



FÉDÉRATION INTERNATIONALE  
DE MOTOCYCLISME

**FIM RALLY-RAID  
TECHNICAL RULES**

**2023**

*RÈGLEMENTS TECHNIQUES  
RALLYES-RAID*



**WORLD  
RALLY-RAID™  
CHAMPIONSHIP**

# **FIM Rally-Raid Technical Rules**

# **2023**

# **Règlements Techniques Rally-Raid**

<b>YEAR 2023</b>		
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4	09.03.2023	Sound Regulations

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## DIAGRAMS

Any references to the male gender in this document are made solely for the purpose of simplicity, and refer also to the female gender except when the context requires otherwise.

## **01.01 INTRODUCTION**

The term motorcycle covers all vehicles having, in principle, less than four wheels, propelled by an engine and designed essentially for the carriage of one or more persons of which one is the rider of the vehicle. The wheels must normally be in contact with the ground except momentarily or in certain exceptional circumstances. Furthermore, in order to traverse certain surfaces one or all of the wheels can be replaced with skis, rollers or chains.

## **01.03 FREEDOM OF CONSTRUCTION**

A motorcycle must conform to the requirements of the FIM regulations, to the Supplementary Regulations, as well as to a number of specific conditions that the FIM may require for certain competitions. No restriction is placed on the make, construction or type of motorcycle used.

All solo motorcycles (Group A) must be constructed in such a way that they are entirely controlled by a rider.

## **01.05 CATEGORIES OF MOTORCYCLES**

Motorcycles are divided into categories which must be observed for all meetings.

### **07.01 Categories are as follows:**

- Category RallyGP: FIM Cross- Country Rallies World Championship, Moto Rally (Up to 450cc)
- Category Rally2: FIM Cross- Country Rallies World Cup, Moto Rally (Up to 450cc)
- Category Rally3: FIM Cross- Country Rallies World Cup, Moto Enduro
- Category Quad: FIM Cross- Country Rallies World Cup, Quad
- Category SSV: FIM Cross- Country Rallies World Cup, SSV

### **07.02 Details for Categories (See also Art.01.58):**

All motorcycles will be according to Art. 01.07, with the following details:

- ~~FIM Cross-Country Rallies~~ **Rally-Raid** World Championship:

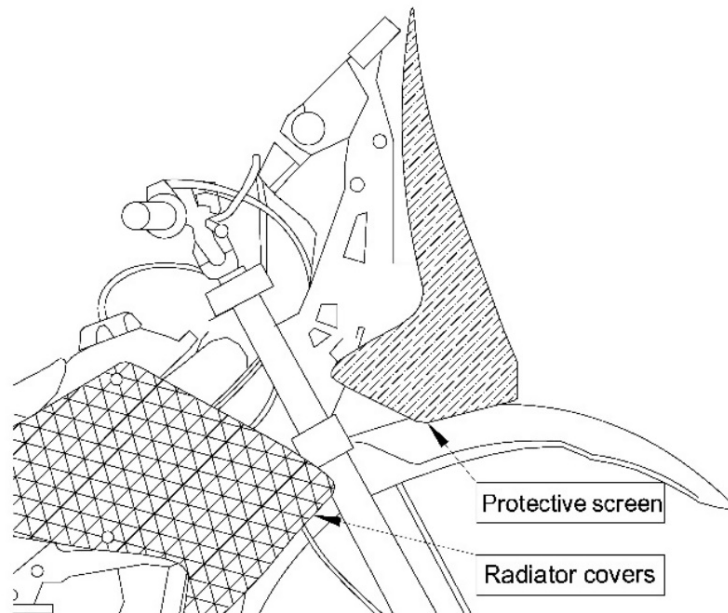
**Category RallyGP:** Moto-Rally motorcycles; based either on 'one' type unit ('proto'-type) or production based.

- FIM ~~Cross-Country Rallies~~ **Rally-Raid** World Cup:

**Category Rally2:** Moto-Rally motorcycles; (same as above)

**Category Rally3:** Moto-Enduro motorcycles; based on models from a manufacturer's catalogue only.

Extra requirement for Category Rally3: Normal on-board instruments and extra navigation equipment shall be fixed on the front fork, triple clamps, **handlebar** or on a support fixed on the steering head. A protective screen to shield the instruments is permitted (& recommended) but it cannot follow the streamline of the fuel tank & radiator covers. (see Figure 1)



**Figure 1**

## 01.11 MEASUREMENT OF CAPACITY

### 11.11 Reciprocating movement engine, "Otto" Cycle

The capacity of each engine cylinder is calculated by the geometric formula which gives the volume of a cylinder; the diameter is represented by the bore, and the height by the space swept by the piston from its highest to lowest point:

$$\text{Capacity} = \frac{D^2 \times 3.1416 \times C}{4}$$

where D = bore  
and C = stroke

When a cylinder bore is not circular the cross sectional area must be determined by a suitable geometrical method or calculation, then multiplied by the stroke to determine capacity.

When measuring, a tolerance of 1/10 mm is permitted in the bore. If with this tolerance the capacity limit is exceeded for the class in question, a further measurement should be taken with the engine cold, to 1/100 mm limits.

### **11.13 Rotary engines**

The capacity of an engine which determines the class in which the motorcycle shall compete in a meeting shall be calculated by:

$$\text{Capacity} = \frac{2 \times V}{N}$$

where V = total capacity of all the chambers comprising the engine  
and N = number of turns of the motor necessary to complete one cycle in a chamber.

This engine is classified as a 4-stroke.

### **11.15 Wankel system**

For Wankel system engines with a triangular piston, the capacity is given by the formula:

$$\text{Capacity} = 2 \times V \times D$$

where V = capacity of a single chamber  
and D = number of rotors

This engine is classified as a 4-stroke.

### **01.17 SUPERCHARGING**

Supercharging by means of a device of any kind is forbidden in all meetings.

An engine whether 2-stroke or 4-stroke coming within any one of the recognised classes (determined by the capacity of the working cylinder) shall not be considered as supercharged when in respect of one engine cycle, the total capacity measured geometrically, of the fuel charging device or devices, including the capacity of the working cylinder (if used for injecting the fuel), does not exceed the maximum capacity of the class in question.

### **01.18 TELEMETRY**

Information must not be transmitted in any way to or from a moving motorcycle.  
An official signalling device may be required on the machine.  
Automatic lap timing devices are not considered as “telemetry”.

Automatic lap timing devices must not disrupt any official time keeping methods and equipment.

### **01.21 DESIGNATION OF MAKE**

When two manufacturers are involved in the construction of a motorcycle the name of both must appear on the machine as follows:

- The name of the chassis manufacturer
- The name of the engine manufacturer

### **01.23 DEFINITION OF A PROTOTYPE**

A prototype motorcycle is a vehicle which must conform to the safety requirements as required by the FIM Sporting Code and Appendices applicable to the type of competition for which it is to be used.

### **01.25 GENERAL SPECIFICATIONS**

The following specifications apply to all vehicles of the groups indicated and to all types of competitions except where otherwise stated in the corresponding section of the FIM Sporting Code.

They should also be applied to all national competitions unless the FMNR (National Motorcycling Federation) has otherwise directed.

Further specifications for some competitions may also be required and these will be detailed in either the appropriate FIM Appendix or in the Supplementary Regulations for the competition in question.

All vehicles from the World Championship 450cc and Quad categories must conform in all respects to the 1968 Vienna Convention, even if the country in which the machine was manufactured is not a signatory to that Convention, and be registered for road use.

All motorcycles/quads must carry the necessary survival equipment as requested in the ~~Cross-Country Rallies~~ **Rally-Raid** World Championship Regulations, Art. 080.28.

Concerning material verification, in case of doubt, a sample or the part in question shall be taken and analysed at a Material Testing laboratory.

### **25.01 Use of titanium**

The use of titanium in the construction of the frame, the front forks (referred only to structural parts: legs, tubes, etc), the handlebars, the swinging arms, the swinging arm spindles and the wheel spindles is forbidden.

The use of light alloys for wheel spindles is also forbidden.



The use of titanium alloy nuts and bolts is allowed.

### **25.03 Carbon fibre**

The use of carbon fibre reinforced materials is authorised (with the exception of handlebars and wheel rims).

### **25.04 Ceramic materials**

The use of ceramic parts is forbidden.

### **25.05 Other equipment**

No signal of any kind may pass between a moving motorcycle and any person, including radio and Bluetooth communication. The exception is for the signal from the time keeping transponder, the tracking system as provided by the Organiser, automatic lap timing devices or approved on-board cameras (with prior written approval from the Championship Promoter/Organiser, which cannot be granted for helmet mounted cameras).

### **25.06 Number of cylinders**

The number of cylinders in an engine is determined by the number of combustion chambers.

### **25.07**

If separate combustion spaces are used they must be connected by an unrestricted passage of minimum cross sectional area at least 50% of the total inlet port area.

## **01.26 DEFINITION OF A FRAME OF A SOLO MOTORCYCLE**

The structure or structures used to join any steering mechanism at the front of the machine to the engine/gear box unit and to all components of the rear suspension.

### **26.01**

Every motorcycle in the 'parc-fermé' must be equipped with a side-stand. The side-stand must be fitted, either on the frame or on the swing arm.

## **01.27 STARTING DEVICES**

Starting devices for the engine are compulsory.

## **01.29 OPEN TRANSMISSION GUARDS**

### **29.01**

A guard must be fitted to the countershaft sprocket.

## 29.02

A chain guard must be fitted in such a way to prevent trapping between the lower chain run and the final driven sprocket at the rear wheel.

## 01.31 EXHAUST PIPES

Exhaust pipes and silencers must fulfil all the requirements concerning sound control (see also Art. 01.79).

### 31.01

The axis of the silencer end must be parallel (tolerance 15°) to the two principal longitudinal planes of the vehicle. The extremity of the silencer must not pass the vertical tangent of the rear tyre.

### 31.02

The edge of the silencer shall not be dangerous in case of accidental contact with the riders or helpers. In case of quads, the exhaust pipe of the silencer must be protected by a rounded edge of minimum 4 mm.

### 31.03

Exhaust fumes must be discharged towards the rear but not in such a manner as to raise dust, foul the tyres or brakes, or any other rider.

### 31.04

On a Sidecar machine the exhaust must discharge horizontally and towards the rear, at a maximum angle of 30° to the axis of the machine.

### 31.05

Any NON-ORIGINAL valve systems installed on the exhaust system with a view to influencing (or modifying) the sound level meter test is forbidden. Only exhaust valve systems (e.g. Exup) provided by the manufacturer on the manifold are authorised. The setting is free.

## 01.33 HANDLEBARS

### 33.01

The width of handlebars must be not less than 600 mm and not more than 850 mm. (see Figure 2)

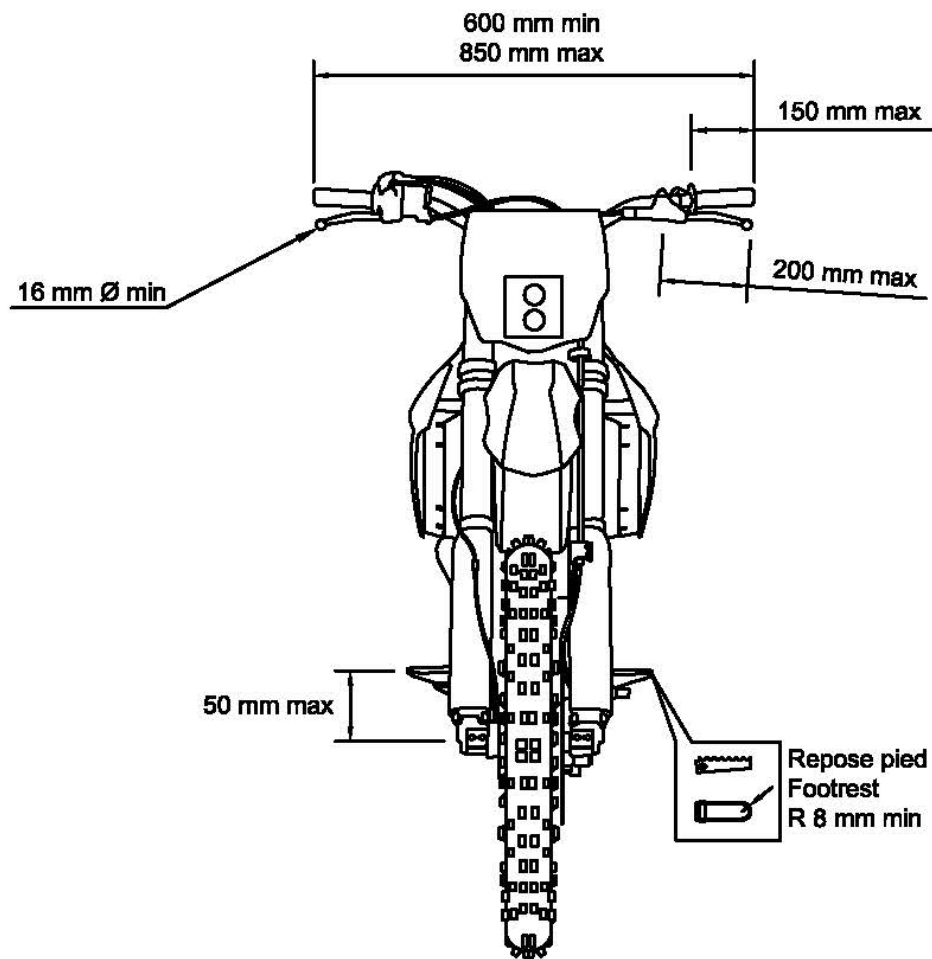


Figure 2

**33.02**

The handlebars must be equipped with a protection pad on the cross bar. Handlebars without a cross member must be equipped with a protection pad located in the middle of the handlebars, covering widely the handlebars clamps.

**33.03**

Handlebar clamps must be very carefully radiused and engineered so as to avoid any fracture points in the handlebar.

**33.04**

Exposed handlebar ends must be plugged with a solid material or rubber covered.

**33.06**

When hand protectors are used, these must be made of a shatter-resistant material and have a permanent opening for the hand.

**33.07**

Handlebars made of composite materials are not authorised.

**33.08**

Repair by welding of light alloy handlebars is prohibited.

**33.09**

Solid stops (when on full-lock, other than steering dampers) must be fitted. These must ensure a minimum clearance of 30 mm between the handlebar with levers and the tank to prevent trapping the rider's fingers.

**01.35 CONTROL LEVERS****35.01**

All handlebar levers (clutch, brake, etc.) must be in principle ball ended (diameter of this ball to be at least 16 mm). This ball can also be flattened, but in any case, the edges must be rounded (minimum thickness of this flattened part 14 mm). These ends must be permanently fixed and form an integral part of the lever. If the gear lever consists of a tube, then its edge must be rounded. (see **Figure 2**)

**35.03**

Each control lever (hand and foot levers) must be mounted on an independent pivot.

**35.04**

The brake lever if pivoted on the footrest axis must work under all circumstances, such as the footrest being bent or deformed.

**01.37 THROTTLE CONTROLS****37.01**

Throttle controls must be self-closing when not held by the hand. All air intakes into the cylinder must pass through the throttle body. No other means allowing ambient air into the inlet track of the cylinder head are allowed.

**37.03**

Solo motorcycles must be equipped with a functional ignition kill switch or button mounted on either right or left side of handlebar (within reach of the hand while on the hand grips), that cut the power to the engine.

Quads must be equipped with a safety ignition cut-out switch which must be permanently attached to the rider right wrist by a non-elastic, spiral cable, as short as possible.

### **01.39 FOOTRESTS**

Footrests must be solidly fixed or of a folding type but in this case must be fitted with a device which automatically returns them to the normal position, and an integral protection is to be provided at the end of the footrest which must have at least 8 mm radius (see Figure 2). The footrest teeth shall not be sharp. The height of the footrest teeth must be 10 mm maximum.

### **01.41 BRAKES**

#### **41.01**

All motorcycles must have at least 2 efficient brakes (one on each wheel, front and rear) operated independently and operating concentrically with the wheel.

#### **41.02**

Vehicles in Group B must be fitted with at least 2 efficient brakes operating on at least 2 of the wheels and be operated independently and operating concentrically with the wheels.

### **01.43 MUDGUARDS AND WHEEL PROTECTION**

Motorcycles must be fitted with mudguards.

#### **43.01**

Mudguards must project laterally beyond the tyre on each side.

#### **43.02**

The front mudguard covered area must respect the angle formed by one line drawn from the front edge of the mudguard to the centre of the wheel and one drawn horizontally through the centre of the wheel must be maximum 60°. (See Figure 3)

#### **43.03**

The front mudguard covered area must respect angle formed by two lines, one drawn from the rear edge of the mudguard to the centre of the wheel and one drawn horizontally through the centre of the wheel shall not exceed 70°. (See Figure 3)

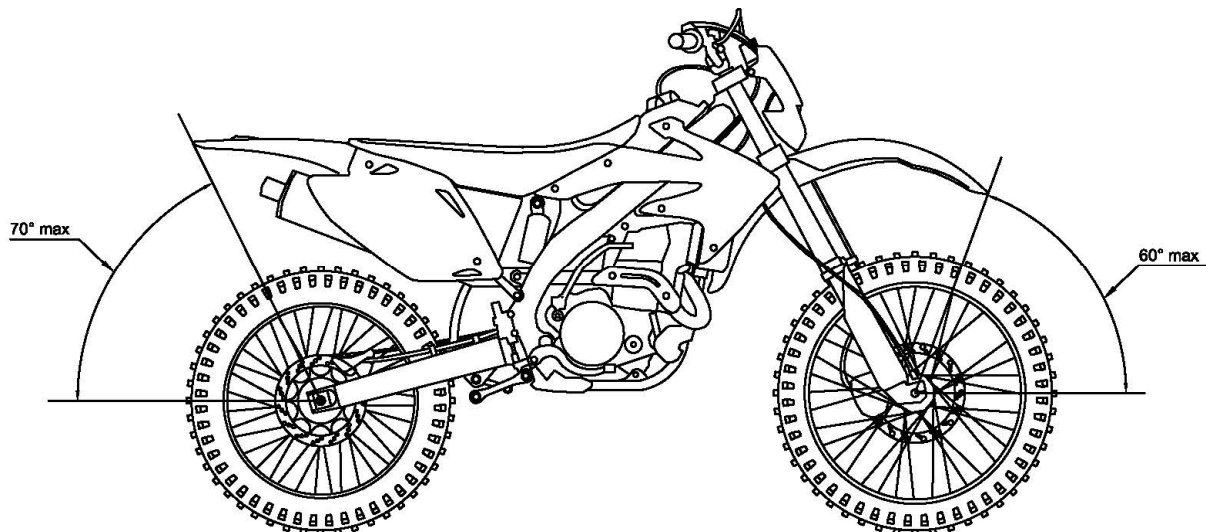


Figure 3

#### **01.45 STREAMLINING**

A 'full' fairing or 'complete' bodywork is not allowed.

Radiator covers (shields) must be made of flexible materials only (e.g. plastics).

#### **01.47 WHEELS, RIMS, AND TYRES**

##### **47.01**

All tyres will be measured mounted on the rim at a pressure of 1 kg/sq.cm (14 lb./sq.in); measurements are taken at a tyre section plane with a 90° angle with the ground plane.

##### **47.02**

Any modification to the rim or spokes of an integral wheel (cast, moulded, riveted) as supplied by the manufacturer (other than for rims with spokes, or valve and security bolts) is prohibited, except for tyre retention screws sometimes used to prevent the tyre movement relative to the rim. If the rim is modified for these purposes, bolts, screws, etc., must be fitted.

##### **47.03**

The front and rear tyre dimensions are free with reference to diameter and width.

##### **47.04**

Tyres with metal studs, spikes, chains or any other anti-skid devices are not permitted. Scoop or paddle tyres (continuous radial rib) are forbidden.

##### **47.05**

Only tyres normally available from commercial or retail sources are authorised.

Modifying the tyre is not authorised. It is forbidden to treat tyres with chemicals, cut or groove them, use tyre warmers or any other means which may alter the shape, minimum Shore hardness, construction or other characteristics.

The tyres shall appear on the tyre manufacturers range catalogue or tyre specification lists available to the general public.

They shall be approved according to UN Vehicle Regulation 75 Rev. 2 (2010) with the following specific features:

- Category of use (5.2): it shall be "snow" or "special" or "All terrain"
- Speed category symbol (5.4): M (130 Km/h) or above
- Load capacity index (5.5): 45 (165 Kg) or above.

It is recommended that the tyres be used according to the European Tyre and Rim Technical Organisation (ETRTO) guidelines.

The E approval mark and number as defined by the UN Vehicle Regulation R75 must be present on both the front and rear tyre sidewalls.

The DOT approval mark is also accepted.

Any marking on the tyre reporting "FIM" approved or similar is forbidden for new production dates (from 2018). FIM Quality Products are exempt of this rule.

#### **47.06**

The tread pattern specifications of the rear tyre are free. However, Art. 47.05 applies in full.

#### **47.07**

The number of rear tyres is limited to one per race day, except for the marathon stages where tyre change is forbidden. Each rider entered in RallyGP must declare the only manufacturer and model of tyre when registering.

### **01.55 NUMBER PLATES**

Number plates are required for ~~Cross-Country Rallies~~ **Rally-Raid**.

The Organiser shall provide each rider with a set of identification plates comprising 1 front plate and 2 side plates called number plates. The exact sizes and positions of these number plates will be explained in the SR.

The number plates shall be affixed visibly at the front and on the rear sides of the motorcycle. They shall in no circumstances cover, throughout the duration of the event, even partly, the registration number of the motorcycle.

**55.07**

The figures must be clearly legible and like the background must be painted in matt colours to avoid reflection from sunlight. The minimum dimensions of the letters being:

- Height of the number 140 mm
- Width of figure 80 mm
- Width of the stroke 25 mm
- Space between two figures 15 mm

**55.08**

The English form for numbers must be used. That is single vertical line for the "one" and a simple sloping line without a horizontal line for the "seven". (See Diagram O).

**55.09**

All other number plates or markings on a motorcycle liable to cause confusion with the number must be removed before the start of a competition.

**55.12 Number plate colours**

The background colours and figures vary according to the class of motorcycle and the type of competition, the main rules being indicated in the Supplementary Regulations for each meeting.

The colours must be matt, following the RAL colour table, example:

YELLOW	1003
PURPLE	4006
BLACK	9005
WHITE	9010

**55.13**

In case of a dispute concerning the legibility of numbers, the decision of the Technical Steward will be final.

**01.56 LIGHTING, WARNING EQUIPMENT AND SPEEDOMETERS**

Motorcycles and their equipment must comply with the national legal requirements for road traffic of the country in which the vehicle is registered and with other rules specified in the Supplementary Regulations.

The electric generator must operate continuously and normally with respect to current and voltage requirements to run front and rear lights during the competition and at post competition control. The electrical connections must be retained.

Lighting equipment for all categories must conform in every way to the International Convention on road traffic, moreover the original headlights and rear lights may be modified or replaced. Extra lights may be added.



Only digital screens provided by the organisation (GPS, TRIP, Roadbook etc...) will be allowed to be fitted on RallyGP motorcycles. No other digital screens can be installed without the previous authorization of the FIM Technical Director or the Chief Technical Steward.

**The compulsory safety equipment provided by the organiser:**

- **GPS**
- **Tracking system,**
- **Vehicle to Vehicle Alarm System**
- **Trip meter (odometer)**
- **Other, if present**

**Must follow the recommendations and guidelines provided by the organiser and also described into the Sporting Rules and or/ Supplementary Regulations.**

**01.58            ADDITIONAL SPECIFICATIONS FOR 450CC**

These vehicles are registered (allowed to be used on roads open to traffic) and can be modified and/or equipped for Off-Road ~~Cross-Country Rallies~~ **Rally-Raid** competition.

All motorcycles will be according to Art. 01.07.

**58.01            Engine capacity**

World Championship, -Cup: 450cc category:  
Single cylinder engines up to 450cc 2T or 4T (2T only allowed in Rally3)

**58.02            Engine**

The engine number must remain visible at all times.

Engine preparation is free

During the event, an “engine change” means removing the engine from the frame. Engine “A”, originally fitted in the frame of the bike can be removed from the frame to be repaired and be replaced by engine “B”. Engine “A” may be repaired during the Event on condition that the engine crankcase marked during the preliminary technical inspection remains the same.

Repairs to the engine’s “top end” (cylinder + cylinder head) are free during the event. All intervention to the “bottom-end” (inside the crankcases) will be considered as a change of engine.

A minimum of one bolt/nut used to fix the engine must be drilled in order to attach a seal embracing the frame.

The engine may be removed from the frame to repair a problem not related to the crankcase. This may be done only under the supervision of the Technical Steward. The Technical Steward only can cut and replace the seals without being penalised.

For the RallyGP category, the engines will be sealed. A seal will be placed between the cylinder and cylinder head, second seal between the cylinder and the crankcase and third seal crankcase housings. The seals will be placed during preliminary scrutineering.

During Marathon Rallies, the top of the engine can only be opened once with a presence of an official scrutineer. If the top of the engine is opened for a second time for Marathon rallies or for a first time for rallies, a penalty will be applied. Cylinder and cylinder head must remain the same for the whole event.

All intervention to the “bottom-end” (inside the crankcases) and replacement of cylinder or cylinder head will be considered as a change of engine if so, a penalty will be applied.

**See also 01.60 Marking of the vehicles.**

### **58.03 Frame and ancillaries**

The main frame must be marked with the original Vehicle Identification Number (VIN). The frame number (VIN) must remain visible at all times.

The frame shall not be replaced during the event. The frame may be repaired under the supervision of the Technical Steward. **See also 01.60 Marking of the vehicles.**

### **58.04 Fuel tank(s)**

The total fuel capacity carried in all tanks is unrestricted. For Rally3 Category, the total fuel capacity carried in the only tank allowed is 17 litres.

**Fuel tank(s) attached to the handlebar are strictly forbidden.**

### **58.05 Weight**

Unrestricted.

### **58.06 Speed Limitation**

Rally3: Top speed is limited to 130km/h

~~In 2023,~~ The maximum speed in RallyGP and Rally2 categories will be limited to 160Kmh ~~by using~~ **and controlled by the GPS provided.**

**In order to accurate the speed signal of the engine’s ECU, it’s allowed to use a maximum of one unit of the only allowed GPS antennas:**

- “2D”, Mod. “BC-GPS2CAN-000” or

- “2D”, Mod. “BC-GNSS2CAN-000”

**It has to be installed on top of rear mudguard or on top of rear fuel tank/s, but always far away the steering stem handlebar (strict minimum 50 [cm]) and following the recommendations of GPS manufacturer.**

**Wheel speed sensors are still allowed.**

## **01.59 ADDITIONAL\* SPECIFICATIONS FOR QUADS**

\*The present Art. 01.59 prescribes additional rules for Quads, while the rest of the book applies.

These vehicles shall be registered (allowed to be used on roads open to traffic).

Top speed is limited to 130km/h

Quads are set in two Groups:

**01.59.1** Group G/ Quad Racers:  
propelled by the action of two wheels (2 wheel driven).

Engine must be produced in a series and available on the market. ~~Cylinder, cylinder head may be modified, with the exception of the crankcase,~~ **Engines may be modified**, but must fulfil the FIM Technical Rules for ~~Cross-Country Rallies~~ **Rally-Raid** Quads category.

The chassis must be produced in a series (minimum quantity of 20 units) and available on the market. The chassis manufacturer must be a holder of an FIM Manufacturer Licence; in addition, the chassis manufacturer has to request and obtain the approval of the Championship Committee before race.

**01.59.2** Group H/ Quad Racers:  
**propelled by the action of four wheels (4 wheel driven).**

Refer to Article 01.07 Classes for definition.

The engine minimum production quantities for engines shall be: 200 units\*

\*The minimum required production quantities refer to units with identical equipment.

Evidence of engine production quantities may be required by FIM, certified by the manufacturer's auditing firm and/or any other institution which may provide reliable documentation written in English.

## **59.01 Engine capacity**

Group G:

- from 250cc up to 350cc for two cylinder, 2-stroke engines
- up to 500cc for single cylinder, 2-stroke engines
- up to 750cc for single cylinder, 4-stroke engines.

Group H:

- up to 1000cc for single or twin cylinders, 4-stroke engines.

## 59.02 Engine

The engine must be produced from a recognised and FIM licenced manufacturer.

The engine number (stamped on the crankcase) must remain visible at all times.

~~The following engine specifications and components may be altered from the original model:~~

- ~~1) Cylinder head:  
Intake and exhaust tracts surfaces may be polished. No addition of material is allowed.  
The gasket is free and compression ratio can be modified.~~
- ~~2) Camshafts and camshaft sprockets are free.  
Valve springs can be replaced but titanium springs are forbidden.~~
- ~~3) Pistons, pistons rings, pins and clips: may be altered or replaced from those fitted to the engine.~~
- ~~4) Exhaust system:  
Exhaust pipes and silencers may be altered or replaced.~~
- ~~5) Clutch: An aftermarket or modified clutch is permitted.~~
- ~~6) Radiator and/or oil cooler may be altered or replaced, additional radiators and oil cooler may be added.~~
- ~~7) Oil pumps and oil liners may be altered or replaced. Oil lines containing positive pressure, if replaced, must be of metal reinforced construction with swaged or treaded connectors.~~
- ~~8) Oil tanks may be added or modified.~~
- ~~9) Air filter may be altered or replaced.~~
- ~~10) Fuel pump may be modified or replaced.~~
- ~~11) Ignition / Engine Control System (ECU), hardware and software may be modified or changed.~~
- ~~12) Generator, alternator, electric starter may be modified or replaced.~~
- ~~13) Secondary transmission is free.~~

During the event, an 'engine change' means removing the engine from the frame. Engine 'A' originally fitted in the frame of the bike can be removed from the frame to

be repaired and be replaced by engine 'B' Engine 'A' may be repaired during the event on the condition that the engine crankcase(s) marked during the preliminary technical inspection remain(s) the same.

Repairs to the engine's 'top end' (cylinder + cylinder head) are free during the event. All intervention to the 'bottom-end' (inside the crankcases) will be considered as a change of engine.

A minimum of one bolt/nut used to fix the engine must be drilled in order to attach a seal embracing the frame.

The engine may be removed from the frame to repair a problem not related to the crankcase. This intervention may be done only after formal request and under the supervision of the Technical Steward. Only the Technical Steward can cut and replace the seals without the participant being penalised. **See also 01.60 Marking of the vehicles.**

### **59.03          Steering**

The machine can operate on the front wheels only.

### **59.04          Chassis and ancillaries**

Shock absorbers and associated springs are free.

Wheelbase, front and rear track are free but the overall width is defined by Art. 59.11.

The main chassis must be marked with the original Vehicle Identification Number (VIN). The frame number (VIN) must remain visible at all times.

The chassis shall not be replaced during the event. The frame may be repaired under the supervision of the Technical Steward. **See also 01.60 Marking of the vehicles.**

#### For Group H only:

The main chassis may only be altered by addition of material, no material can be removed (except original engine fixing points if an alternative unit is installed).

The position on the chassis of steering pipe, swing arm, suspension linkage mounting points must remain as in the production Quad.

The rear sub-frame can be modified, but the type of material must remain as in the production model and the weight cannot be lower.

Fairing and body can be modified or replaced.

Seat may be modified or replaced.

Battery may be changed but the nominal energy must be equal or higher than the original one.

Footrests and foot controls may be modified or replaced.

### **59.05 Number plates**

Four number plates are required:

- 1 plate fixed to the front of the machine at the level of the head lamp, facing forward.
- 1 double-side rear plate made of flexible material set on the safety bar placed behind the saddle of the quad.

### **59.06 Suspensions**

All the mountings of the front and rear suspension units, suspension arms and the steering spindle are retained by a safety wire or a splitpen.

For Group H only:

Steering linkages and suspension arms may be modified or replaced. The FIM may require demonstrating that the new parts present equivalent or higher mechanical properties to the original ones.

### **59.07 Brakes, wheels and rims**

Disc brakes, callipers and associated pipes can be changed.

The rear wheel rim diameter cannot exceed 12 inches in Group G and 15 inches in Group H. Wire spokes are not authorised.

Every front wheel must have a single, functional brake installed on each axle and be operated by a handlebar mounted lever.

At the rear, the vehicle must have a brake on each wheel or a brake installed jointly on the rear wheel axle, operated either by a lever on the handlebar or by a foot pedal.

Wheels may be replaced but not modified. Magnesium alloys and carbon-reinforced wheels are forbidden.

### **59.08 Mudguards**

The front and rear wheels must be covered by mudguards made of flexible materials, covering each wheel over an area of minimum 30 degrees.

### **59.09 Fuel tank(s)**

Supplementary fuel tanks are allowed but must be at least 25 mm (1 inch) away with relation to the edges of the protective barrier.

The maximum fuel tank capacity (counting all tanks) is 45 litres.

Original fuel tanks can be modified or replaced but the fixing points on the chassis and the fixing system must be as in the original model. Supplementary fuel tanks are allowed.

### **59.10 Protection (Diagram Q)**

The secondary chain transmission must be equipped with a cover/shield protecting both the chain sprocket and the brake disc.

A compulsory countershaft sprocket guard must cover the sprocket by 30% minimum and prevent the rider's hand/foot becoming trapped.

The complete length of the lower chain run must be shielded by a guard or a protection tube, securely fixed.

A crash 'bar' or 'guard' must be fixed at the front and the rear of the vehicle.

A protective barrier (or 'guard') of a round profile (minimum diameter: 25 mm or 1 inch) must be installed on each side of the vehicle. This protective barrier must be fitted in such a way that it is in alignment with the wheels to eliminate entanglement. There shall be no prominent (sharp) parts.

A structure of crossed belts or a metallic grid must be fitted to fill the opening between the wheels and the barrier, to prevent the riders' foot from accidentally touching the ground.

### **59.11 Dimensions**

The width cannot exceed 1300mm for group G and 1400mm for group H.

The maximum height at the rider's seat level is 950mm for group G and 1000mm for group H (with all liquids at operational level and full fuel tank, and without the rider).

### **01.60 MARKINGS OF THE VEHICLES**

**Valid for RallyGP, Rally2, Rally3 and Quad:**

**The following parts will be marked as described below, in such a way as to ensure their identification. The parts so marked must be used throughout the entire competition and must be in their proper place at the final examination. Paint markings or stickers on the crankcases and silencer must be heat resistant. The competitor is responsible for the continued presence of all seals and marks.**

**The Technical Stewards may check, at any time, the presence of these identification marks. The substitution of the original components or disregard of these regulations is strictly forbidden. Any fraudulent act that is recorded and, in particular the presentation of retouched identification marks as being intact, shall result in a penalty up to the disqualification of the competitor who has aided or abetted the offence; pursuant to Art. 3.1.3 of the FIM Disciplinary Code.**

**Any offence to the provision of the marking of parts is considered as a statement of fact.**

<b>Parts</b>	<b>Marking</b>	<b>Number</b>	<b>How or where marked</b>
<b>Spare engine**</b>	<b>Paint*</b>	<b>1</b>	<b>Right or left side</b>
<b>Frame (Chassis for Quads) main section</b>	<b>Paint + *</b>	<b>1</b>	<b>Right hand steering head</b>
<b>Silencer</b>	<b>Paint*</b>	<b>1</b>	<b>On the top</b>

**\* any indestructible means of marking**  
**\*\*when requested by the team/rider**

**Marking is restricted to these four parts only and must be done with any indestructible means of marking. The use of a marker pen is forbidden.**

**The frame consists of all welded parts surrounding the engine and supporting the steering column and the mounting points for the rear suspension/s. The frame must not be changed or replaced during the running of the event. However, the frame may be left for servicing and repairs.**

## **01.63 FUEL AND LUBRICANT**

All vehicles must be fuelled with one of these:

- unleaded fuel (from public pump station or race type)
- a mixture of unleaded fuels
- a mixture of unleaded fuel(s) and lubricant in the case of 2-stroke engines.

The unleaded fuel or the mixture of unleaded fuels used must comply with the FIM specifications as set out in Art. E from FIM Fuel Regulation.

The mixture of unleaded fuel(s) and lubricant must comply with the FIM specifications as set out in Art. F from FIM Fuel Regulation.

If a Riders/team is using Race Fuel, they must declare to the FIM Technical Director (or the FMNR Chief Technical Steward when there is no FIM Technical Director appointed) the make and type of fuel to be used during practices and race(s), upon presentation of the rider/team's motorcycle(s) at the initial Technical Verifications. They are also recommended to provide a certificate issued by the fuel company which certify that the fuel has been tested and is in conformity with FIM specifications.

## **01.64 MEDICAL AND SURVIVAL EQUIPMENT**

### **01.64.1 First-aid medical kit**

**Each competitor must provide himself with a first-aid medical kit composed of:**

- **A water disinfectant for 40 litres (hydrochlorazone or micropure)**



- Eye lotion (Boroclarine, Piroftal or equivalent)
- An antalgic (Aspirine, analgesic or equivalent)
- Two anti-diarrhoeic (Immodium, Ercéfuryl, Bimixin or equivalent)
- Antibiotic (Oracilline, Totapen or equivalent)
- Unguent, disinfecting compresses, two bandages, plasters, 5 safety pins
- One skin disinfectant (Betadine or equivalent)
- One sun screen for skin and lips
- Vitamin C tablets
- Salt tablets (Enervit or Nergisport sodium or similar)
- A soothing cream (Biafine)

#### 01.64.2 Survival equipment

The compulsory survival equipment, for the Rallies held in a desert environment is the following:

- A soft water tank of minimum 3 litres carried by the competitor, of a “Camelbak” type. At each Refuelling, competitors must fill up their Camelbak with water.
- One survival supply of rations
- ~~A general map of the country crossed (Michelin type), satellites maps are prohibited~~
- One aluminium survival blanket (about 2 m x 1 m) serving as an isothermal covering and an earth to sun signal
- A klaxon of the Vehicle to Vehicle Alarm system (example Sentinel)
- A Tracking System
- A GPS

The proper functioning of the survival equipment during the whole event is the sole responsibility of the competitor.

The existence of this equipment shall be checked before the departure of each stage. Failure to possess a part or all of this equipment will result in a refusal to start. The competitor will have 30 or 60 minutes (according to the interval between bikes and cars) to conform to the rules; beyond this delay the start will be refused.

Transport of fuel in any other way than in fuel tanks designed for this purpose is forbidden. Similarly, transport of objects, parts, tools that may cause injuries to a competitor (back pack, belt...) is forbidden. Failure to respect this rule will result in the start being refused.

#### 01.65 EQUIPMENT AND PROTECTIVE CLOTHING DURING EVENT

The FIM cannot be held liable for any injuries that a rider or passenger may sustain from the use of a specific item of equipment or protective clothing.

For the entire course, the wearing of the following protections is compulsory, under pain of disqualification.

#### 65.01 Clothing and protectors

It is compulsory that riders wear either a suit or trousers and long-sleeve shirt.

Repaired overalls are acceptable provided that the repair guarantees protection to the same standard as the original garment. The Chief Technical Steward has the right to refuse any temporary repairs which are not deemed to provide the same protection as the original garment.

Any modifications brought to the protectors remove the certification of the equipment and will not be accepted.

### 65.01.1 Airbags

It is compulsory that riders wear an airbag eligible for competition. By eligible for competition it is to be understood: an airbag system (complete vest or gilet) inside which the chest and back protector are included. The current version of airbag system eligible for competition is available here: [https://www.fim-moto.com/en/documents?tx\\_solr%5Bq%5D=airbag](https://www.fim-moto.com/en/documents?tx_solr%5Bq%5D=airbag)

At the start of the stage, the competitor must take one (or 2, depending on the model of his equipment) spare cartridge(s) for his airbag.

It is responsibility of the competitor to ensure that the airbag is operational at the start of the selective sector:

- Sufficient battery level
- Gas cartridge(s) changed in case of the previous activation
- **Switched-on and ready to use**

The neck-brace is not compatible with the airbag and therefore is prohibited.

If the airbag is inflated during the first part of the special stage, the competitor may continue the selective sector until refuelling, where he must then replace his used cartridge(s). If the airbag is inflated after refuelling or if the selective sector does not include refuelling, a competitor may end the selective sector in this way and must replace the used cartridge on arrival to bivouac.

Checks may be carried out at the start of the selective sectors as well as at the exit of the neutralisation after refuelling.

Under no circumstances may the competitor hold the FIM or the organiser in the event of a malfunctions of the airbag.

In addition, the double **deployments/shots** cartridges Airbags will be:

	2023	2024	2025
<b>RallyGP</b>	<b>Recommended</b>	<b>Compulsory</b>	<b>Compulsory</b>
<b>Rally2</b>		<b>Recommended</b>	
<b>Rally3</b>			
<b>Quads</b>			

### 65.01.2 Limb joints protectors

It is recommended that riders wear limb joint protectors for knees, hips, elbow and shoulders.

The limb joint protectors, if present, must be certified according the International norm:

- EN 1621-1:2012, Level 1 or 2

### **65.01.3 Back protector**

It is compulsory that riders wear a back protector.

The back protector must be certified according the International norm:

- EN 1621-2:2014, Level 1 or 2, only CB (Central Back) or FB (Full Back)

### **65.01.4 Chest protector**

It is compulsory that riders wear a chest protector.

The chest protector must be certified according the International norm:

- EN 1621-3:2018, Level 1 or 2

## **65.02 Footwear**

Footwear, in a good condition, made of leather or other materials having equivalent properties, shall be worn and have a minimum height of 30 cm.

## **65.03 Gloves**

Riders shall wear gloves made of leather or other materials having equivalent properties.

## **65.04 Eye protection**

Riders shall wear goggles. The use of glasses, helmet visors and "roll offs" is also permitted. The use of "tear offs" is forbidden for environmental reasons. The material used for glasses, goggles and visors must be made of shatter-proof material. Helmet visors must not be an integral part of the helmet.

Eye protectors which cause visual disturbance (e.g. scratched) must not be used.

## **01.67 WEARING OF HELMETS**

- It is compulsory for all participants taking part in practice and races to wear a protective helmet. The helmet must be properly fastened, be of a good fit, and be in good condition. The helmet must have a chin strap type 'retention system'.

- A protective lower face cover must be present and must be not detachable and not moveable.
- Helmets constructed with an outer shell made of more than one piece are not permitted (e.g. they must not contain any seam).
- A retention system with a strap and the double D ring closing system is recommended.
- All helmets must be marked with one of the official international standard marks mentioned in Art. 01.70. Any FMN approval marks do not substitute the official international standard marks.
- A helmet is made to provide protection. A helmet is not a platform to attach foreign objects. Cameras or other accessories are NOT permitted nor shall be attached to the rider's helmet.
- Long hair must not come out of the helmet. Long hair must be completely contained within the helmet.

Failure to observe the above rules will entail exclusion.

## **01.69 HELMET OPERATIVE INSTRUCTIONS**

### **69.01**

Scrutineers, under the supervision of the Chief Technical Steward, may check prior to practice and the races that all helmets meet the technical requirements.

### **69.02**

If a helmet does not meet the technical requirements or is found to be defective, the Technical Steward must clearly mark in red (e.g. with a red dot) all international marks without destroying them and retain the helmet until the end of the event. The rider must submit another helmet for approval by the Technical Steward. After an accident involving impact, the helmet must be presented to the Technical Steward for examination.

### **69.03**

All helmets must be intact and no alteration must have been made to their construction. After an accident involving a shock or impact, the helmet must be presented to the Technical Steward for examination.

### **69.04**

The Chief Technical Steward and/or the Technical Steward may perform the following checks before the rider is permitted to take part in practice of the race:

- 69.04.1** That the helmet fits well on the rider's head.

**69.04.2** That it is not possible to slip the retention system over the chin, when fully fastened.

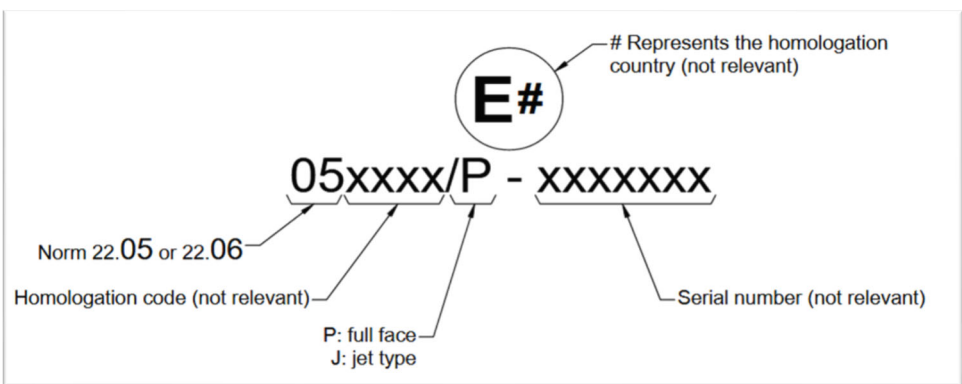


**69.04.3** That it is not possible to pull the helmet over the rider's head by pulling it from the back of the helmet.

**01.70 RECOGNISED HELMET APPROVAL MARKS**

Helmets must conform to one of the recognised international standards:

EUROPE	<b>For 2023:</b> ECE 22-05 or ECE 22-06 (only "P" type) <b>RallyGP, for 2024 on: ECE 22-06 (only "P" type)</b>
JAPAN	JIS T 8133:2015 (only "Type 2 Full face")
USA	SNELL M 2015 or SNELL M 2020D or SNELL M 2020R
<b>FIM</b>	<b>FRHPhe-02</b>

Examples of labels are reported below (for Europe, the country numbers which have granted the approval are also indicated):

EUROPE	
JAPAN	
USA	



As from 01/01/2025, FIM homologated helmets according to the FRHPhe-02 (with a valid FIM homologated label) will be strongly recommended (if already available), and will be mandatory as from 01/01/2026. All the other standards will be forbidden.

A list of FIM Homologated helmets will be available on [www.frhp.org](http://www.frhp.org)

FRHPhe-02 (FIM)	TBD
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### 01.75 BADGE OF THE FIM

Under certain circumstances the FIM may permit the use of the FIM badge on certain equipment in order to show that the latter conforms to the standards laid down by the FIM. When this authorisation is granted and provided the equipment on which it appears is in good condition, the badge is then the guarantee of the conformity with the standard set by the FIM.

### 01.76 NUMBER SASHES (BIBS)

The starting number on the rider’s bib or vest must be the same as on his motorcycle.

Starting numbers must be in conformity with the following specifications:

#### 76.01

Black numbers on a white background must be used.

#### 76.02

The size of the area in which numbers are printed is: 25 x 25 cm maximum.

#### 76.03

Height of number: 15 cm.

#### 76.04

Width of number: 6 cm.

**76.05**

Width of stroke: 2 cm.

**76.06**

Only the space outside the 25 x 25 cm area may be used for publicity.

**76.07**

Bibs manufactured from PLASTIC material are not allowed.

**01.77 TECHNICAL VERIFICATIONS****77.01 Preparation**

- Prior to the Technical Verifications, it should be decided who is doing what and note decisions. "Efficiency" must be the watchword. Always keep cheerful and remember the reasons for scrutineering: SAFETY AND FAIRNESS.
- Before the START of the competition, a closed and guarded area (closed parc/parc-fermé) shall be prepared.
- Inspection must take place under cover with a large enough area.
- Inspection area must be supplied with the necessary equipment, including tables, chairs, electric light and power outlet.
- Weighing apparatus must be accurate, practical and have a minimum resolution of 100g. Weighing scales must have been certified by a National Institute within the period of 24 months before the event. Certified master weights and their certificate must be available for verifying.
- The necessary tools are listed below:
  - ✓ Revolution meter
  - ✓ Sound meter, calibrator and spare batteries
  - ✓ Slide calliper (for verifying engine capacity, carburettor diameter, etc.)
  - ✓ Depth gauge
  - ✓ Steel measuring tape
  - ✓ Arrangement for measuring ground clearance (for Sidecars)
  - ✓ Seals
  - ✓ Weighing apparatus (to be furnished by the Organiser) (and set of reference weights)
  - ✓ Tools for measuring the engine capacity
  - ✓ Lampoil tester is recommended and when used, it indicates the cylinder capacity. When a more precise measurement is required, the Chief Technical Steward may ask to take the cylinder head off the cylinder.
  - ✓ Colour for marking parts
  - ✓ Heat resistant stickers or paint for marking the silencer (and solvent)
  - ✓ Magnet

- ✓ Adequate fuel sample bottles
  - ✓ PC with CD Drive + updated operating system
  - ✓ Printer, etc. are recommended
  - ✓ Calculator
- The necessary documents are listed below:
    - ✓ Supplementary Regulations
    - ✓ FIM Technical Rules - current year
    - ✓ FIM Rules of the discipline concerned
    - ✓ FIM Sporting Code
    - ✓ Homologation papers (if applicable)
    - ✓ Writing material
    - ✓ Technical Verifications forms
  - All necessary measures and administrative equipment should be in place at least 1/2 hour before the start of the Technical Verifications is due to open (time in Supplementary Regulations).

## 77.02 Verifications

- The Technical Verifications must be carried out in conformity with the procedure and times fixed in the CTT Rules and the Supplementary Regulations of the event.
- The Sound control must be carried out first. The Sound level will be recorded in the technical card. The exhaust silencer will be marked with paint or sticker.
- An example of minimum verifications that shall be performed is given below:

INITIAL TECHNICAL VERIFICATIONS	TRIAL	MOTO CROSS	TRACK RACING	ENDURO	RALLY-RAID and BAJAS
Make + model	✓	✓	✓	✓	✓
Sound	✓	✓	✓	✓	✓
Cut-off switch	✓	✓	✓	✓	✓
Self-closing throttle	✓	✓	✓	✓	✓
Lights (front, rear, brake)	✓*			✓*	✓
Race fuel certificate	✓	✓	✓	✓	✓
Vehicle identification plate/chassis number				✓	✓



Crankcase				<input type="checkbox"/>	<input type="checkbox"/>
Wheels (hubs)				<input type="checkbox"/>	<input type="checkbox"/>
Registration plate + insurance (green card)				✓	✓
Weight + ballast	✓	✓	✓		
Fuel tank	✓				✓
Silencer	✓	✓	✓	✓	✓
Carburettor			✓		
Guard for the countershaft sprocket and rear sprocket	✓	✓	✓	✓	✓
Handlebar ends + protection + levers	✓	✓	✓	✓	✓
Front/rear brake disc protection	✓				
Side stand				✓**	✓
Tyres	✓	✓	✓	✓	✓
Helmet(s) + national colors	✓	✓	✓	✓	✓
Protective clothing	✓	✓	✓	✓	✓

\* not applicable for closed circuits when specified in the Supplementary Regulations

\*\* not applicable in SuperEnduro

- An overall inspection of the motorcycle must be carried out in conformity with the FIM rules. On accepted motorcycles a sticker or paint will be applied on the front of the main frame, in conformity with Arts. 082.8.2.1 of the ~~Cross-Country Rallies~~ **Rally-Raid** Appendices.
- The Technical Verifications will only be carried out when the Technical Verifications form of the motorcycle has been presented by the rider or his mechanic.
- The fuel tank shall contain a minimum amount of fuel for the sound control.
- At the arrival, at the end of the competition, all the marked parts on the motorcycles must be controlled. After control, the machines must be placed in a closed park for 30 minutes after arrival of the last rider from the class concerned, in case a protest is lodged or further examination is required.
- If a motorcycle or a part of a motorcycle has to be verified and completely dismantled, the motorcycle, the part or the group of parts must be sealed and

shipped to a place where the required tools are present for a disassembly. The Clerk of the Course/FIM Race Director must take the decision for this operation.

- The disassembly and the verification of the motorcycle or the parts in question must take place in the presence of the Technical Steward, appointed to the event.
- The Organiser will pay the costs for the transportation and for the verification according to Art. 77.02.14 and 77.02.15.
- If a disassembly is required and ordered by the Clerk of the Course/FIM Race Director, following a protest, according to Art. 77.02.14 and 77.02.15, the losing party will incur all the transportation and verification costs, or a part of these costs fixed by the Clerk of the Course/FIM Race Director.

### **77.03 FMNR Chief Technical Steward and technical stewards**

- The Chief Technical Steward must be in attendance at an event one hour before the Technical Verifications are due to begin. He must inform the Clerk of the Course/FIM Race Director and FIM Technical Director, if present, of his arrival.
- The Chief Technical Steward must ensure that all technical stewards appointed for the event carry out their duties in a proper manner. The Chief Technical Steward shall appoint the technical stewards to individual posts for the race, practices and final control.
- Scrutineers can have different tasks, but the team of scrutineers must have a minimum of four persons. The FMNR Chief Technical Steward must be a holder of an FIM SENIOR Technical Stewards Licence and at least one Technical Steward must hold a FIM Technical Stewards Licence. A minimum number of scrutineers is required according to the following:
  - Sound test, silencer marking: two
  - Machine inspection, helmet and clothing: twoIt is recommended to have 2 up to 4 helpers (staff).
- The Sound Control Officer (SCO) must be holder of a valid FIM Technical Steward's license, come with good knowledge and experience of the sound control and application of the test method. The FMNR may propose the services from a special technician (acoustic engineer) if there is no FIM licenced Technical Steward available to act as SCO.
- After the Technical Verifications has been completed the Chief Technical Steward will submit to the Clerk of the Course/FIM Race Direction a list stating the names of the accepted riders, machines and the sound levels.

- During the event, in the arrival and departure areas, the technical steward must control the repairs and changes made to the machines. He must control that no outside assistance is made. He must also control the condition of the machines.
- At individual time checks, the technical steward must control repairs and other technical assistance. He must also control that the machines are marked in order to ensure that no change in motorcycle occurred on the course.
- At the arrival, at the end of each day, the technical steward must check all parts and the condition of the machine. A rider is allowed an extra 30 minutes to repair or replace a silencer and/or exhaust pipe only.
- If a motorcycle is involved in an accident, the Technical Steward must check the machine to ensure that no defect of a serious nature has occurred. However, it is the responsibility of the rider to present his machine for this re-examination together with the helmet and clothing worn.
- The Chief Technical Steward has the right to look/ inspect any part of the motorcycle at any time of the event.
- All technical stewards shall be well informed and shall make sure their FMN has supplied them with all technical "updates" that may have been issued subsequent to the printing of the Technical Rules books.

#### **77.04 FIM Technical Director**

- The FIM Technical Director is appointed by the Director of the FIM International Technical Commission in consultation with the Director of the FIM Cross-Country Rallies Commission.
- The FIM Technical Director is not responsible for the technical verifications but will ensure that they are carried out in accordance with the FIM Technical Rules.
- The FIM Technical Director works in cooperation with the FIM Race Director and the FIM Delegate.
- The authority and duties of the FIM Technical Director include but are not limited to (Please, also refer to the FIM Technical Rules):
  - a) The FIM Technical Director will report any concerns or deficiencies relating to the technical verifications to the FIM Race Director and FIM Delegate and present proposals to resolve such concerns.
  - b) The FIM Technical Director is the final arbiter in relation to technical issues at the event.
  - c) The FIM Technical Director will examine with the Chief Technical Steward the motorcycle(s) and the protective equipment of any rider(s) involved in serious or fatal accidents and present a written report to the FIM Delegate.

d) The FIM Technical Director will attend all meetings of the Race Direction, but without voting rights.

#### **77.05 Rider and/or mechanic**

- The rider and/or the mechanic and/or the Team Manager must attend at least once the Technical Verifications with the (rider's) machine within the time limits stated in the Supplementary Regulations.
- On request of the technical steward, the rider must present themselves to the Technical Verifications.
- The maximum number of persons present at the technical verifications will be the rider and/or the mechanic and/or the Team Manager.
- A rider remains at all times responsible that his machine and his personal protective gear are in conformity with the FIM ~~Cross-Country Rallies~~ **Rally-Raid** Technical Rules.
- The rider and/or the mechanic and/or the Team Manager must present a clean motorcycle in conformity to the FIM ~~Cross-Country Rallies~~ **Rally-Raid** s Technical Rules and a duly filled in and confirmed Technical Verification form.
- A rider and/or the mechanic and/or the Team Manager must present one motorcycle only.
- The rider and/or the mechanic and/or the Team Manager must present the rider's protective wear (equipment), e.g. helmet and clothing.
- Riders/mechanics/Team Managers must confirm their agreement by signing the register. The motorcycles will then be placed in a closed park.
- Competitors must retrieve their machines within 30 minutes after the opening of the closed park area, except for the machines that are chosen for disassembly. After this time limit, the closed park officials will no longer be responsible for the machines left behind.
- Any rider failing to report as required by the provisions below may be excluded from the meeting.
- The Clerk of the Course/FIM Race Director may prohibit any person who does not comply with the rules, or any rider who could be a danger to other participants or to spectators, from taking part in the competitions.

#### **01.78 DANGEROUS MACHINES**

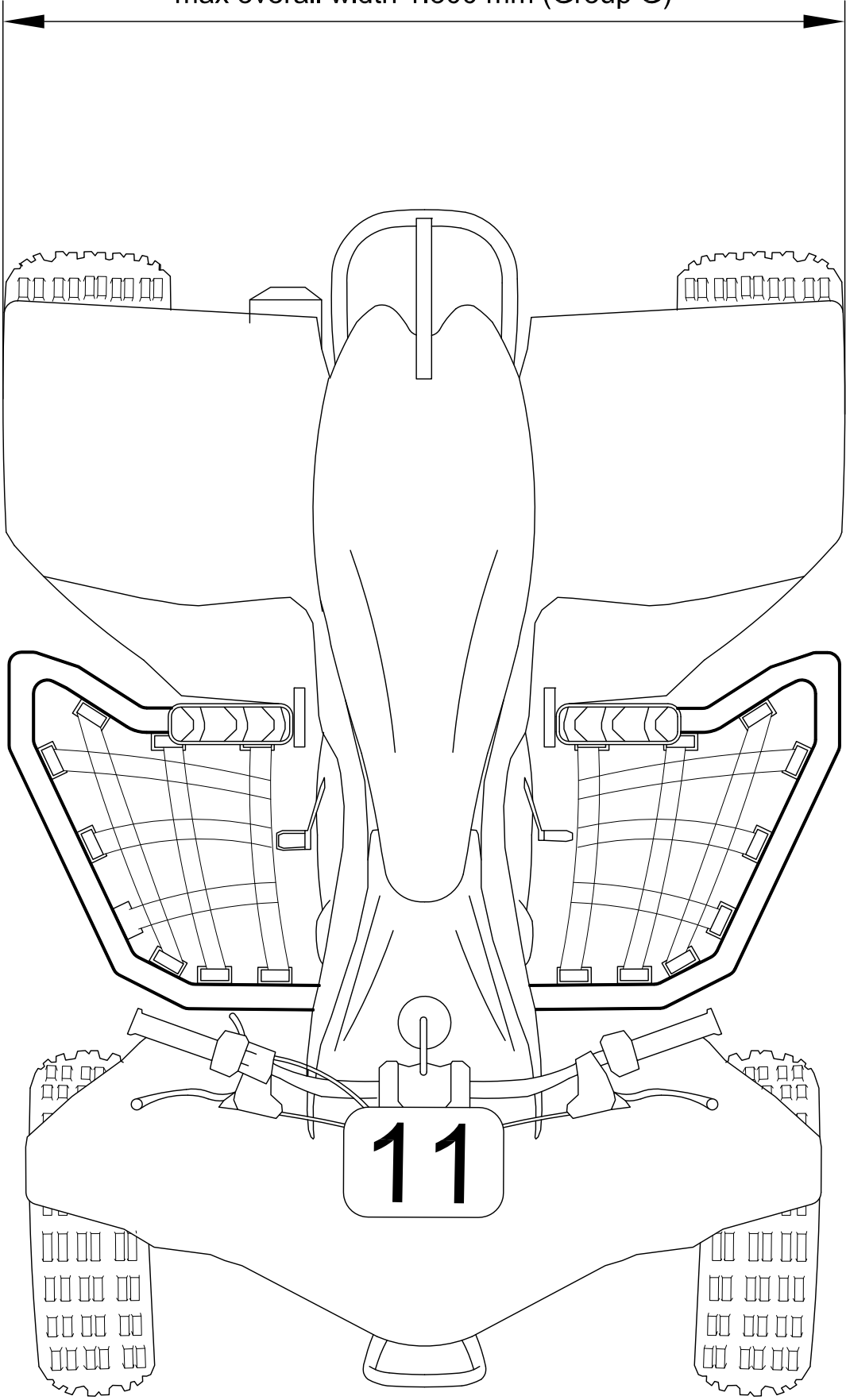
If, during practice or the race, a Technical Steward finds that a machine is defective and might constitute a danger to other riders, he must immediately notify the Clerk of the Course/FIM Race Director or his deputy. It is their duty to exclude such a machine either from the practice or from the race itself.

## **01.79      SOUND CONTROL**

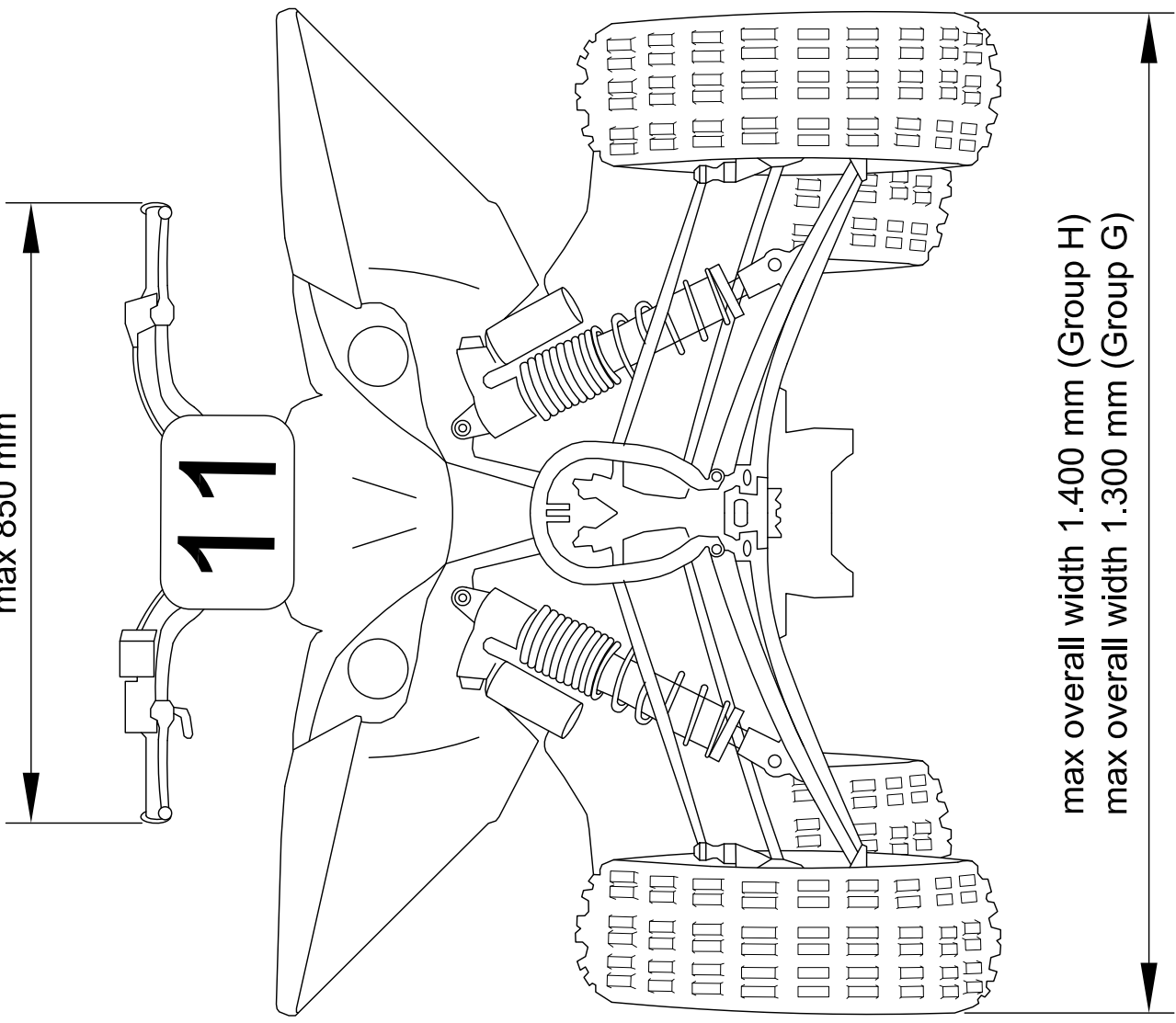
Exhaust pipes and silencers must fulfil all the requirements concerning sound control (see also FIM Sound Regulation).

QUADS	GROUP G (2WD)	GROUP H (4WD)
Max. overall width (mm)	1.300	1.400
Max. rim diameter (inches)	12	15
Max. seat height (mm)	950	1.000
Handlebar width (min-max, mm)	650	800

max overall width 1.400 mm (Group H)  
max overall width 1.300 mm (Group G)

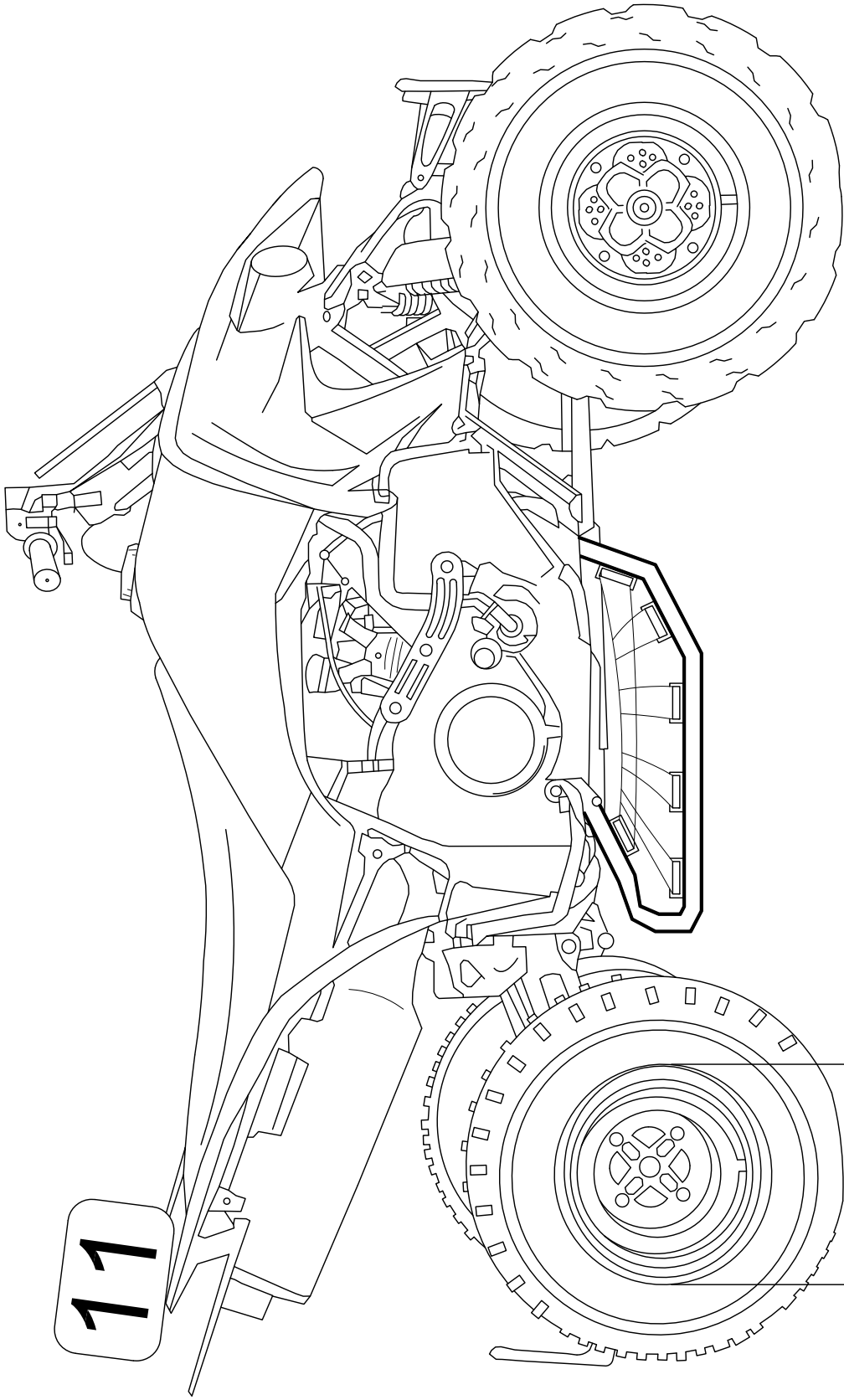


min 600 mm  
max 850 mm



max overall width 1.400 mm (Group H)  
max overall width 1.300 mm (Group G)



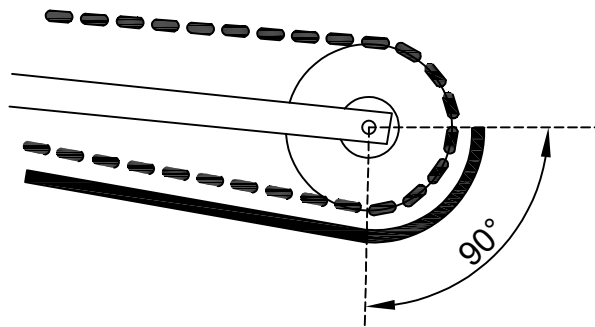


wheel rim  
diameter  
max 12" (Group G)  
max 15" (Group H)

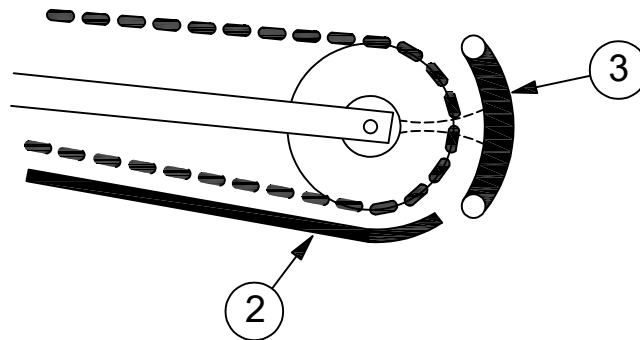
## DIAGRAMME Q (suite)

PROTECTIVE DEVICES (REAR): sprocket and disc  
SYSTEMES DE PROTECTION (AR): couronne et disque

- (1) Chain guard, mounting to a height corresponding to minimum 90°  
Sabot inférieur remontant à la hauteur correspondant à 90° minimum



- (2) Chain guard + (3) protective guard  
Sabot inférieur + (3) barre de protection





## **TEN FITTING TESTS FOR HELMETS** **DIX TESTS D'ADAPTATION POUR LES CASQUES**

1. *Obtain correct size by measuring the crown of the head*  
Avoir la bonne grandeur en mesurant le sommet de la tête
2. *Check there is no side to side movement*  
Vérifier qu'il n'y ait pas de déplacement d'un côté à l'autre
3. *Tighten strap securely*  
Serrer solidement la jugulaire
4. *With head forward, attempt to pull up back of helmet to ensure helmet cannot be removed this way*  
Tête en avant, essayer de soulever le casque pour s'assurer qu'il ne peut pas être enlevé de cette façon



5. *Check ability to see clearly over shoulder*  
Vérifier si vous pouvez voir clairement par-dessus l'épaule
6. *Make sure nothing impedes your breathing in the helmet and never cover your nose or mouth*  
S'assurer que rien ne gêne votre respiration dans le casque et ne jamais couvrir le nez ou la bouche
7. *Never wind scarf around neck so that air is stopped from entering the helmet. Never wear scarf under the retention strap*  
Ne jamais enrouler une écharpe autour du cou, car cela empêche l'air d'entrer dans le casque. Ne jamais porter d'écharpe sous la jugulaire
8. *Ensure that visor can be opened with one gloved hand*  
S'assurer que la visière peut être ouverte avec une main gantée
9. *Satisfy yourself that the back of your helmet is designed to protect your neck*  
S'assurer que l'arrière de votre casque a une forme telle qu'il vous protège la nuque
10. *Always buy the best you can afford*  
Toujours acheter le meilleur que vous pouvez vous offrir



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FÉDÉRATION INTERNATIONALE  
DE MOTOCYCLISME

**FIM SOUND  
REGULATIONS  
2023**

# FIM Sound Regulations

## *Règlement FIM pour le son*

Modifications log		
Updated	Applicable as from	Modified articles
0	01.01.2023	D; E.3; E.4; E.5; E.6
1	07.03.2023	D;



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## A. INTRODUCTION

In order to pursue the measures taken to reduce the sound level in favour of environment and in the framework of the 'RIDE QUIET' campaign, a new method for measuring the sound level called "2 metre max" is applied as from 2013 in all 'all-terrain' disciplines.

For the first World Championship event, all competitors' machines will be checked for sound level. After the first event, the machine of a 'wild card-' or 'one event' rider, will be checked for the sound level, as well as any other rider's machine on a random basis.

Excessively loud machines must always be checked, regardless of the participants' status.

The technical specifications and the resources to apply such a method, for the use of the technical stewards and officials, are outlined in the present article.

The "2 metre max" method shows a very good correlation between the sound power level (LwA) issued by motorcycles in full acceleration, and the maximum sound pressure levels measured at proximity of the same motorcycles, with engines at idle and quickly taken to their maximum rotational speeds.

The "2 metre max" method will consist in quantifying not only the sound level produced by the silencer of the exhaust, but the maximum global sound level achieved by the motorcycle when the engine rpm's are raised to the maximum engine speed, limited by a natural regulation (for 2 strokes) or rev limiters (for 4 strokes).

Only the sound levels measured with the "2 meter max" method will be considered by the technical stewards and by the Race Direction/Jury of the event to decide whether the motorcycle is in conformity with the maximum sound levels authorised.

### For Motocross, Enduro/SuperEnduro/HardEnduro:

Before the opening of the season, the manufacturers must declare to the FIM International Technical Commission (CTI) at [cti@fim.ch](mailto:cti@fim.ch) the maximum power rpm value of the engine of their motorcycles (in standard 'production' specification as sold on the market). The minimum threshold of rpm applied for each class for the sound control procedure will be defined and communicated by the FIM Technical Director.

No modification (in any possible way) of the original RPM channel is allowed. During the sound control, the engine must be able to reach its maximum admissible RPM level (meaning at least the minimum rpm set for each class by the FIM Technical Director according to the information provided by the manufacturers) in Neutral or In Gear position of the gearbox (at the discretion of the Sound Control Officer (SCO)).

Furthermore, all systems of dB-Killers must be either the original part delivered by the exhaust manufacturer or made in a safe and professional (well-engineered) way. In case of dispute, the decision of the FIM Technical Director will be final.

## B. PREPARATION OF THE SOUND METER

For all FIM championships and prizes, sound level meters must conform to the frequency response tolerance for Class 1 or Class 2 for nominal frequencies between 125Hz to 8000Hz, as stated by the IEC 61672-1:2013 subsection 5.5 standard.

All sound level meters must also conform to the tolerance for Class 1 or Class 2 for amplitude linearity, for its specified class, as stated by the IEC 61672-1:2013 subsection 5.6 standard. IEC 61672 is a regulatory document, which covers specifications and qualification requirements for class 1 and class 2 sound level meters.

Two sets of equipment must be available in case of failure of tachometer, sound level meter or calibrator during technical control.

Sound level measuring equipment must also include:

- a compatible calibrator, which must be used immediately before testing begins and always just prior to a re-test if a disciplinary sanction may be imposed;
- a tachometer.

The sound meter shall be prepared by applying the following procedure:

1. Activate the 'A' weighing
2. FAST time weighting must be activated
3. Select the highest range available (ex. 80~130 [dB])
4. Calibrate the sound meter according to the instructions, taking into account the incidence of the wind foam ball
5. Position the wind foam ball on the microphone
6. Activate the function MAX MIN – set on MAX

## C. SET UP OF THE MEASUREMENT

The sound levels will be measured with the microphone fixed on a tripod at a height of 1.35 m above the ground, in horizontal (levelled) position. It is helpful to have the microphone equipped with an extension cable to the sound meter.

For the place and position of the motorcycle, ensure that there are no solid obstacles within 10 m around the microphone.

Depending on the vehicle, the sound meter will be positioned:

**for Solo motorcycles:** at an angle of 45° from the longitudinal axis of the vehicle, on the exhaust side, at a distance of 2 m behind the vehicle (measured from the point where the centre of rear tyre touches the ground).

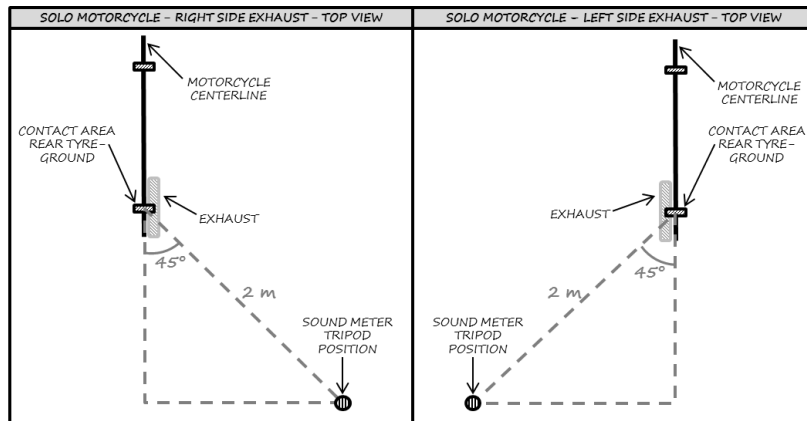


Figure 1 : Sound meter position for solo motorcycle

**for Solo motorcycles with 2 exhaust outputs:** at an angle of 45° from the longitudinal axis of the vehicle, on the side of the air intake, at a distance of 2 m behind the vehicle (measured from the point where the centre of rear tyre touches the ground). Note: if a central positioned air intake is used, both sides will be tested.

**for Snowmobiles:** at an angle of 90° from the longitudinal axis of the vehicle, on the side of the silencer, at a distance of 2 m next to the vehicle (measured from the silencer exit). For continuity of the measurement, use the handlebar as a reference to line up the machine with the microphone - the exhaust pipe is usually located on the right hand side of the machine and directly under the handlebar position. Note: the use of only one silencer is allowed for Snowmobiles.

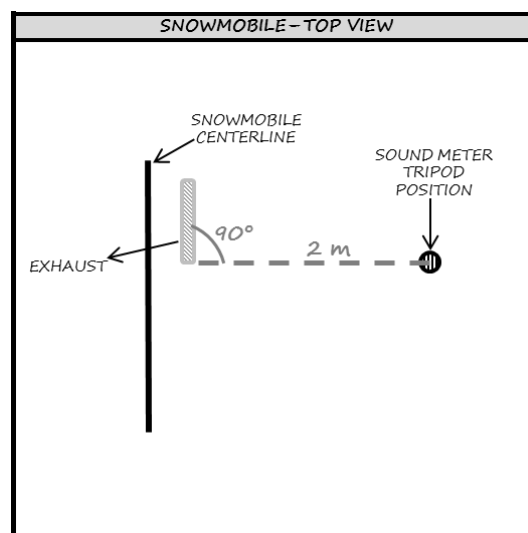


Figure 2: Sound meter position for solo snowmobile

**for Sidecars:** at an angle of 45° from the longitudinal axis of the vehicle, on the sidecar side, at a distance of 2 m behind the vehicle (measured from the point where the sidecar tyre touches the ground). If the exit of the silencer is closer to the motorcycle rear wheel, the reference point will be the contact point of the motorcycle rear wheel on the ground (as for Solo motorcycles).

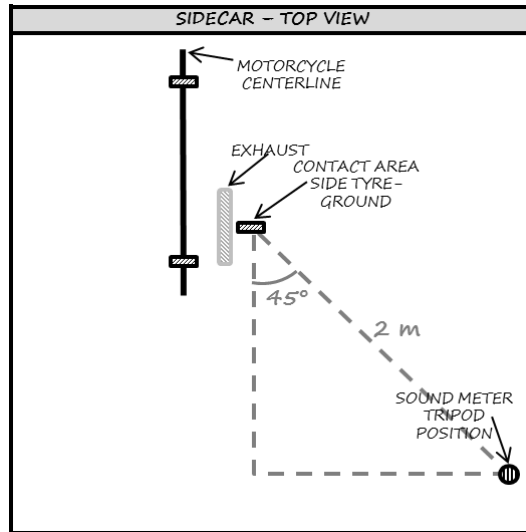


Figure 3: Sound meter position for sidecars

**for Quads:** at an angle of 45° from the median longitudinal axis of the vehicle, at a distance of 2 m behind the vehicle (measured from the point where the line drawn perpendicular to the rear axle touches the ground).

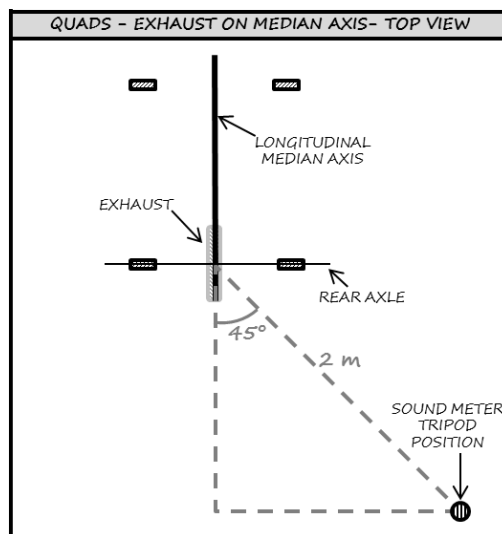


Figure 4: Sound meter position for quads

**for Quads with the exhaust moved out of the median axis:** at an angle of 45° from the exhaust axis, on the offset side, at a distance of 2 m behind the vehicle (measured from the point where the line drawn perpendicular to the rear axle touches the ground).

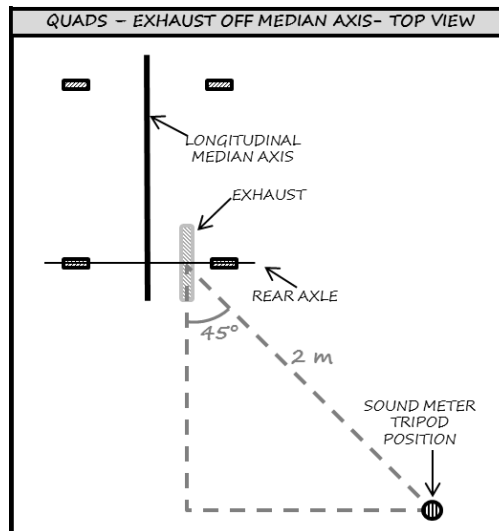


Figure 5: Sound meter position for solo motorcycle with exhaust moved out of the median axis

The sound level for engines with more than one silencer will be measured on each exhaust end.

Silencers fitted with adapters aiming to reduce the sound level shall be permanently fitted.

To make repetitive measurements, all motorcycles can be positioned into a small frame fixed on the ground, making sure to respect the 45° requirements. A squared frame helps the positioning of the motorcycle.

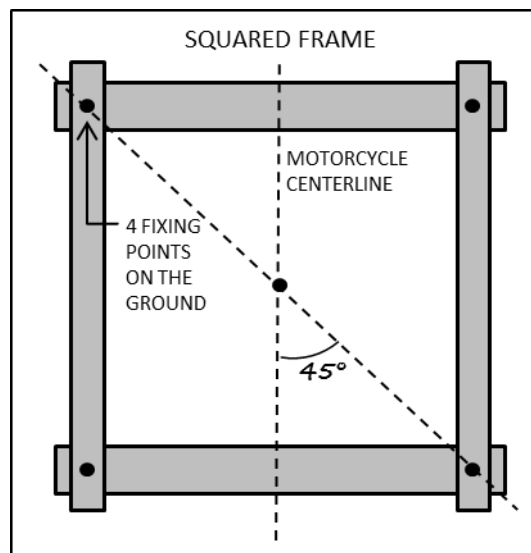


Figure 6 : Squared frame design

Vehicles which are not equipped with a gear box neutral must be placed on a stand.

It is preferred to make the tests on soft ground, not reverberating, i.e. grass or fine gravel.

In other than moderate wind, machines should face forward against the wind direction.

The ambient sound at the point of measurement must be minimum 15 [dB/A] less than the lowest FIM sound limit applied in each discipline.

It is recommended to re-calibrate the sound meter before starting measurements and before putting the system away except when there has been any accident (physical impact to the equipment). In the event of an impact, the sound meter must be systematically re-calibrated before restarting any measurements.

## D. TEST PROCEDURE

The Sound Control Officer (SCO) must be holder of a valid FIM Technical Stewards' license, come with good knowledge and experience of the sound control and application of the test method. The FMNR may propose the services from a special technician (acoustic engineer) if there is no FIM licenced Technical Steward available to act as SCO.

The SCO must have arrived in sufficient time for discussions with the Clerk of the Course/FIM Race Director and other Technical Officials in order that a suitable test site and testing procedure can be agreed. The SCO takes place next to the vehicle, opposite to the sound meter/microphone, in order not to screen or stand between the bike and the microphone.

A second technical steward can be present to help. The rider can also be present.

It is strongly advised that the technical steward(s) use earplugs, a headset or ear protectors.

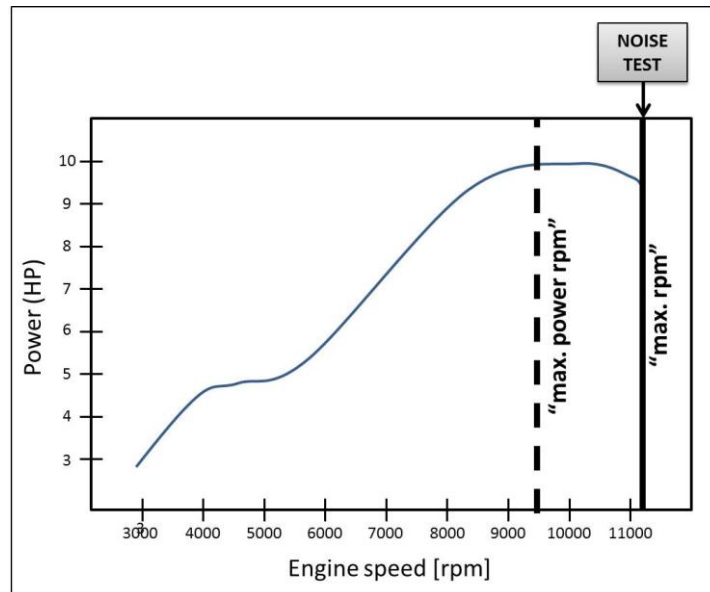
The measurements are made with motorcycle on its wheels, with a hot engine, whatever in neutral gear position or in-gear position (at the discretion of the SCO). During the sound test, only the rider may sit on the vehicle in the normal riding position.

A rider or a mechanic, placed on the left side of the motorcycle, shall disengage the clutch.

The SCO (and not others) shall open the throttle as fast as possible (instantly, within 0.3 s) until "full open throttle", in order to reach the maximum rpm value ("max. rpm").

**For Motocross, Enduro/SuperEnduro/HardEnduro, Cross-country rallies/Bajas, Sand Races and Track Racing motorcycles with no FIM homologated silencers,** the "max rpm" is the one defined by the ECU (for 4-stroke engines), or by a natural regulation (for 2-stroke engines).

When in doubt, it can be verified that such "max. rpm" value is higher than the rpm value at which the vehicle supplies its maximum power (kW) ("max. power rpm").



**For Trial**, the "max rpm" is established at 10000 ( $\pm 200$ ) rpm and obtained thanks to a dedicated "sound test" mapping of the internal ECU or an external one, purpose-made and connected in occasion of the test.

**For Track-Racing with FIM homologated silencers**, when sound tests are needed, the "max rpm" is established at 11000 ( $\pm 500$ ) rpm.

The SCO then keeps the engine at the "max. rpm" value for at least 1 s (or until there is an audible sign of over-revving the engine), during which the measurement is taken.

To conclude the test, the SCO releases the throttle quickly.

The maximum noise value (dB/A) registered during the measurement interval is then read on the sound meter and recorded. This noise value shall not be rounded down to the nearest whole number.

The noise value is then compared with the sound limits (see **Art. E**).

The noise test can be "**PASSED**" or "**NOT PASSED**":

**"PASSED"**: The sound test is considered "passed" if the recorded noise value is below or equal to the sound limits of **Art. E**. The silencer can then be marked by the SCO at the end of the test.

The silencer can be changed after verification under the conditions of Technical control.

The end opening of the silencer shall remain unmodified once it has been checked and marked.

**"NOT PASSED"**: The sound test is considered "not passed" if the recorded noise value is above the sound limits of **Art. E**.

In this case, the vehicle (with the same silencer) can be presented again, but for two more tests maximum. If the third test result is negative, the rider can present a different or repaired silencer (in case the sound test was done before the race) will receive a penalty (in case the sound test was done during or after the race).

The sound meter is then reset by pushing on the side-line and armed by pushing on the side-line again.

### **Sound controls during the event or after the race:**

- **the motorcycle must be tested in the exact conditions at any time of the event when the FIM Technical Director requests the team/rider for a sound control.**
- **the motorcycle must be tested in the conditions it has finished the race and has rejoined the parc fermé.**

### **Notes:**

If the engine starts to misfire, close the throttle slightly and re-open the throttle.

If detonations appear, the measurement must be started again.

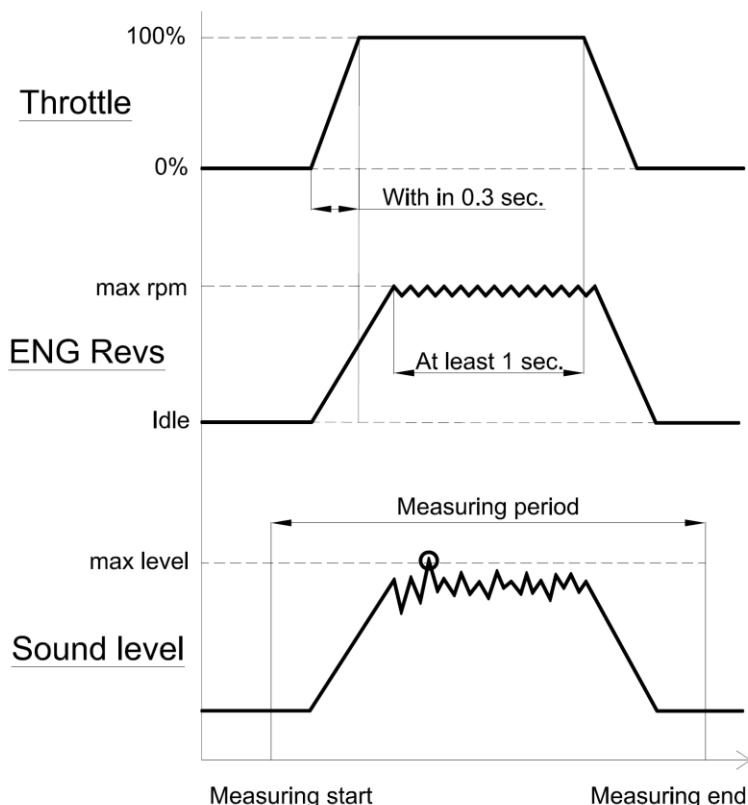
For vehicles without an engine rev. limiter, the throttle will have to be opened not more than 2 s or until there is an audible sign of over-revving the engine.

Even in case a vehicle has not exceeded the respective sound limit, if there is any doubt, the vehicle may be checked again.

If the vehicle is unable to reach the "max. power rpm" value, the vehicle shall be refused. Any attempt by a participant to prevent his engine from reaching the "max. power rpm" will be considered a breach of the rules.

In case the SCO doubts that the "max. power rpm" value (as declared by the manufacturers or previously obtained with the dyno test), he/she shall measure the engine speed with a tachometer connected to the spark.





1. The Inspector shall open the throttle until full open throttle within 0.3 seconds.
2. And keep at the max rpm (at rpm limiter) at least 1 second. Then, release the throttle quickly.
3. The sound level is measured in the all period and the maximum level shall be recorded in any case. (automatically by the sound meter).

## E. SOUND LIMITS

Below are listed the maximal sound limits by category and by type of engine. No deductions for ambient temperature, pressure or altitude are allowed. If present, the values that have to be respected after the race take into account the degradation of the silencer (i.e. the limit is raised of 1 [dB/A]).

The measured noise value shall not be rounded down to the nearest whole number. The values already take into account the accuracy of the method.

### 1. TRIAL World Championships, Cups and Prizes

Type of engine	Maximum Sound limit in [dB/A]	
	Before the race	During or after the race
2-stroke	103.0	104.0
4-stroke	105.0	106.0

Table 1 : Sound limit for Trial

### 2. TRACK RACING World Championships, Cups and Prizes

Type of engine	Maximum Sound limit in [dB/A]	
	Before the race	During or after the race
All	115.0	116.0
<b>2-stroke</b> <b>4-stroke</b>	<b>(Target 113.0 + 2.0 for the precision of the method)</b>	<b>(Target 115.0 + 1.0 for the degradation of the silencer)</b>

<b>SGP4 4-stroke</b>	<b>111.0 (Target 109.0 + 2.0 for the precision of the method)</b>	<b>112.0 (Target 111.0 + 1.0 for the degradation of the silencer)</b>
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Table 2: Sound limit for Track Racing

### 3. ENDURO, SUPERENDURO, HARDENDURO World Championships, Cups and Prizes

Type of engine	Maximum Sound limit in [dB/A]	
	Before the race	During or after the race
All	114.0	115.0
<b>2-stroke 4-stroke</b>	<b>(Target 112.0 + 2.0 for the precision of the method)</b>	<b>(Target 114.0 + 1.0 for the degradation of the silencer)</b>
<b>As of 2024</b>	<b>111.0</b>	<b>112.0</b>
<b>2-stroke 4-stroke</b>	<b>(Target 109.0 + 2.0 for the precision of the method)</b>	<b>(Target 111.0 + 1.0 for the degradation of the silencer)</b>

Table 3: Sound limit for Enduro, SuperEnduro, HardEnduro

### 4. SAND RACES World Championships, Cups and Prizes

Type of engine	Maximum Sound limit in [dB/A]	
	Before the race	During or after the race
All	114.0	115.0
<b>2-stroke 4-stroke</b>	<b>(Target 112.0 + 2.0 for the precision of the method)</b>	<b>(Target 114.0 + 1.0 for the degradation of the silencer)</b>
<b>As of 2025</b>	<b>111.0</b>	<b>112.0</b>
<b>2-stroke 4-stroke</b>	<b>(Target 109.0 + 2.0 for the precision of the method)</b>	<b>(Target 111.0 + 1.0 for the degradation of the silencer)</b>

Table 4: Sound limit for Sand Races

### 5. CROSS-COUNTRY RALLIES & BAJAS World Championships and Cups

Type of engine	Maximum Sound limit in [dB/A]	
	Before the race	During or after the race
All	117.0	118.0
<b>2-stroke 4-stroke</b>	<b>(Target 115.0 + 2.0 for the precision of the method)</b>	<b>(Target 117.0 + 1.0 for the degradation of the silencer)</b>
<b>As of TBA</b>	<b>TBA</b>	<b>TBA</b>
<b>2-stroke 4-stroke</b>	<b>(Target 10X.0 + 2.0 for the precision of the method)</b>	<b>(Target 10X.0 + 1.0 for the degradation of the silencer)</b>

Table 5: Sound limit for Cross-Country Rallies & Bajas

## 6. MOTOCROSS World Championships, Cups and Prizes

Since 01/01/2022:

MOTOCROSS World Championships, Cups and Prizes		
Discipline/Class	Maximum Sound limit in [dB/A]	
	Before the race	During or after the race
MXGP, MX2, Women MX 2-stroke 4-stroke	114.0 (Target 112.0 + 2.0 for the precision of the method)	115.0 (Target 114.0 + 1.0 for the degradation of the silencer)
Supercross (SX) 2-stroke 4-stroke	114.0 (Target 112.0 + 2.0 for the precision of the method)	115.0 (Target 114.0 + 1.0 for the degradation of the silencer)
Sidecars: 2-stroke 4-stroke	114.0 114.0 (Target 112.0 + 2.0 for the precision of the method)	115.0 115.0 (Target 114.0 + 1.0 for the degradation of the silencer)
Junior MX: 2-stroke (65/85)  2-stroke (125) 4-stroke	111.0 (Target 109.0 + 2.0 for the precision of the method) 114.0 (Target 112.0 + 2.0 for the precision of the method)	112.0 (Target 111.0 + 1.0 for the degradation of the silencer) 115.0 (Target 114.0 + 1.0 for the degradation of the silencer)
Supermoto 2-stroke 4-stroke	114.0 (Target 112.0 + 2.0 for the precision of the method)	115.0 (Target 114.0 + 1.0 for the degradation of the silencer)
Snowcross 2-stroke 4-stroke	114.0 (Target 112.0 + 2.0 for the precision of the method)	115.0 (Target 114.0 + 1.0 for the degradation of the silencer)
Quad: 2-stroke 4-stroke	114.0 114.0 (Target 112.0 + 2.0 for the precision of the method)	115.0 115.0 (Target 114.0 + 1.0 for the degradation of the silencer)

Table 6: Sound limit for Motocross as from 01/01/2022

### NOTES:

- The values that have to be respected after the race take into account the degradation of the silencer (i.e. the limit is raised of 1 dB/A).
- The values already take into account the accuracy of the method.
- No deductions for ambient temperature, pressure or altitude are allowed.
- The measured noise value shall not be rounded down to the nearest whole number.

**As of 01/01/2025:**

MOTOCROSS World Championships, Cups and Prizes		
Discipline/Class	Maximum Sound limit in [dB/A]	
	Before the race	During or after the race
MXGP, MX2, Women MX 2-stroke 4-stroke	<b>TBA</b> <b>(Target 10X.0 + 2.0 for the precision of the method)</b>	<b>TBA</b> <b>(Target 10X.0 + 1.0 for the degradation of the silencer)</b>
Supercross (SX) 2-stroke 4-stroke	<b>TBA</b> (Target <b>10X.0</b> + 2.0 for the precision of the method)	<b>TBA</b> (Target <b>10X.0</b> + 1.0 for the degradation of the silencer)
Sidecars: 2-stroke 4-stroke	<b>111.0</b> (Target <b>109.0</b> + 2.0 for the precision of the method)	<b>112.0</b> (Target <b>111.0</b> + 1.0 for the degradation of the silencer)
Junior MX: 2-stroke (125)  2-stroke (65/85) 4-stroke	<b>TBA</b> <b>(Target 10X.0 + 2.0 for the precision of the method)</b> <b>111.0</b> (Target <b>109.0</b> + 2.0 for the precision of the method)	<b>TBA</b> <b>(Target 10X.0 + 1.0 for the degradation of the silencer)</b> <b>112.0</b> (Target <b>111.0</b> + 1.0 for the degradation of the silencer)
Supermoto 2-stroke 4-stroke	<b>111.0</b> (Target <b>109.0</b> + 2.0 for the precision of the method)	<b>112.0</b> (Target <b>111.0</b> + 1.0 for the degradation of the silencer)
Snowcross 2-stroke 4-stroke	<b>TBA</b> <b>(Target 10X.0 + 2.0 for the precision of the method)</b>	<b>TBA</b> <b>(Target 10X.0 + 1.0 for the degradation of the silencer)</b>
Quad: 2-stroke 4-stroke	<b>111.0</b> (Target <b>109.0</b> + 2.0 for the precision of the method)	<b>112.0</b> (Target <b>111.0</b> + 1.0 for the degradation of the silencer)

Table 6: Sound limit for Motocross as from 01/01/2025

**NOTES:**

- The values that have to be respected after the race take into account the degradation of the silencer (i.e. the limit is raised of 1 dB/A).
- The values already take into account the accuracy of the method.
- No deductions for ambient temperature, pressure or altitude are allowed.
- The measured noise value shall not be rounded down to the nearest whole number.



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FÉDÉRATION INTERNATIONALE  
DE MOTOCYCLISME

**FIM FUELS  
REGULATIONS  
2023**

# FIM Fuels Regulation

## *Règlement FIM pour les essences*

Modifications log		
Version	Applicable as from	Modified articles
0	01.01.2023	



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## **A.REGULAR FUEL**

If not specified in the Technical Rules of the Championships, Cup or Prize or in the Supplementary regulation of the event, regular fuel coming from Public Fuel station can be used.

By regular fuel. It is to be understand fuel available at the fuel station with a fuel gun and with an Octane not more than 98.

## **B. RACE FUELS**

Fuel companies which supply “race” fuels (fuels other than those obtained at public pump stations) to participating teams/riders must test their fuel at against all the FIM specifications set out in Art. D of this regulation.

### **1. Conformed fuels**

If the specifications of the fuel are in conformity to Art. D of this regulation, a certificate containing a test report and batch number will be issued to the fuel company.

The fuel company shall be able to provide a copy of such certificate to their client rider/teams before they take part in a race.

A list of fuels which are in conformity with FIM specifications are listed in Art. I of this regulation.

### **2. Appointed supplier(s) to event(s)**

In the cases in which only fuel from the appointed supplier is permitted (for a specific event or the entire World Championship, Prize or Cup), the aforementioned fuel shall have been previously tested in a FIM appointed laboratory in order to test its conformity with the FIM specifications as set out in Art. D of this regulation:

- in case of conformity, a certificate of conformity (including test report and tested batch number) shall be available and Art. I of this regulation applies in case of controls for the riders/teams;
- in case the conformity is not achieved, the FMN of the organising country/the Organiser/the Promoter shall ask the FIM for a waiver in order to enable the use of fuel not corresponding to FIM specifications. If the waiver is granted, the riders/teams will be responsible for using the fuel provided without changing its composition. Controls may be carried out by FIM.

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## C. TESTING LABORATORY

For question regarding the “race” fuels and/or the testing of the fuels please contact the aforementioned testing laboratory:

**Intertek (Schweiz) AG**

Analytical Testing - Fuel, Lubricants & Combustible  
Wagistraße 2  
8952 Schlieren  
Switzerland

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## D. FIM SPECIFICATIONS FOR UNLEADED FUELS OR MIXTURES OF UNLEADED FUELS, CATEGORY 1

The following fuels specifications are valid for these FIM Competitions:

- MotoGP™
- Moto2™
- Moto3™

The following properties shall be within the following thresholds (for each property, the relative test methods to be used for the measurement are indicated):

Property	Units	Min. <sup>1</sup>	Max. <sup>1</sup>	Test Methods <sup>2</sup>
Density at 15°C	[kg/m <sup>3</sup> ]	720.0	775.0	ASTM D4052
RON	-	95	102	EN ISO 5164
MON	-	85	90	EN ISO 5163
Oxidation stability	[min]	360		ASTM D525
Vapour pressure (DVPE)	[kPa]		90	EN 13016-1
<b>Aromatics</b>	% (V/V)		35.0	EN ISO 22854
<b>Benzene</b>	% (V/V)		1.0	EN ISO 22854
<b>Diolefins total</b>	% (m/m)		1.0	GC-MS HPLC
<b>Existent Gum</b>	[mg/100 mL]		5.0	EN ISO 6246
<b>Lead</b>	[mg/L]		5.0	ICP-OES or-EN 237
<b>Manganese</b>	[mg/L]		1.0	ICP-OES
<b>Nitrogen</b>	% (m/m)		0.2	ASTM D 4629
<b>Olefins</b>	% (V/V)		18.0	EN ISO 22854
<b>Oxygen</b>	% (m/m)		2.7	EN ISO 22854
<b>Sulphur</b>	[mg/kg]		10.0	ASTM D5453
<b>Distillation:</b>				EN ISO 3405
<b>E at 70°C</b>	% (V/V)	22.0	50.0	
<b>E at 100°C</b>	% (V/V)	46.0	71.0	
<b>E at 150°C</b>	% (V/V)	75.0		
<b>Final Boiling Point</b>	[°C]		210	
<b>Residue</b>	% (V/V)		2.0	
<b>Copper Corrosion</b>	Rating		Class 1	ISO 2160

Table 1 : Specifications and test methods (does not include the visual inspection)

<sup>1</sup> All reported min. and max. thresholds do not include the tolerance, which needs to be calculated in accordance with ISO 4259 and taken into account to correct the min. and max. thresholds

<sup>2</sup> In case of dispute the test method listed in **bold** will be the reference

Only the following oxygenates will be permitted:

- ◆Methanol
- ◆Ethanol
- ◆Iso-propyl alcohol
- ◆Iso-butyl alcohol
- ◆Methyl tertiary butyl ether
- ◆Ethyl tertiary butyl ether
- ◆Tertiary amyl methyl ether
- ◆Di-isopropyl ether
- ◆n-Propyl alcohol
- ◆Tertiary butyl alcohol
- ◆n-Butyl alcohol
- ◆Secondary butyl alcohol

In addition to these specifications, the appearance of the fuel, controlled by visual inspection must be clear, bright and free from solid matter and undissolved water.

The total of individual hydrocarbon components present at concentrations of less than 5% (m/m) must constitute at least 30% (m/m) of the fuel. The test method will be GC-FID (gas chromatography-flame ionisation detector) and/or GC-MS (gas chromatography-mass spectrometry).

The total concentration of naphthenes, olefins and aromatics classified by carbon number must not exceed the values given in the following table:

% (m/m)	C4	C5	C6	C7	C8	C9 +
Naphthenes	0	5	10	10	10	10
Olefins	5	20	20	15	10	10
Aromatics	-	-	1.2	35	35	30

**Table 2 : Naphtenes, Olefins and aromatics contents**

Bicyclic and polycyclic olefins are not permitted. The fuel must contain no substances which are capable of exothermic reaction in absence of external oxygen.

## E. FIM SPECIFICATIONS FOR UNLEADED FUELS OR MIXTURES OF UNLEADED FUELS, CATEGORY 2

The following fuels specifications are valid all FIM Competitions not included in Category 1.

The following properties shall be within the following thresholds (for each property, the relative test methods to be used for the measurement are indicated):

Property	Units	Min. <sup>3</sup>	Max. <sup>1</sup>	Test Methods <sup>4</sup>	
Density at 15°C	[kg/m <sup>3</sup> ]	720	785	EN ISO 12185	ASTM D4052
RON	-	95	102	EN ISO 5164	ASTM D2699
MON	-	85	90	EN ISO 5163	ASTM D2700
Oxidation stability	[min]	360		EN ISO 7536	ASTM D525
Vapour pressure (DVPE)	[kPa]		100	EN 13016-1	ASTM D5191
Aromatics	% (V/V)		35.0	EN ISO 22854	ASTM D6839
Benzene	% (V/V)		1.0	EN ISO 22854	ASTM D6839 or D5580
Diolefins total	% (m/m)		1.0	GC-MS	HPLC
Lead	[mg/L]		5.0	ICP-OES or-EN 237	AAS
Manganese	[mg/L]		2.0	ICP-OES	AAS
Nitrogen	% (m/m)		0.2	<b>ASTM D 4629</b>	ASTM 5762
Olefins	% (V/V)		18.0	EN ISO 22854	ASTM D6839
Oxygen (includes 10% ethanol allowance)	% (m/m)		3.7	<b>EN ISO 22854</b>	EN 13132 or elemental analysis
Sulphur	[mg/kg]		10.0	EN ISO 20846	ASTM D5453
<b>Distillation:</b>				EN ISO 3405	ASTM D86
E at 70°C	% (V/V)	20.0	52.0		
E at 100°C	% (V/V)	46.0	72.0		
E at 150°C	% (V/V)	75.0			
Final Boiling Point	[°C]		210		
Residue	% (V/V)		2.0		
<b>Oxygenates:</b>				<b>EN ISO 22854</b>	EN 13132
Methanol	% (V/V)		3.0		
Ethanol	% (V/V)		10.0		
Isopropanol	% (V/V)		12.0		
Isobutanol	% (V/V)		15.0		
tert-Butanol	% (V/V)		15.0		
Ethers (C5 or higher)	% (V/V)		22.0		
Others	% (V/V)		15.0		

Table 3 : Specifications and test methods (does not include the visual inspection)

<sup>3</sup> All reported min. and max. thresholds do not include the tolerance, which needs to be calculated in accordance with ISO 4259 and taken into account to correct the min. and max. thresholds

<sup>4</sup> In case of dispute the test method listed in **bold** will be the reference

In addition to these specifications, the appearance of the fuel, controlled by visual inspection must be clear, bright and free from solid matter and undissolved water.

The total of individual hydrocarbon components present at concentrations of less than 5% (m/m) must constitute at least 30% (m/m) of the fuel. The test method will be GC-FID (gas chromatography-flame ionisation detector) and/or GC-MS (gas chromatography-mass spectrometry).

The total concentration of naphthenes, olefins and aromatics classified by carbon number must not exceed the values given in the following table:

<b>% (m/m)</b>	<b>C4</b>	<b>C5</b>	<b>C6</b>	<b>C7</b>	<b>C8</b>	<b>C9 +</b>
Naphthenes	0	5	10	10	10	10
Olefins	5	20	20	15	10	10
Aromatics	-	-	1.2	35	35	30

**Table 4 : Naphtenes, Olefins and aromatics contents**

Bicyclic and polycyclic olefins are not permitted. The fuel must contain no substances which are capable of exothermic reaction in absence of external oxygen.

## F. FIM SPECIFICATIONS FOR MIXTURES OF UNLEADED FUEL(S) AND LUBRICANT

The lubricant must not:

1. change the composition of the fuel fraction when added to the fuel
2. contain any nitro-compounds, peroxides or any other engine power boosting additives
3. contribute to an improvement in overall performance in any way
4. show a reduction in mass by evaporation of more than 10% (m/m) during the distillation up to 250°C (test method: simulated distillation GC)
5. contain more than 10% of anti-knock agents (lead, manganese, iron) (test method: ICP-OES).

Moreover, the following specifications are set for the mixture of unleaded fuel(s) and lubricant:

The following properties shall be within the following thresholds (for each property, the relative test methods to be used for the measurement are indicated):

Property	Units	Min.	Max. <sup>1</sup>	Test Methods	
Density at 15°C <sup>5</sup>	[kg/m <sup>3</sup> ]	690	815	EN ISO 12185	ASTM D4052
RON	-		102	EN ISO 5164	ASTM D2699
MON	-		90	EN ISO 5163	ASTM D2700

<sup>5</sup> For the density measurement, the min. and max. thresholds do include the tolerance



## **G. FUELS CONTROLS**

The FIM may require fuel controls, i.e. controls of the unleaded fuel, mixture of unleaded fuels or mixture of unleaded fuel and lubricant, used by riders/teams at events. These controls involve an initial sampling at the event and further testing in the FIM appointed laboratory.

### **3. Sampling**

- 1) The FIM Technical Director (or the FMNR Chief Technical Steward when there is no FIM Technical Director appointed) is the sole official responsible for the sampling management and supervision.
- 2) Riders/teams selected for fuel controls are directed to proceed with their vehicles to the area that has been designated for this purpose.
- 3) The FIM Technical Director/FMNR Chief Technical Steward collects the fuel from the motorcycle by using only new sample containers and pipettes/hand pumps.
- 4) The fuel is transferred through the use of the pipette/hand pump directly from the fuel tank into three containers, denominated A, B and C. The containers are closed and sealed by the FIM Technical Director/FMNR Chief Technical Steward.
- 5) The FIM Technical Director/FMNR Chief Technical Steward fills in (in all its parts) and signs the Fuel Sample Declaration Form (see forms). The rider or a team representative also signs this Form, after verifying that all the information is correct.
- 6) The FIM Technical Director/FMNR Chief Technical Steward prepares an appropriate shipping box containing the collected A, B and C samples and a copy of the respective, signed, Fuel Sample Declaration Form. The box is then shipped to the FIM appointed laboratory by courier.

### **4. Testing**

- 1) One or more properties to be checked (following the relevant testing method as per Art. D, E or F) are set by the FIM for each selected rider/team.
- 2) Sample A is the first sample to be tested by the FIM appointed laboratory.
- 3) Sample B can be used for a second analysis if required by the FIM. The test result of the A or B sample more favourable to the rider/team is taken into account. Costs for the shipping and testing of sample A and B are paid by FIM.
- 4) As soon as possible after completing the testing, the FIM appointed laboratory reports the test results directly to the responsible CTI Coordinator.
- 5) For negative cases (i.e. conformity of the tested property(ies) with the specification), the riders/teams concerned will be individually informed by the FIM in due course, copying the rider/team's FMN, the FIM Technical Director/FMNR Chief Technical Steward, the competent authority (e.g. Race Direction, International Jury), the CTI Director, the Director and Coordinator(s) of the sporting Commission concerned.

- 6) Only for positive cases following testing of sample A or B or A and B (i.e. non-conformity of one or more properties\*), the responsible CTI Coordinator notifies by electronic mail\* the rider/team concerned (including the testing results) and, 24 hours after, forwards the relevant information to the rider/team's FMN, the FIM Technical Director/FMNR Chief Technical Steward, the competent authority (e.g. Race Direction, International Jury), the CTI Director, the Director and Coordinator(s) of the sporting Commission concerned.

\*Note: The non-conformity of one property (except the Appearance) is sufficient for declaring non-conformity of the fuel or the mixture.

- 7) If the rider/team wishes to request a counter-expertise, he must notify the responsible CTI Coordinator by electronic mail\* accordingly, within 72 hours of receipt by the FIM of the delivery status notification pertaining to the notification of the test results to the rider/team.

- If a counter-expertise is requested, the sample dedicated to the counter-expertise is sample C and the test shall aim at checking the same property(ies) previously checked on sample A/B. The rider/team can request that sample C be tested at one of the available FIM appointed laboratories. Costs for shipping and testing of sample C are paid by the rider/team concerned.

Upon notification of the sample C results, the responsible CTI Coordinator notifies by electronic mail<sup>6</sup> the rider/team concerned (including the testing results) and forwards the relevant information to the rider/team's FMN, the FIM Technical Director/FMNR Chief Technical Steward, the competent authority (e.g. Race Direction, International Jury), the CTI Director, the Director and Coordinator(s) of the sporting Commission concerned.

- If no counter-expertise is requested within the time limit, the responsible CTI Coordinator forwards the relevant information by electronic mail\* the rider/team's FMN, the FIM Technical Director/FMNR Chief Technical Steward), the competent authority (e.g. Race Direction, International Jury), the CTI Director, Director and Coordinator(s) of the sporting Commission concerned.

- 8) The competent authority of the event concerned (e.g. Race Direction, International Jury) makes a decision based on the information received. The Coordinator of the sporting Commission concerned notifies the rider/team concerned regarding the decision by electronic mail\*.

The non-conformity of :

- A sample (in the cases B sample was not used) or
- B sample (in the cases A sample result was not conclusive) or
- A and B samples or

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<sup>6</sup> The receipt of a delivery status notification will be deemed as proof of delivery

- A and B and C samples (in the cases B sample was used and a counter-expertise was requested) or
- A and C samples (in the cases B sample was not used and a counter-expertise was requested)


automatically results in the disqualification of the rider/team from the entire event.

No disqualification will be applied in case of conformity of sample C.

Furthermore, in any case, other penalties may be applied.

- 9) The rider/team has the right to appeal against the decision of competent authority of the event concerned (e.g. Race Direction, International Jury) in accordance with FIM Disciplinary and Arbitration Code applicable to the relevant discipline.

## H. FUEL SAMPLE DECLARATION FORM

 <h3 style="margin: 0;">FIM Fuel Sample Declaration Form</h3>									
Discipline									
IMN (xxx/xx)									
Rider/team's name									
Rider/team's number									
Rider/team's email or telephone number									
Team									
Vehicle's make									
Fuel's make and type									
Fuel origin (public station or race supplier)									
Fuel samples taken on date (dd/mm/yy)									
Fuel samples taken at (right before or after):									
<b>MOTOCROSS</b>  Practice <input type="checkbox"/> Qualifying race <input type="checkbox"/> Race 1 <input type="checkbox"/> Race 2 <input type="checkbox"/>	<b>TRIAL</b>  Day 1 <input type="checkbox"/> Day 2 <input type="checkbox"/>	<b>TRACK RACING</b>  Heat n°__ <input type="checkbox"/>	<b>ENDURO /ISDE</b>  Day 1 <input type="checkbox"/> Day 2 <input type="checkbox"/> Day n°__ <input type="checkbox"/>	<b>RALLIES /BAJAS</b>  Day 1 <input type="checkbox"/> Day 2 <input type="checkbox"/> Day n°__ <input type="checkbox"/>					
<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="padding: 5px;">Container seal n°</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"><b>Sample A</b></td> <td style="width: 50px;"></td> </tr> <tr> <td style="padding: 5px;"><b>Sample B</b></td> <td></td> </tr> <tr> <td style="padding: 5px;"><b>Sample C</b></td> <td></td> </tr> </tbody> </table>		Container seal n°		<b>Sample A</b>		<b>Sample B</b>		<b>Sample C</b>	
Container seal n°									
<b>Sample A</b>									
<b>Sample B</b>									
<b>Sample C</b>									
<p>The above listed details refer to fuel samples taken from the fuel tank of the motorcycle specified.</p> <p><b>Sample A</b> is the first testing sample to be used by the FIM appointed laboratory</p> <p><b>Sample B</b> can be used for a second analysis if required by the FIM</p> <p><b>Sample C</b> is used if a counter-expertise is required by the rider/team.</p> <p>The serial numbers of the vial seals and the accuracy of the listed information have been verified.</p>									
Rider or team responsible name									
Rider or team responsible signature									
FIM Technical Director/ FMNR Chief Technical Steward name									
FIM Technical Director/ FMNR Chief Technical Steward signature									

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## I. LIST OF APPROVED FUELS

This list can be obtained by requesting it to [cti@fim.ch](mailto:cti@fim.ch).



FÉDÉRATION INTERNATIONALE  
DE MOTOCYCLISME

**FIM-MOTO.com**

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