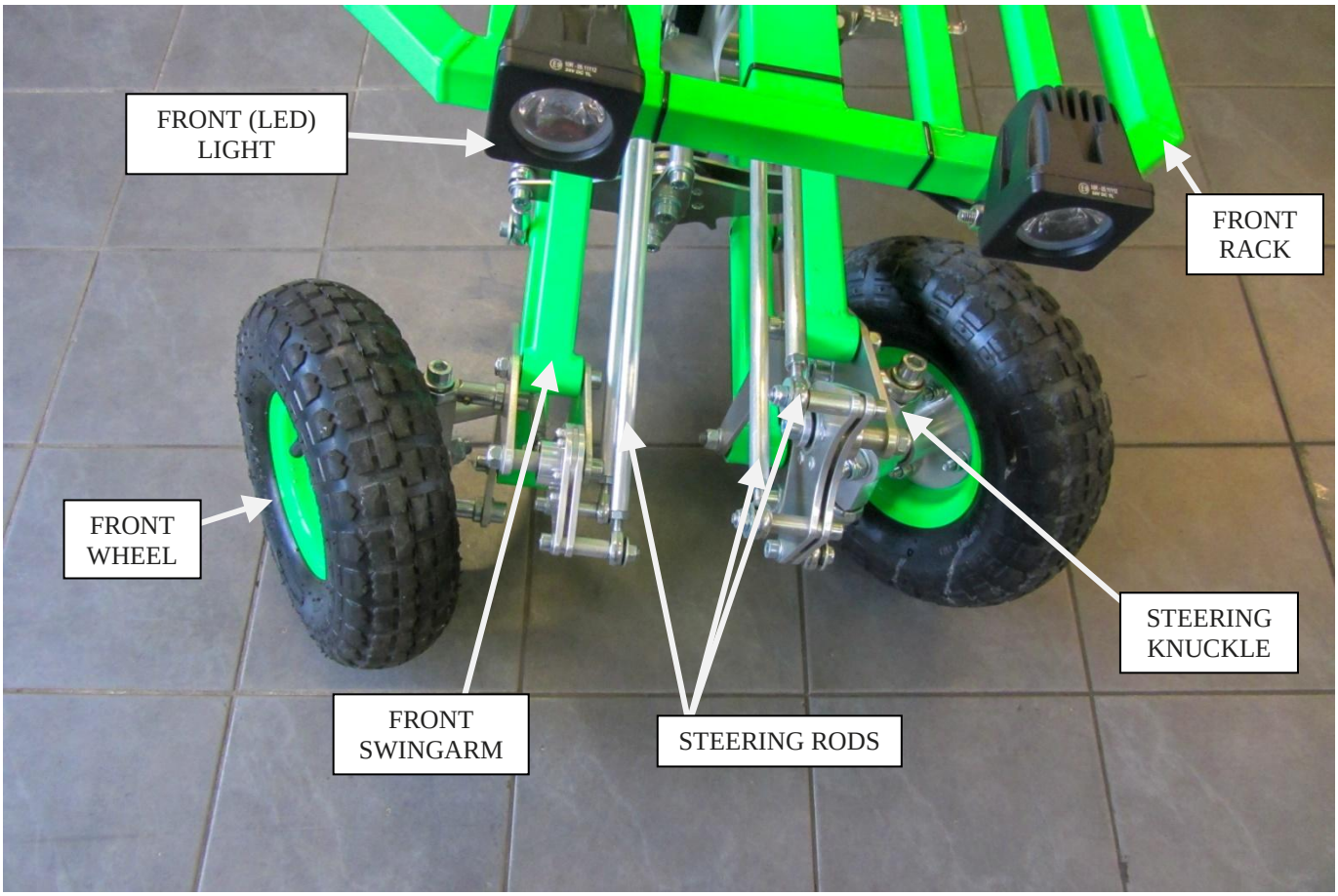
2.1. Manufacturer contact details:

AERO-SERVICE Jacek Skopiński
Dereniowa 4/69
02-776 Warsaw, Poland
Tel. +48 603 397 810
e-mail. ev4@ev4.pl

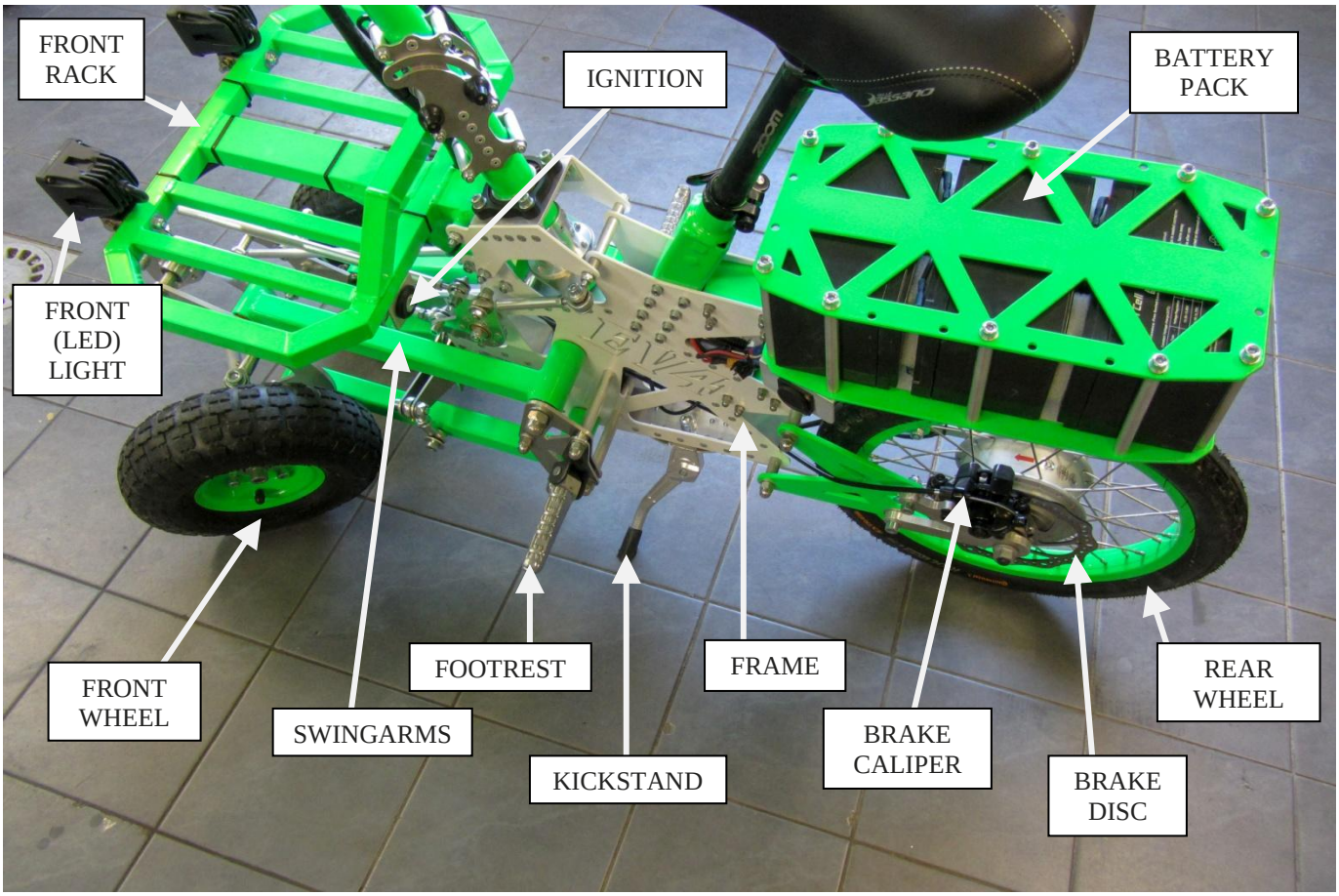
2.2. General description

The vehicle has an adaptive suspension that adapts to the shape or inclination of the terrain and allows the vehicle to tilt in the bend so as to eliminate the effect of the centrifugal force. The vehicle is used to transport people.

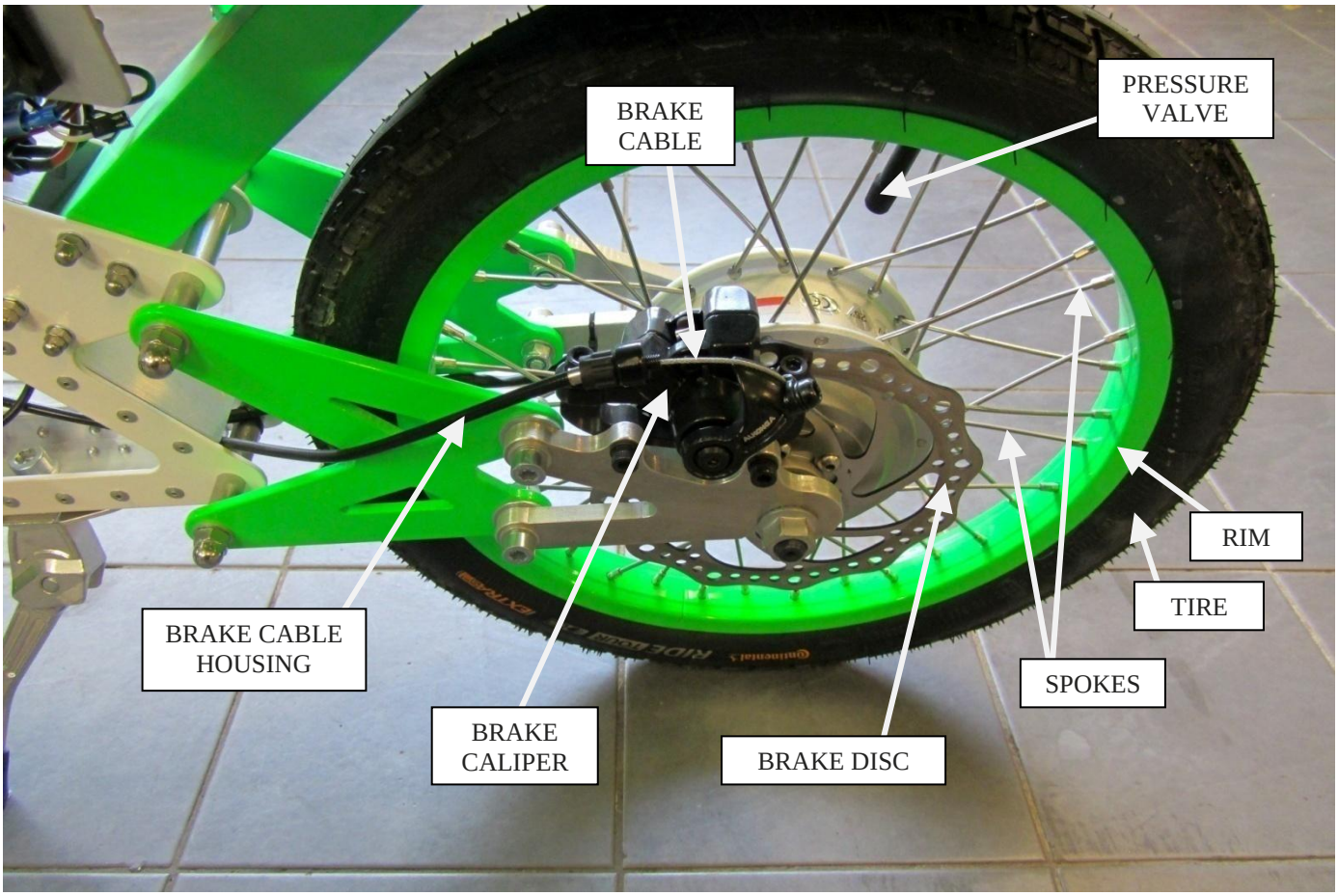
Diag. 1 EV4 GREMLIN



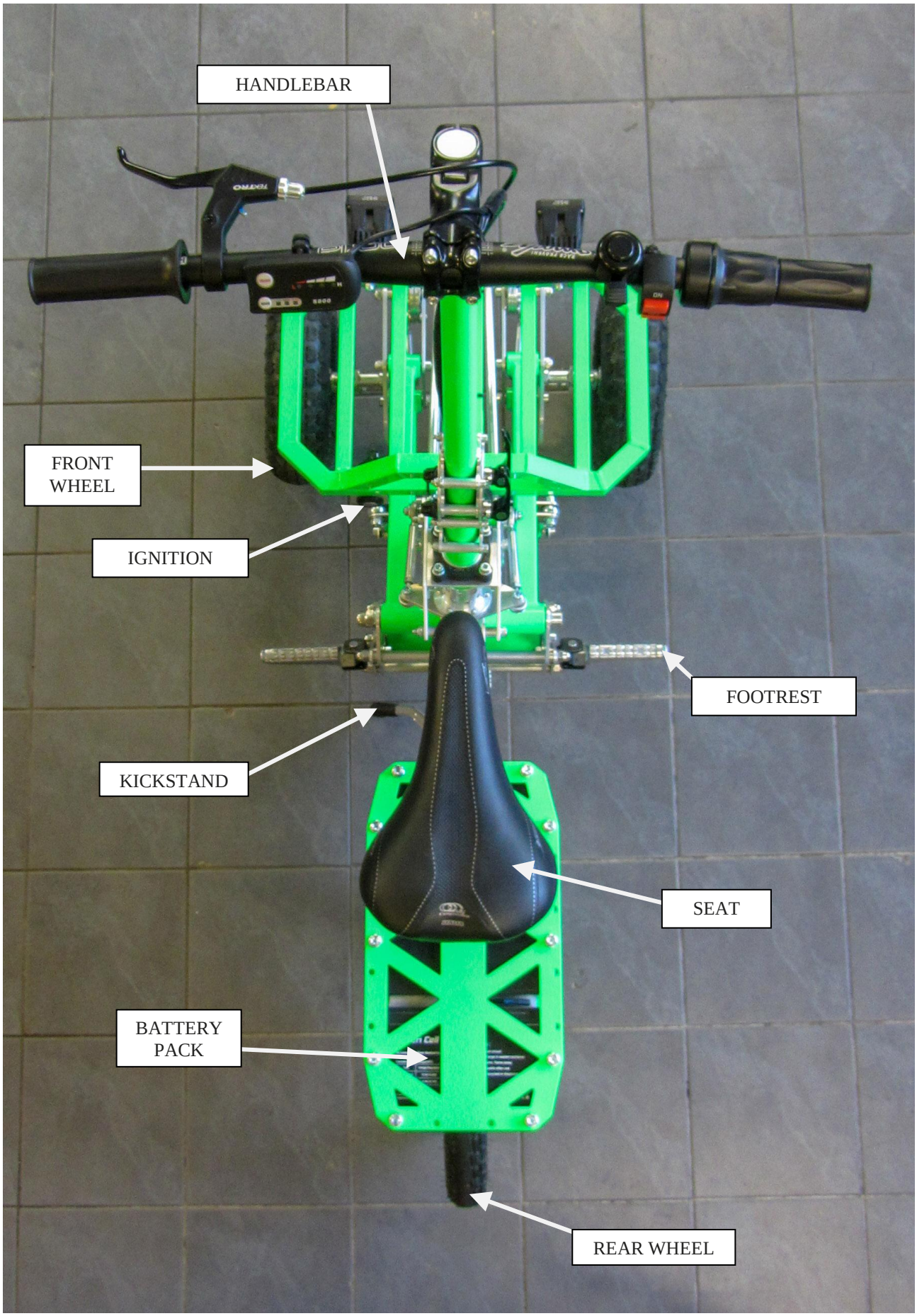
Diag. 2 MAIN PARTS



Diag. 3 MAIN PARTS



Diag. 4 MAIN PARTS



Diag. 5 MAIN PARTS

3. Proper use

The vehicle can only be used to transport people over 18 years of age. The weight of the person and the baggage must not exceed 100 kg.

WARNING! It is forbidden to use the vehicle contrary to its purpose.

Use for other purposes is not allowed. Proper use also includes all activities related to the correct and safe operation and maintenance of the EV4. Accordingly, the user is obliged to:

- read the manual and adhere to its recommendations and warnings;
- understand how the machine operates and maintain safety;
- avoid accidents.

4. Warnings for unauthorised use

WARNING! The manufacturer is not responsible for the consequences of improper use.

- EV4 GREMLIN mey not meet the requirements for use in traffic. Please check your local traffic laws.
- Incorrect use of EV4 may cause personal injury. Use protective clothing such as suitable footwear, gloves, helmet, knee pads, elbow pads, safety goggles, etc.
- Be very cautious when using this product on: unhardened, wet, slippery and uneven surfaces.
- It is forbidden to drive under the influence of alcohol, intoxicants, narcotics, and drugs which don't allow driving vehicles.
- EV4 is an electric vehicle, so using it in rain or in humid conditions is not recommended. Driving into puddles should be avoided.
- It is prohibited to: pour water onto the EV4, store it in rain, wash it and clean it under running water. Removing dirt is possible using a damp cloth.
- Users under the age of 16 must be looked after by their parents.
- Persons using the vehicle must have the ability to maintain balance while driving as they would on a two-wheeled vehicle such as a bicycle, scooter or motorbike. They should also have the appropriate height so that when using the vehicle they can support their foot during the stop. They must be people who have good eyesight, reflexes, and are able to make quick decisions.
- The vehicle owner is fully responsible for any damages resulting from the use of the EV4

- EV4 is not designed for extreme driving. It is forbidden to perform jumps and other dangerous evolutions. You cannot speed it up and stop too fast.
- Speed must be adapted to field conditions. Longer braking distances should be considered for slippery surfaces.
- Overload: do not overload the vehicle's power package and overload the vehicle itself. The weight of the driver along with the luggage must not exceed 100kg. Overload and excessive load can damage the vehicle and the power unit.
- Driving at the same time is only permitted by one person. Driving in two or more is prohibited.
- Before each use of the vehicle, the driver is obliged to inspect the technical condition of the vehicle. Make sure all components are in place, no screws and nuts missing. Check the front and rear brakes.

5. Residual risk

Residual risk is risk that still remains after all precautions have been taken.
When observing such recommendations as:

- read the manual carefully;
- do not place hands in between moving parts ;
- do not make any modification or repairs to the electrical parts of the vehicle;
- do not operate the vehicle without reading the manual first,
- secure the EV4 from persons unauthorized to operate it,

Residual risk can be eliminated without endangering people and the environment. There is a residual risk in case of non-compliance with the specified recommendations and guidelines.

6. Technical information

Main technical information is shown in the table below.

TECHNICAL INFORMATION	
INPUT VOLTAGE	**230 V**
OUTPUT VOLTAGE	**37 V**
FREQUENCY	**50-60 Hz**
MAXIMUM POWER OUTPUT	**700 W**
WEIGHT with Li-Ion battery pack	**27 kg**
WEIGHT with gel type battery pack	**37 kg**

7. Putting to use

7.1. Minimal requirements for vehicle operation

EV4 is an electric vehicle, so using it in rain or in humid conditions is not recommended. Driving into puddles should be avoided. It is prohibited to: pour water onto the EV4, store it in rain, wash it and clean it under running water. Storage and use temperatures must be between +1 and +40 degrees Celsius.

7.2. Before use

Take special care when starting up the machine; check all safety and security functions. Remember to read this manual carefully and first observe safety regulations.

Check before use:

- ✓ Tire pressure,
- ✓ Battery charge.
- ✓ Check for steering control malfunctions.
- ✓ Check for brake system malfunctions.

8. Operator requirements

The person selected and authorized to operate and maintain EV4 must have the appropriate knowledge. Service work may only be performed by persons who have manual skills and are familiar with the operating instructions. To properly handle EV4 the user must:

- Know how to use and seek information in this document;
- Know how the EV4 functions;
- Have a medical condition consistent with the certificate given by a physician,
- Be mentally and physically fit;
- The person selected and authorized to operate and maintain EV4 must have the appropriate knowledge.
- The weight of the driver with the luggage must not exceed 100 kg. Overloading can damage the vehicle and drive train.
- Recognize abnormalities in functioning and, if necessary, take necessary measures to remove them.
- Persons using the vehicle must have the ability to maintain balance while driving as they would on a two-wheeled vehicle such as a bicycle, scooter or motorbike. They should also have the appropriate height so that when using the

vehicle they can support their foot during the stop. They must be people who have good eyesight, reflexes, and can make quick decisions.

9. Use of Personal Protective Equipment

To avoid injury when using EV4, wear protective equipment. Equipment includes bicycle helmet, knee and elbow pads. Protective gloves are recommended during repairs and maintenance.

10. Use

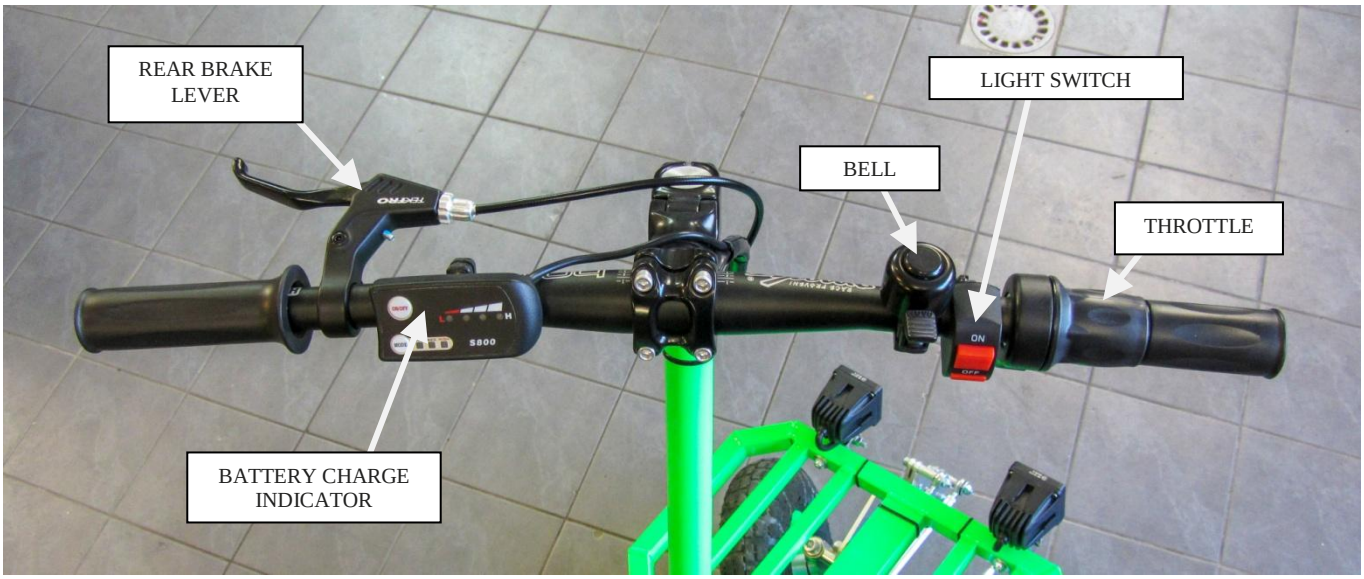
10.1. How to operate the EV4

When using the EV4, sit on a seat, hold hands on the steering wheel, feet while on the ground and while driving on footrests. Keep your hands and feet away from all the mechanical components of the vehicle such as steering suspension or drive system. Do not touch: vehicle mechanisms drive system and vehicle suspension during operation. When you move the vehicle, the feet of the vehicle must be moved directly onto the footrests. Before using the vehicle for the first time, charge the battery to 100%.

The throttle is on the right hand side of the steering wheel. It is used to start and to adjust the speed of the vehicle. Increasing the speed is done by rotating the handle in a clockwise direction (looking at the lever from the left side of the vehicle). When opening the throttle one should always be sitting on the vehicle. Hands must be on the steering wheel. One foot should be on the footrest, the other leg should be used to slightly push away from the ground while opening more throttle. One should take great care not to let the leg get under the rear wheel. When moving, both legs should be on the footrests.

The rider should be sitting on the seat. If necessary it is allowed to be moving while standing on the footrests. This allows for a greater range of body balancing in rough terrain. However, bear in mind that when standing one is moving the centre of mass higher and consequently lowering the stability of the vehicle. Stand steady on the footrests and distribute weight on both feet equally. Standing with uneven weight distribution is forbidden and can result in loss of balance and tipping. The equilibrium should be kept in the same way as in two-wheeled vehicles. Turning is done by simultaneous body balance and steering turn. The vehicle is stopped when the throttle is closed and the brake lever is pressed, ensuring that the wheel is not locked which may cause loss of steer ability, balance and tipping. Stopping in the final phase, one should support with foot.

The maximum tilting of the vehicle while riding is 30 degrees. Increasing the tilting of the vehicle beyond 30 degrees may cause the suspension to fall against the limiter and consequently vehicle damage and imbalance.



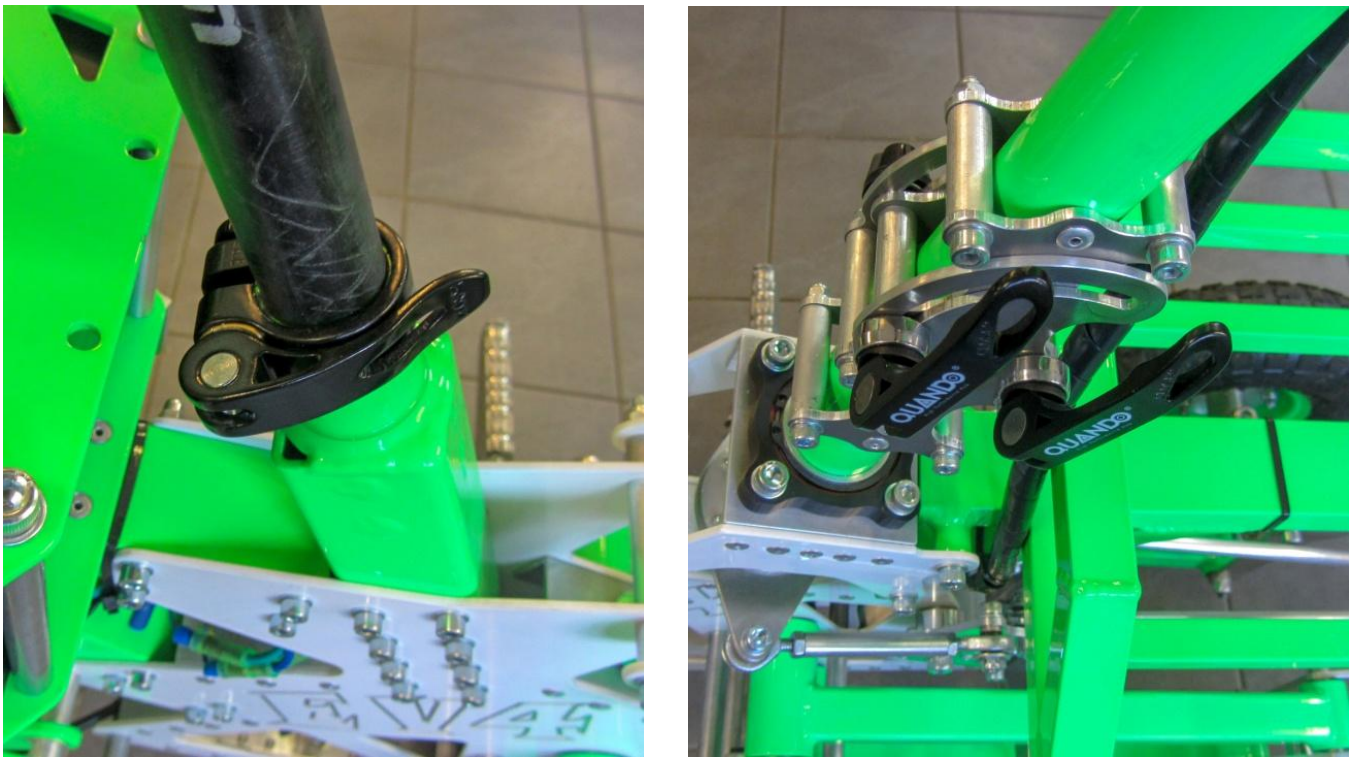
Diag. 6 THE HANDLEBAR

10.2. Essential activities during use

1.	Put the vehicle in vertical position (do not sit on the vehicle when in fully tilted position)
2.	Fold the kickstand.
3.	Sit on the seat and place one foot on the footrest. When moving put both feet on the footrests
4.	Put the key into the ignitron and turn fully to the right.
5.	The vehicle is ready to run when the battery charge indicator is activated.
6.	To move forward open the throttle.
7.	When moving put both feet on the footrests.
8.	The speed of the vehicle is adjusted with the throttle.
9.	After driving, turn off the vehicle with a key and secure it against unwanted use, etc. Use the kickstand to keep the vehicle from pipping over.

10.3. Folding the vehicle

To fold the vehicle, unlock the 3 clamps located on the seat post and the steering column. Slide the seat down into the mounting post and fold the steering column forward. Lock the clamps to secure the parts.



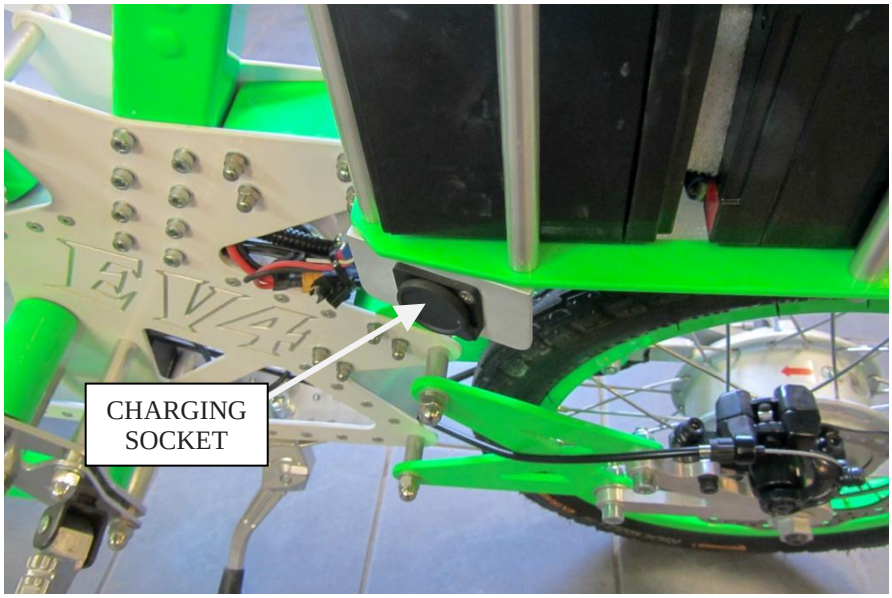
Diag. 7 Folding mechanism

Diag. 8 Folding mechanism

10.4. Charging

In order to properly charge the battery, use the charger supplied with the vehicle. It is forbidden to use a charger other than the original charger, because that may result in electrical damage, short circuit, fire and personal injury. It may also cause permanent damage to the battery and the vehicle's electrical system.

The charger must first be connected to the vehicle then to the network. Take the lid off the socket and then plug in the charger. It be disconnected from the vehicle when the vehicle is fully charged (charge will not occur after 100%). It is indicated with a green lamp on the charger. Secure the vehicle's charging socket when charging is complete. After the charge is complete, one can start the vehicle with the key. Disconnect the charger before starting the vehicle. Do not connect any equipment or short connectors to the charger socket. The charger for the EV4 does not charge other batteries.



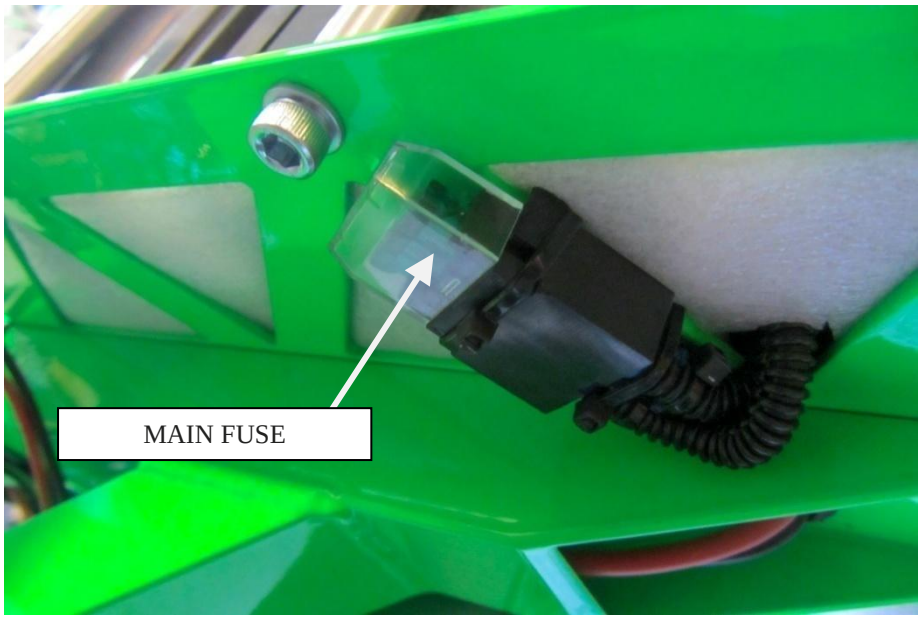
Diag. 9 CHARGING SOCKET

10.5. Fuse

EV4 vehicles have fuses for electrical wiring. If the vehicle cannot be started or the battery won't recharge check whether the fuse has been blown.

If the vehicle cannot be started and the fuse is working, contact the manufacturer / service. Do not perform repairs on your own. EV4 GREMLIN has a main fuse with a current of 30 A. When it is necessary to replace the fuse, the new one must have the same parameters.

It is forbidden to use a fuse of other parameters. This may cause damage to the electrical system and fire.



Diag. 10 FUSE LOCATED UNDER THE BATTERY RACK

11. Setup

1.1. Seat height

The seat is equipped with a bicycle seat tube with variable height adjustment. Loosen the pipe clamp to change the height. After fixing the height again tighten the fixing. Pay attention to the proper crimping force of the tube. Insufficient force of clamp may cause the seat to fall while driving. This situation is dangerous for the driver.

1.2. Braking system

The EV4 Gremlin is equipped with a mechanical disc brake system on the rear wheel. Operate the brake lever with your index finger and middle finger instead of your whole hand. If squeaking occurs during braking, it has become ineffective, or other disturbing braking problems are observed immediately replace the brake pads.

12. Maintenance

Please observe the following maintenance recommendations:

- The maintenance and servicing times given in this manual must be strictly observed.
- Any changes have to be approved by the manufacturer.
- To prevent premature wear of EV4, diligently clean and maintain them at regular intervals.
- Correct maintenance ensures that the service life is extended and the level of security remains unchanged.
- Carry out maintenance procedures using personal protective equipment (protective gloves).
- Do not throw waste into the environment as a result of maintenance. Dispose of them in accordance with applicable regulations.
- Some maintenance and repairs require the use of specialized tools and knowledge of how to perform such repairs. Therefore, repairs must be carried out only by the manufacturer or in the place indicated by the manufacturer.

- Most of the parts used to make EV4 are aviation grade. Fabrication of components from other materials will not provide adequate strength and consequently will not ensure proper operation of the vehicle.
- The frame and other parts of the vehicle are riveted with aviation grade rivets. Repairing the vehicle with other rivets than recommended by the manufacturer can reduce the strength of the individual components or damage the vehicle.

12.1. Wheels

The EV4 has 16 inch spoke wheel with aluminium rim on the rear and 4 inch wheels on the front. It is very important to maintain proper pressure in the wheels. It should be 0,4-2 Bar in the front wheels and 2-2.5 in the rear wheel. Too low or too high pressure in the tires can cause damage to: tires, wheel rims, suspension and cause excessive electricity consumption. It is very important that the tread of the tire is correct and not worn out. Too much tread wear can cause tire breakage, poor vehicle grip and poor tread. Uneven tread wear may indicate wheel distortion, improper centring, suspension failure, incorrect tire pressure, improper tire operation, improper tire assembly, etc. When the tire is punctured or has low pressure it needs to be replaced immediately. Always remove air from the wheel before replacing the tire.

12.2. Bolts and glued parts.

All screws used in EV4 are screws with a higher strength class. Replacing them can only take place with screws of adequate strength. The minimum strength class of screws is 8.8. Some screws such as the rocket axles have a strength class of 12.9. Almost all used nuts are self-locking nuts and are one time use only. After unscrewing, replace them with new ones. Some nuts, for example when attaching the rocker arms for safety reasons, are blinded. In screw connections where self-locking nuts are not used for safety, a self-locking safety thread is used: Loctite 243. Loctite 603 is used in some places, such as bearing housings, wheel alignment, and engine rack mounting. Removal and reassembly of these components requires the use of specialized tools, preheating when disassembling and reuse of glue during assembly.

12.3. Lubrication

Important components requiring lubrication are ball joints in the suspension system and in the steering. The M8 ball joints are in suspension - there are a total of 4 units. The right lubricant for these is engine or gear oil used in automotive industry. There are a total of 4 M10 and 16 M6 joints in the steering system. All of them require periodic lubrication. They should be lubricated every 100-400 km. The period in which the articulations must be lubricated depends on the style of riding, the type of terrain, the mass of the user, the dirt and sanding. If the vehicle is standing unused for more than 2 months then the joints should also be lubricated before using the vehicle after such a break. If the joints become too loose, replace them with new ones, keeping the same length of the pushers when replacing them.

13. Fixing

EV4 repair may only be carried out by specially trained AERO-SERVICE personnel. EV4 repairers must adhere to the factory guidelines. Failure to comply with the recommendations may result in loss of health.

WARNING! Performing such operations requires appropriate technical competence or specific skills so that they can only be performed by qualified personnel with experience gained and recognized in the performance of their activities.

14. Moving EV4

The vehicle can be moved by: handlebar, seat, wheel rims as well as front and rear rack. It is forbidden to move the vehicle by grabbing the suspension or steering rods. This may cause a hand and body injury and damage to the vehicle.

When transporting EV4 on means of transport, it must be secured with fastening straps so that it cannot be moved. Fixing straps must not be attached to delicate components like spokes, electrical wires, steering rods, etc.

15. Part specification

If you need to replace machine parts, you must contact AERO-SERVICE (tel. +48 603 397 810, e-mail: ev4@ev4.pl) before replacement. AERO-SERVICE will present a suitable replacement model. Using a component that is not approved by AERO-SERVICE may result in an accident. When replacing some spare parts, you must follow the original parts manual. The life span of the entire machine provided by the manufacturer is 15 years.

16. Noise

The machine in terms of noise emission complies with European standards and directives. The average noise level during operation of the operator at a distance of 1m is < LpA=70 dB.

17. Radiation

Components of the machine are built in accordance with the requirements of the EMC Directive 2014/30/EU, so that the machine does not emit harmful electromagnetic interference and is itself resistant to such interference.

18. Troubleshooting

If the vehicle is not working or does not work properly, do not troubleshoot or repair the vehicle by yourself, return it to the manufacturer or to the person indicated by the manufacturer.

Procedure:

In the event of a breakdown, please contact us by phone +48 603 397 810 or the person / company indicated by the manufacturer. Many simple failures can be repaired by giving instructions over the phone. In the event of a major breakdown that cannot be remotely repaired, the machine must be delivered to the place of purchase after prior contact with the manufacturer.

19. Declaration of conformity

DEKLARACJA ZGODNOŚCI UE

Declaration of conformity

Nr

2017/DC_16393/01

PRODUCENT:
Manufacturer:

AERO-SERVICE Jacek Skopiński
Ul. Dereniowa 4/69
02-776 Warszawa
Poland

Deklarujemy z pełną odpowiedzialnością, że nasz produkt:
We declare with full responsibility, that our product:

NAZWA:
Name:
EV 4

MODEL:
Model:
BIKE, QUAD

NUMERY SERYJNE:
Serial numbers:
001-999

ZASTOSOWANIE:
Application:
EV4 służy do transportu osób.

Jest zgodny z następującymi dokumentami odniesienia:
Compliance the following documents of reference:

DYREKTYWY:
Directives:
2006/42/WE
2014/30/UE

NORMY:
Harmonized standards:
PN-EN ISO 12100:2012

Dokumentacja została stworzona przez:
Documentation was created by:
AERO-SERVICE Jacek Skopiński
Ul. Dereniowa 4/69, 02-776 Warszawa

Miejsce przechowywania dokumentacji:
Stocking location of documentation:
AERO-SERVICE Jacek Skopiński
Ul. Dereniowa 4/69, 02-776 Warszawa

Niniejsza deklaracja zgodności wydana zostaje na wyłączną odpowiedzialność producenta.

AERO - SERVICE
JACEK SKOPIŃSKI
ul. Dereniowa 4/69 02-776 Warszawa
NIP: 521-271-55-68
Regon: 140076428

WARSZAWA 01-02-2017

Miejsce, data:
Place, date:

Stanowisko i Podpis osoby upoważnionej:
Signature of authorized person:

NOTES

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