**THIS DOCUMENT IS LIVE AND ANY CHANGES WILL HAPPEN AS MACHINES AND SPECIFICTIONS ARE ADDED OR UPDATED. Last updated 30.9.2024**

## APPENDIX D: ELECTRIC MOTORCYCLES – Motocross

Safety is an absolute priority for this class. In the event of a fire this may result in the event being terminated depending on where at the venue the incident is situated. Fumes from battery fires are toxic.

The technical concept is reserved for motorcycles powered solely by stored electricity (battery/accumulator) and by the action of the wheel/s in contact with the ground.

a) For two and/or three-wheeled electric propelled machines, powered solely by stored electricity (battery/accumulator). The number of electric motors is limited to one.

All Machines must be approved by MNZ and amendments to these technical regulations may be made at any time in order to ensure fair competition. For a list of eligible electric machines, the class and disciplines in which they are eligible to compete and other specific electric machine information, refer to https://mnz.co.nz/manuals-policies/homologations/

Machine examination by a technical official is compulsory for all electric propelled machines.

**Class Performance Limits.**

For MX, SX & Miniature TT, Vets & TT's:

a) 50cc Auto & Demo Class equivalent – An electric motor with a maximum output of up to 4kw measured (measured at the motor).
b) 65cc class equivalent – An electric motor with a maximum output of up to 16kw (measured at the motor).
c) 85cc class equivalent – An electric motor with a maximum output of up to 18kw (measured at the motor).
d) MX2 / 250cc Class equivalent – An electric motor with a maximum output of up to 48hp/36kw (measured at the motor).
e) MX1 Class equivalent – An electric motor with a maximum output of up to 60hp/45kw (measured at the motor).
f) Veterans MX Class equivalent – An electric motor with a maximum output of up to 60hp/45kw

Switching to a higher power mode from that listed for the class entered during competition is strictly prohibited. Switching to lower power mode from that listed for the class entered during competition is permitted.

The power output must be confirmed during machine examination and may be checked post-race at the designated Parc Ferme (i.e. a sound test area or podium). Approved methods must be used for technical inspections.

Only off road specific machines used to compete in the listed disciplines above are permitted to compete in the appropriate classes for that discipline. Road biased machines are not eligible.

Discipline specific wheel sizes apply to mini and junior classes utilising these machines.

Electric machines are permitted to compete in the appropriate class at Club or Interclub events and with the approval from the Discipline Commissioner in consultation with the Technical Steward at National & Championship Events.
In addition to these regulations, all machines must meet New Zealand Standards for Electric Vehicles and pass machine examination prior to being permitted to compete. Refer to m i) to m vi) for information on the required standards below.

**All disciplines technical requirements**.

a) The charging system must be that supplied by the OEM separate from the machine and comply with all New Zealand electrical safety requirements including thermal overload trip, fusing and be equipped with an earth leakage protection breaker. The charging of machines must be carried out in accordance with the manufacturers' instructions.

b) Charging with OEM wall socket charger up to 3.5Kw/h may be done following the guidelines of the manufacturer in the general paddock area. The charging system must be automatic and must ensure that the battery cannot be overcharged or damaged if left permanently connected to the charger.

c) For fast charging:

i) A separate fast charging area is to be provided and controlled to allow safe fast charging of electric machines or removable batteries. It is not permitted to fast charge machines in the general paddock area.

d) A Technical Official shall check the machine for compliance with the technical specifications.

e) The machine or removable battery must not be left unattended while charging

f) All motorcycles must comply in every respect with all the requirements for racing as specified in the Manual of Motorcycle Sport for each eligible discipline, unless otherwise specified below.

g) For the accumulator (storage battery):

i) The accumulator is defined as any equipment used for the intermediate storage of electrical energy supplied by the charging unit. Any on-board accumulator is considered as an integral part of the vehicle's accumulator.

ii) The type, dimensions and weight of accumulator/s cannot be changed between official practices and race.

iii) All on-board electrical equipment, unless consisting of items originally powered by dry batteries, small accumulators or their own solar cells, must receive its energy supply from the machine's official accumulators.

h) Recovering energy generated by the kinetic energy of the vehicle is permitted.

i) The use of any carbon based source of energy in any form whatsoever with the aim of improving the performance of the machine is strictly prohibited. This includes the energy used to drive the machine's cooling system.

i) The Machine must be able to freewheel in the event that the propulsion system has stopped (i.e. charge exhausted or system failure).

j) The voltage is limited to 500 volts nominal between two points (when charging higher charging voltages are permitted).

k) A 'self-closing' throttle (power control) must be applied.

l) An emergency circuit breaker (kill switch) that isolates the battery/s and prevents drive must be fitted. The breaker must be fitted in such a position that it can be operated by the rider while seated and by an official attending the machine.

i) This breaker must be clearly identified as such.

m) For IEC/NZS Publications (Guidelines):

i) If no specific rule exists in these MoM's, the relevant IEC/NZS Standard (New Zealand electrical safety requirements or International ElectroTechnical Commission Standard) or report should be observed.

ii) IEC 60529 Degrees of protection provided by enclosures (IP Code).

iii) IEC 60783/SA TR IEC 60783:2014 Wiring and connectors for the road vehicles. This report is applicable to cabling and connectors used in battery electric road vehicles

iv) IEC 60784 Instruments for electric road vehicles. This report is applicable to the instrumentation of electric road vehicles, excluding those items which are used as instrumentation in vehicles with internal combustion engines.

v) IEC 60785 Rotating machines for electric road vehicles. This report is applicable to rotating electrical machines (traction motors and auxiliary motors) of electric road vehicles including hybrids, which are fed from the main traction batteries.

vi) IEC 60786 Controllers for electric road vehicles. This report is applicable to the equipment on electric vehicles that control the rate of energy transfer between the traction battery or batteries and the motor or motors.

n) All electric machines must have the stand by / shut off time set to maximum 15 seconds

Note: For a list of eligible electric machines, the class and disciplines in which they are eligible to compete and other specific electric Machine information, refer to: https://mnz.co.nz/manuals-policies/homologations/

## Recommended Safety Equipment and Procedures when exposed to Electric Machines.

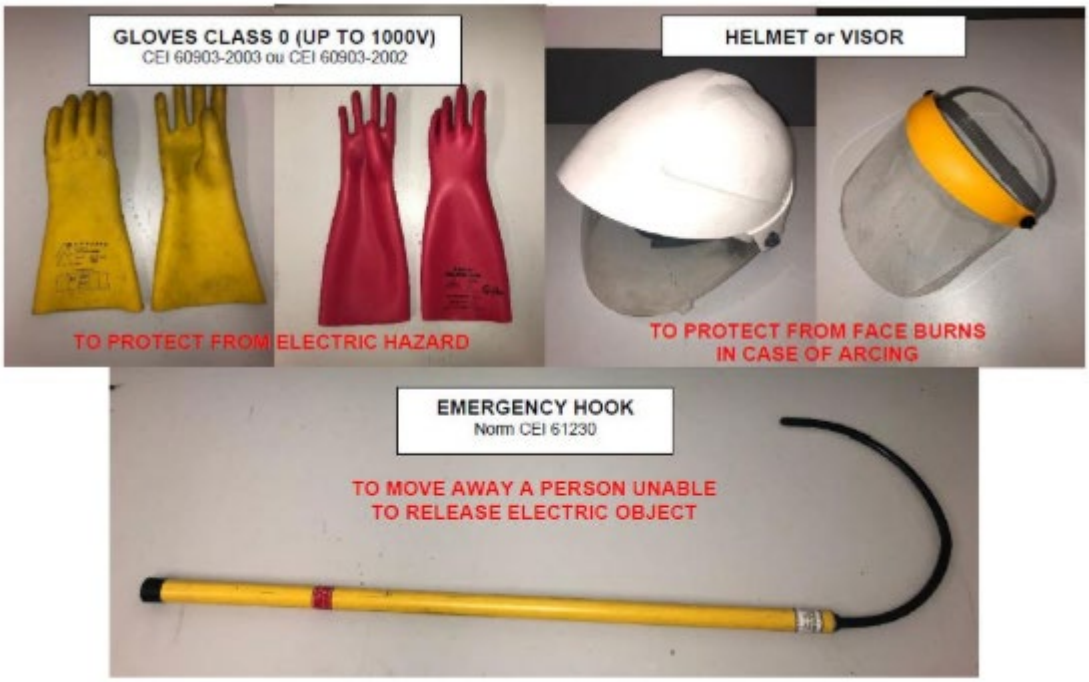
At events where an electric motorcycle is competing, all officials need to be briefed on how to identify if a bike is isolated, and how to make it safe before moving.

Officials must be mindful to ensure that the machine is turned off, is safe to approach and do not twist the throttle prior to picking any machine up involved in an incident.

### Recommended Safety Equipment

- Gloves: class 0 CEI 60903-2002 or CEI 60903-2003 (until 1000 V) – class 1 (above 1000 V.)

- Robust shoes with insulated soles
- Safety glasses (helmet or visor)
- CO2 fire extinguisher for HV system (min. 1 with a valid certification) - optional
- Emergency hook: CEI 61230
- 3m x 3m Fire Blanket




## Recommended Safety Equipment and Procedures when exposed to Electric Machines.

## IF A FIRE BREAKS OUT RING 111

## Flag Marshals and other "on track" marshals briefing must include instructions in event of fire

**Electrical fire in the pits or paddock**

- Officials/marshals immediately inform the clerk of the course or Steward.
- Officials/marshals evacuate any person in the area
- Officials/marshals must not directly touch the vehicle
- Officials/marshals maintain a safe distance until the fire is out.
- Officials/marshals must quarantine the area around the machine.
- The machine must remain under surveillance until proven safe to move.

**Electrical fire on track**

- Officials/marshals immediately inform the clerk of the course or Steward indicating the rider status.

• Steward or the clerk of the course stops the session (red flag).
• Officials/marshals evacuate any person present in the area
• If required officials/marshals should use the safety hook to separate the rider from the machine if the safety hook is available.
• The rider must be checked by the medical crew.
• Officials/marshals maintain a safe distance until the fire is out.
• Officials/marshals must quarantine the area around the machine.
• The machine must remain under surveillance until proven safe to move.

**Other hazards (overheating, sparks, electric shocks, electrical dysfunction, auto-riding, etc. …)**
• Officials/marshals immediately inform the clerk of the course or Steward indicating the rider status
• Steward or the clerk of the course stops the session (red flag) if applicable.
• Officials/marshals evacuate any person present in the area.
• Officials/marshals must approach the machine with caution and turn the machine off if safe to do so.
• Officials/marshals must quarantine the area around the machine.
• The machine must remain under surveillance until proven safe to move.

**Electric Machine involved in a crash resulting in severe damage to the machine.**

• Officials/marshals immediately inform the clerk of the course or Steward indicating the rider status.
• Steward or the clerk of the course decides if the session must be stopped or not.
• Officials/marshals evacuate any person present in the area of the crash
• Any riders must be checked by the medical crew.
• Officials/marshals must quarantine the area around the machine.
• The machine must remain under surveillance until proven safe to move.