



FÉDÉRATION INTERNATIONALE  
DE MOTOCYCLISME

**TECHNICAL RULES  
MOTOCROSS**  
(INCLUDING RULES FOR QUADS, SUPERMOTO & SNOWCROSS)

**2017**

**RÈGLEMENTS TECHNIQUES  
MOTOCROSS**  
(RÈGLEMENTS POUR QUADS, SUPERMOTO & MOTONEIGE INCLUS)

**Technical Rules Motocross**  
**(Including Rules for Supermoto, Sidecars,  
Quads and Snowcross)**

**2017**

**Règlements Techniques Motocross**  
**(Règlements pour Supermoto, Sidecars, Quads et  
Motoneige inclus)**

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Applicable as from 01.01.2017

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Rule changes as of 01.01.2018

DIAGRAMS

## **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 A1) must be constructed in such a way that they are entirely controlled by a rider. Motorcycles with Sidecars (Group B) must be constructed to carry a passenger.

## **01.05 CATEGORIES AND GROUPS OF MOTORCYCLES**

Motorcycles are divided into categories which must be observed for all meetings and world record attempts.

In principle, it is forbidden for different categories, groups and classes to compete in the same race, unless the Supplementary Regulations state otherwise.

### **Category I**

Motorcycles propelled by the action of one wheel in contact with the ground.

### **Category II**

Special vehicles propelled by the action of one or more wheels in contact with the ground but which are not covered by the conditions of Category I.

#### **Group A1 - Solo Motorcycles**

Two-wheel vehicles making only one track on the ground.

#### **Group B1**

Vehicles with three wheels, making two tracks on the ground, consisting of a motorcycle making one track and a sidecar for a passenger making the other track.

#### **Group B2**

Vehicles with three wheels, making two or three tracks on the ground in the direction of forward travel, with a permanently attached Sidecar forming a complete integral unit. If three tracks are made, the centre-lines of the two tracks made by the motorcycle wheels must not be more than 75 mm apart. A track is determined by the longitudinal centre-line of each of the vehicle's wheels in the direction of forward travel.

## Category II

**Vehicles propelled by the action of two driving wheels in contact with the ground in only one direction.**

Group C - Special 2 wheel driven motorcycles

Group D - Special 3 wheel, 2 wheel driven motorcycles

Group E - Snowmobiles

Group F - Sprinters and Dragsters

Group G - Quad racers

## Category III

Group J – Electric Powered Vehicles (EPVs, see Art. 01.50)

## 01.07 CLASSES

Groups are again separated into classes according to cylinder capacities as detailed below. Generally, these classes must be observed for all meetings. (However, see Art. 032.3.2 of the Motocross Rules).

### Category I

#### Group A1 - Solo Motorcycles

Class	over (cc)	up to (cc)
50	-	50
65	50	65
85 (2-stroke) (4-stroke)	65	85
	85	150
100	85	100
MX2 (2-stroke) (4-stroke)	100	125
	175	250
175	125	175
MX1 (2-stroke) (4-stroke)	175	250
	290	450

350		250	350
MX3	(2-stroke)	175	500
	(4-stroke)	290	650
750		500	750
1000		750	1000
1300		1000	1300

Note: For 125 cc, only single cylinder engines are allowed.

### Groups B1, B2 - Sidecars

Over 350 cc and up to a maximum of 750 cc for 2-stroke engines or a maximum of 1000 cc for 4-stroke mono and bi-cylinder engines.

## Category II

### Group E Snowmobiles

Class	over (cc)	up to (cc)
250	-	250
350	250	350
500	350	500
750	500	750
1050	750	1050
1300	1050	1300

### Group G Quad racers

Four-wheeled, two-wheel driven, balloon-tyred off-road vehicles having a wheel at each diagonal extremity and consisting of a complete integral unit, having accommodation for a rider only sitting astride, and steered by a handlebar. Same classes as Category I, Group A1.

## 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

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.

## 01.19 MOTORCYCLE WEIGHTS

### 19.01

The minimum weights of the motorcycle (**without rider and/or passenger**) are:

for the 65 cc class	Up to 65cc – 2T	53 kg
for the 85 cc SW class (small wheels)	65cc up to 85cc - 2T	63 kg
	100cc up to 150cc - 4T	71 kg
for the 85 cc LW class (large wheels)	65cc up to 85cc - 2T	65 kg
	100cc up to 150cc - 4T	73 kg
for MX1 motorcycles	175cc up to 250cc - 2T	98 kg
	290cc up to 450cc - 4T	99 kg
for MX2 motorcycles	100cc up to 125cc - 2T	88 kg
	175cc up to 250cc - 4T	95 kg
for MX3 motorcycles	290cc up to 500cc - 2T	102 kg
	475cc up to 650cc - 4T	102 kg

**The fuel tank shall contain a maximum of 0.5 litres of fuel, when the machine is checked before the race.**

**These are absolute limits and no tolerance is applied when the machine is checked before the practice/qualifying race/race.**

**The minimum weight of the verified motorcycle must not at any time be less than the minimum weight required.**

A 1% tolerance in the weight of the machine is accepted when checked **during or after** the race, **in order to take into account the variability of the test conditions.**

**A scale with a minimum resolution of 100g must be used.**

### 19.02

**The use of ballast to stay over the minimum weight is forbidden. The term "ballast" refers to as any piece of component, device or part, the primary function of which is to add weight to the machine.**

### **19.03**

A sticker or other piece of material (preference goes to plastics) must be fixed to the front of the main frame (and with preference on the same side of the frame on all the motorcycles).

### **19.04**

Weighing scales must have been certified by a National Institute **within the period of 24 months before the event.**

### **19.05**

For Groups B1 and B2 at all competitions a passenger must be carried.

## **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.

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

### **25.01 Use of titanium and light alloys**

The use of titanium in the construction of the frame, the front forks, the handlebars, the swinging arms, the wheel- and swinging arm-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**

The use of data recording devices and automatic electronic ignition is authorised.

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, automatic lap timing devices or from the approved on-board cameras (with prior written approval from the Championship Promoter/Organiser).

### **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.

## **01.27 STARTING DEVICES**

Starting devices **for the engine** are compulsory.

## **01.28 FUEL TANKS**

The fuel tank and fuel cap must be leak proof at all times.

Fuel tanks shall only be filled in the paddock or pit area.

## **01.29 OPEN TRANSMISSION GUARDS**

A guard must be fitted to the countershaft sprocket.

### **29.01**

If the primary transmission is exposed, it must be fitted with a guard as a safety measure. The guard must be designed so that rider or the passenger cannot under any circumstances come into accidental contact with the transmission parts. It must be designed to protect the rider from injuring his fingers.

### **29.04**

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 AND SILENCERS**

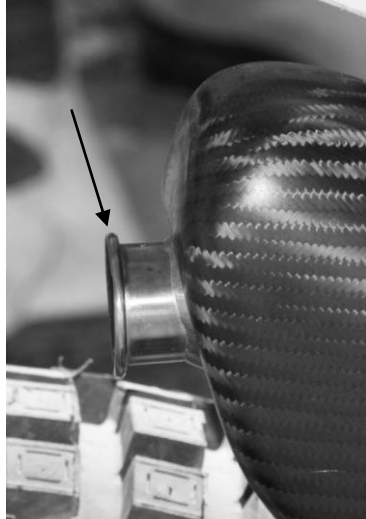
Exhaust pipes and silencers must fulfil all the requirements concerning sound control (see also Art. 01.79).

### **31.01**

**The silencer end axis must be parallel (tolerance 10°) to the central axis 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. If the edge of the final tube protrudes more than 5 mm, it must be rolled to an angle of 180° (see picture below).**



### **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 inconvenience the passenger (in the case of sidecars), 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.

## **01.33 HANDLEBARS**

### **33.01**

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

### **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.

When light alloy handlebars are used, the distance between the two extremities of the clamping area (or of the 2 clamps) must not be less than 120 mm.

### **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, **see Diagrams**). 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.

### **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.

### **35.05**

**Hand- and foot-controls may be modified for mobility challenged riders.**

## **01.37 THROTTLE CONTROLS**

### **37.01**

Throttle controls must be self-closing when not held by the hand. The throttle operation (opening and closing) shall only be activated by mechanical cable from the twist grip directly attached to the throttle valve. 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.

### **37.02 Ignition cut-out switches**

Sidecars, Quads and Snowmobiles must have an ignition cut-out fitted to operate when the rider leaves the machine. This ignition cut-out system must interrupt the primary circuit and must be wired for both the supply and return of the current.

This ignition cut-out must be placed as near to the centre of the handlebar as possible and must be operated by a non-elastic string of adequate length and thickness. Once the rider steps off the vehicle, the lanyard must disconnect from the cut-off switch and **cut the power to the engine**. The cut-off switch cannot be taped, glued wired or fitted solidly in place. It must be possible to pull it off to stop the engine immediately.

For Sidecars and Quads, the cut-out switch must be strapped to the rider's right-hand wrist. A spiral cable (similar to that of a telephone wire) of maximum 1 m in length is permitted. **For Snowmobiles, it must be attached properly to the rider's waist (loop, hook or ring).**

**In the case of vehicles belonging to Group J (Electric vehicles), refer to Art. 50.04.6.**

### **01.39 FOOTRESTS**

#### **39.01**

Footrests must be solidly fixed. They may be 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 an 8 mm radius (see Diagrams).

### **01.41 BRAKES**

#### **41.01**

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

#### **41.02**

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

#### **41.04**

Snowmobiles must have at least one functional brake.

#### **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 must cover the circumference of the wheel at an angle sufficient enough to protect the rider from mud.

##### **43.04**

The rear mudguard measure described **in the Diagrams ("L" distance)** must not exceed 130 mm at the most extended positions of the front and the rear suspension, at full extension.

##### **43.05**

The ends of the mudguards must be rounded. The radius must be at least 3 mm. Mudguards must be made of flexible materials only (e.g. plastics).

##### **43.07**

If cast or welded wheels are used, a protection must be provided by enclosing the spokes with solid discs. Any open area between the outer edge of the solid disc and the wheel rim shall be maximum 10 mm (tyre inflation valve excepted).

#### **01.45 STREAMLINING**

No type of streamlining is allowed.

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

#### **01.46 SUSPENSION**

Electronically controlled suspension systems must not be used.

#### **01.47 WHEELS, RIMS, 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, or of a traditional detachable rim other than for spokes, valve or security bolts, is prohibited.

The only exception made is for tyre retention screws, sometimes used to prevent tyre movement relative to the rim.

If the rim is modified for these purposes, bolts, screws, etc., must be fitted.

#### **47.03            Restrictions for wheel (rim) dimensions**

<b>Capacity</b>	<b>Maximum front wheel (rim) size</b>	<b>Maximum rear wheel (rim) size</b>
65cc	14 inch	12 inch
85cc SW (small wheels)	17 inch	14 inch
85cc LW (large wheels)	19 inch	16 inch
125cc and up	21 inch	19 inch

#### **01.49            TYRES FOR MOTOCROSS**

##### **49.01**

Scoop or paddle (continuous radial rib) tyres and/or tyres with lugs having a height of over 19.5 mm are forbidden.

##### **49.03**

The tyre surface shall not be fitted with subsequently mounted elements such as anti-skid spikes, special chains, etc.

#### **01.50            ADDITIONAL SPECIFICATIONS FOR ELECTRIC POWERED VEHICLES (EPVs, Group J)**

##### **50.01            INTRODUCTION**

The technical concept is reserved for motorcycles propelled by non-thermal energies with zero toxic/noxious emissions and by the action of one wheel in contact with the ground.

Amendments to these technical regulations may be made at any time in order to ensure fair competitions.

## **50.02 GENERAL EPV CLASS REQUIREMENTS**

EPVs refer to two- and/or three-wheeled autonomous electric powered motorcycles, **having traction on one or both wheels (with an unpowered sidecar if applicable).**

The number of electric motors is limited to one.

Amendments to these technical regulations may be made at any time in order to ensure fair competitions.

### **50.02.1 Race Procedures**

(Race procedures to be defined by the Sporting Commission concerned).

### **50.02.2 Race Format (Guidelines – actual race format depends on the discipline and battery life)**

Minimum race length: 20 minutes

Maximum race length: 30 minutes

### **50.02.3 Charging the accumulator**

Energy supply will be provided in the paddock at the times and locations determined by the race Organiser.

Charging may only be done with the energy supply provided by the race Organiser.

The charging system must be separate from the machine and comply with all electrical safety requirements including thermal overload trip, fusing and be equipped with an earth leakage protection breaker.

### **50.02.4 Pit Stop**

Riders will be allowed to define their own method of energy renewal subject to safety and practical considerations subject to the approval of the race Organiser.

Riders who wish to have a pit stop must declare the process and technology to the FIM Permanent Technical Delegate/Chief Technical Steward for a safety evaluation. All information will be treated with strict confidentiality.

### **50.02.5 Transponder timing**

All machines must be equipped with an official transponder.

### **50.02.6 Technical Control**

**As a condition of entry, all safety items on-board the motorcycle must be precisely described and presented at the Technical Verifications.**

The Technical Steward shall check both the machine and the rider for compliance with the technical specifications, as well as the employment of good engineering construction practice, and the presence of adequate electrical insulation and weatherproofing.

Damaged machines must be returned to the technical control area for examination after race or practice. In such circumstances it is the responsibility of the competitor to ensure both his machine and clothing have been rechecked and approved before further use in the event. **If stickers/marks are used, a new sticker/mark must be in place.**

It is the responsibility of the rider to ensure that a machine used in competition is electric, mechanically and structurally in a safe condition.

**In case of a dispute, the decision of the FIM Permanent Technical Delegate will be final.**

#### **50.02.7 Conformity**

It is the duty of each competitor to show the Technical Stewards of the meeting that his/her vehicle fully complies with these rules and the rules governing the meeting, in their entirety at all times.

#### **50.03 General vehicle specifications**

##### **50.03.1 Requirements**

All motorcycles must comply in every respect with all the requirements for racing as specified in the FIM General Technical Specifications, unless otherwise specified below.

The power circuit consists of all those parts of the electrical equipment which are used to propel the motorcycle. The on-board circuit consists of all those parts of the electrical equipment which are used for signalling, lighting or communication.

**The accumulator is defined as any on-board equipment used for the storage of electrical energy supplied by the charging unit.**

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

**The use of any external source of energy in any form whatsoever with the aim of improving the performance of the vehicle is strictly prohibited.**

##### **50.03.2 Number Plates and Colours**

See Art. 01.55.

Colours: Green background – yellow numbers

### **50.03.3 Handlebars**

See Art. 01.33.

### **50.03.4 Control levers**

See Art. 01.35.

### **50.03.5 Foot Rest/Foot Controls**

See Art. 01.39.

### **50.03.6 Wheel and rims**

See Art. 01.47.

### **50.03.7 Tyres**

See Art. 0.49.

### **50.03.8 Streamlining**

See Art. 01.45.

### **50.03.9 Machine Weight**

**No minimum weight is applied.** The maximum weight limit shall not exceed **130 kg**.

The machine will be checked for weight in the 'ready-to-race' condition. The verified weight may never fall below the required minimum weight.

### **50.03.10 Overall Dimensions**

The specific dimensions for the vehicles of this discipline apply.

### **50.03.11 Inclination**

It must be possible for a motorcycle not being loaded, to be inclined to an angle of 40 degrees from the vertical, without any part of it other than the tyre coming in contact with the ground.

In race conditions, the vehicle must be capable of affecting a standing start on an uphill slope with a gradient of 18%.

### **50.04 Electrical safety**

It must be ensured that the components used cannot cause injury under any circumstances, either during normal operation or in foreseeable cases of malfunction.

It must be ensured that the components used for protecting persons or objects can reliably fulfil their function for an appropriate length of time.

#### **50.04.1 Electrical components**

All parts of the electrical equipment must be protected to at least the equivalent of IP 44 type protection (dust proof and splash proof). **Exposed connectors/wires must be protected against abrasion in case of accident (side covers).**

**It must be ensured that the electrical components used cannot cause injury under any circumstances, either during normal operation or in foreseeable cases of malfunction. It must be ensured that the components used for protecting persons or objects can reliably fulfil their function during the period of the competition.**

#### **50.04.2 Power bus maximum voltage**

**The maximum allowed voltage in the main power bus is 400VDC or 285VAC. A secondary power bus may be used to supply energy to the critical systems at a maximum voltage of 20VDC or 14VAC.**

#### **50.04.3 High voltage symbols**

Symbols warning of 'HIGH VOLTAGE' must be displayed on or near the electrical equipment protective covers; all symbols must comprise a black flash of lightning inside a yellow triangle with a black border. The sides of the triangle must measure at least **8 cm**, but may be larger if practical.



#### **50.04.4 Insulation**

**Every part of the electrical equipment must be electrically insulated relative to all live components and system ground. Maximum default current is 20mA.**

**Wiring insulators can be required to be checked at any time by the FIM Permanent Technical Delegate. Double insulation will be required in high voltage or high current wires. Technical datasheets of the wires used will prevail under all circumstances.**

**Plus and minus wires from the battery must be insulated with respect to the chassis to withstand battery maximum voltage at least.**

**All electrically conducting non-live parts must be connected with the system ground.**

**In cases where the voltage of the power circuit exceeds 36VDC, the power circuit must be separated from the on-board circuit by an appropriate insulator.**

**Insulating material not having sufficient mechanical resistance, i.e. paint coating, enamel, oxides, fibre coatings (soaked or not) or insulating tapes are not accepted.**

#### **50.04.5 Power Indicator**

When the vehicle is in a powered on state, there must be two clearly visible indicators, one light on the instrument panel and one light on the rear of the vehicle.

**The rear light must be red and visible from at least 10 m away, from the rear or the side.**

#### **50.04.7 General circuit breaker – 'Emergency Stop'**

**The general circuit breaker must disconnect from the cut-off switch and discharge the main bus voltage below 60V. This system will be referred to as general circuit breaker or "Emergency stop".**

**Low power accumulators provided for low voltage circuits, e.g. auxiliary circuits, do not have to be isolated by the general circuit breaker (Emergency Stop) provided that they are completely isolated from the main power accumulators.**

#### **50.04.9 Fuses (over-current trip switches)**

An over-current trip switch is a device which automatically interrupts the electrical current in which it is installed if the level of this current exceeds a defined limit value for a specific period of time.

**Fuses must under no circumstance replace the general circuit breaker (Emergency Stop).**

#### **50.04.13 Capacitors**

Voltage across capacitors belonging to the power circuit should fall below 65 volts within 5 seconds after the general circuit breaker is opened or the over current trips of the accumulator are blown.

#### **50.04.15 Power control**

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

#### **50.04.2 Accumulator (storage battery)**

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

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

**IMPORTANT:** As a condition of entry, a Material Data Safety Sheet must be supplied with the race entry for the machine, including all relevant details as to the accumulator chemistry, human and environmental hazards, handling and specific fire risks and precautions.

#### **50.04.14 Accumulator fastening**

The accumulator must be installed securely inside the vehicle and be protected against short-circuits and leakage. The accumulator must be attached to the frame or chassis using metal clamps with an insulating covering.

The fixing method must be designed in such a way that neither the accumulator nor the fastening device itself nor its anchorage points can come loose, even when subjected to a crash. A solid partitioning bulkhead must separate the location of the accumulator from the rider.

**Each accumulator box must provide its own cooling and/or venting system. In modular battery systems, a heat shield is strongly recommended between modules, by means of an adiabatic shield or intumescent.**

The accumulator installation must ensure that in the event of accumulator cell leakage or explosion, the contents are kept away from the rider and do not interfere in any way with the rider's vision or the safe handling of the machine.

#### **01.51 ADDITIONAL SPECIFICATIONS FOR SUPERMOTO**

The following specifications will apply for motorcycles entering the SuperMoto World Championship:

- There must be a clear colour distinction between the colour of the background and the colour of the number. Reflecting numbers are forbidden. Thus, with exception of a red front number plate with white numbers, riders have the free choice of colour for number plates and colours. The front red number plate with white numbers is compulsory for, and must be displayed by the current leader in each class of the Championship.
- A safety device (pin or lock nut) should be installed on the brake pad fixture.
- The safety wire used on the bolts of the brake callipers must be visible.
- On 4-stroke engines, an oil catch tank of 0.5 litres minimum properly fastened, or a closed breather system must be installed.
- Motorcycles must be equipped with a protective shield, installed under the engine, designed to act simultaneously as a protection and as a reservoir to

collect losses of oil or coolants which may occur in case of an engine breakdown.

- One or several leak-proof catch tanks must be provided for the radiator water and the breather system of the fuel tank. These catch tanks must be emptied before each start.
- The only authorised cooling liquid is water.
- The safety wire used on oil and water filter caps, as well on drain plugs, must be visible.
- Motocross, enduro or trial tyres are prohibited.
- The maximum tread depth on the front and/or back tyres used must be 10 mm in the middle.
- Additional tread grooves, cuts, etc. are allowed on the front and/or back tyres.

## **01.53          ADDITIONAL SPECIFICATIONS FOR SIDECARS**

### **53.01**

The Sidecar must be fixed to the motorcycle in at least three points, if it is not an integral part of the chassis.

The fixing points must not allow movement at the joints (articulated Sidecars are strictly forbidden). If the angle of the inclination is changeable, it must be locked in such a way that the fixing method is completely secured and not only clamped on.

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

The fuel tank must be sufficiently and independently protected from the ground.

### **53.06**

The drive shall be transmitted to the ground only through the rear wheel of the motorcycle.

### **53.07**

The distance between the tracks left by the centre lines of the rear motorcycle wheel and the Sidecar wheel must be at least: 800 mm and not more than 1150 mm.

### **53.09**



To reduce the torque in the steering, a maximum displacement of 75 mm is permitted between the front and the rear wheel.

#### **53.10**

**The steering of the front wheel must be accomplished without any intermediate articulated steering joints directly by a classic telescopic fork or a swinging arm fork with the wheel supported equally each side (long or short leading link type). All other types of front wheel steering and suspension are forbidden.**

#### **53.11**

The minimum dimensions of a Sidecar available for passenger accommodation are:

Length: 1 000 mm - Width: 400 mm

Height of the screen protecting the passenger: 300 mm minimum (see Diagrams).

#### **53.12**

The minimum ground clearance of a laden Sidecar when measured must not be less than 175 mm.

#### **53.13**

**The position of the engine is optional, except that it must be positioned in front of the rear wheel.**

**If the engine and gearbox are mounted on plates, the minimum thickness of the steel plates must be 4 mm, and 5 mm for light alloy plates.**

#### **53.14**

Handlebars must be firmly secured to the forks. They must be at a height above the mid-point in the seat.

The motorcycle must have a steering head which must be fitted like the handlebar, and must not be attached to the unsuspended part of the front wheel suspension.

#### **53.16**

**For Sidecars, the Sidecar wheel must be covered or protected with a solid material.**

#### **53.17**

Referring to the longitudinal axis of the motorcycle, the exhaust pipe shall not protrude beyond the width of the sidecar (if on the sidecar side) or protrude by more than 330 mm (if on the motorcycle side) (see Diagrams).

If the exhaust pipe is on the sidecar side, it must not exceed the vertical line drawn at a tangent to the rear edge of the Sidecar platform.

## **01.55 NUMBER PLATES**

### **55.03**

Number plates must be made of flexible materials only (e.g. plastic). The shape of the front number plate is free and may be part of the general design of the motorcycle.

However, the front number plate must have the minimum size necessary to carry a three-digit number as described in Art. 55.07 and the Motocross World Championship logo.

Team publicity is allowed on the front number plate within a space 50 mm from the top or bottom section of the number plate.

### **55.04**

The plates curved not more than 50 mm out of a true plane must not be covered or bent.

### **55.05 Front number plates**

The front number plates curved not more than 50 mm out of a true plane must not be covered or bent (see Diagrams).

One plate must be fixed to the front inclined not more than 30° towards the rear from the vertical plane. Holes can be perforated between the numbers on the number plate. However, under no circumstances must the actual numbers be perforated.

For the solo classes of the Individual Motocross World Championship events, the front number plate must always display (See Appendix "O"):

- The background colour,
- The number of the rider,
- The FIM Motocross World Championship logo as shown on the Diagrams (5 cm x 5 cm).

The numbers must be clearly legible. **In case of a dispute, the decision of the FIM Permanent Technical Delegate will be final.**

Reflecting numbers are forbidden. The following minimum dimensions must be respected on the front number plate:

- |                        |        |
|------------------------|--------|
| • Height of the number | 140 mm |
| • Width of each number | 70 mm  |
| • Width of the stroke  | 25 mm  |

- Space between two numbers 15 mm
- Space between the FIM logo and the number 10 mm

## **55.06 Side number plates**

The side number plates must be positioned above a horizontal line drawn through the rear wheel spindle and the front edge of the plate must be behind a vertical line drawn at 200 mm to the rear of the rider's footrest.

They must be fixed in such a manner as to be clearly visible and they must not be masked by any part of the motorcycle or by the rider when seated in the driving position.

In place of separate plates, a space of equivalent size in matt colours can be painted or fixed on the bodywork.

For the solo classes of the Individual Motocross World Championship events, the side number plate must always display (See Appendix "E"):

- the number of the rider
- the FIM Motocross World Championship logo (5 cm x 5 cm)
- optionally, publicity of the rider's/team's sponsor(s).

There is freedom of design and publicity, but incorporation of the rider's number and the FIM Motocross World Championship logo into the graphics is compulsory.

The colour scheme for the background of the side number plates and the numbers is free. However, there must be a clear colour distinction between the colour of the number and the colour of the background. The FIM logo must be in black or white.

## **55.07**

The figures must be clearly legible and like the background must be painted in matt colours to avoid reflection from sunlight. In general, the following minimum dimensions must be respected on front number plates:

- Height of figure 140 mm
- Width of figure 70 mm
- Width of stroke 25 mm
- Space between two figures 15 mm

However, the following minimum dimensions must be respected on the side number plates:

- Height of figure 100 mm
- Width of figure 70 mm
- Width of 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.

Whenever official time keeping methods (transponders) are being used in the FIM World Championships and Motocross of Nations events, competitors will be allowed to put publicity on:

- the front number plate (for dimensions, see Art. 55.03). Publicity may be put within a space, 50 mm from the top or bottom section of the number plate, (See Diagram O, the shaded area is reserved for publicity).
- the side number plates: the entire number plate may be used for publicity space. For Motocross des Nations, the FMN's national flag must be displayed on the side number plates, whereby the specified dimensions must be respected.

## 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 are indicated in the Supplementary Regulations for each meeting.

The following colours shall be used; and they must be matt colours, following the RAL colour table, i.e.:

Black	9005
Yellow	1003
Green	6002
White	9010
Blue	5005

The following colour schemes shall be used:

MX1	White background	Black Numbers / Logo FIM
MX2	Black background	White Numbers / Logo FIM
Women's MX	Blue background	White Numbers / Logo FIM
World Champion (1st event)	Red background	White Numbers / Logo FIM
Points leader	Red background	White Numbers / Logo FIM
MX des Nations	According to class	
MXN - Winning Team	Red background	White Numbers / Logo FIM

Sidecar	Yellow background	Black Numbers
Veteran World Cup	Yellow background	Black Numbers /Logo FIM
Supercross	White background	Black Numbers / Logo FIM

### 55.13 For all other events:

<b>65 cc</b>	<b>blue background</b>	<b>white numbers</b>
85 cc	white background	black numbers
125 cc	black background	white numbers
250 cc	green background	white numbers
500 cc (open)	yellow background	black numbers
Sidecars	yellow background	black numbers
Supercross	white background	black numbers

## 01.63 FUEL, OIL AND COOLANTS

All motorcycles must be fuelled with unleaded petrol, as this term is generally understood.

All riders/teams must declare to the FIM Technical Steward the make and type of fuel to be used during practices and race(s), upon presentation of the riders' motorcycle(s) at the initial technical control. See also: Art. 63.04.2 Race fuels

### 63.01 Physical properties for unleaded fuel

**63.01.1** Unleaded petrol must comply with the FIM specification.

**63.01.2** Unleaded petrol (incl. E10) will comply with the FIM specification if:

**NOTE: The present rule will be subject to change as of 01.01.2018 (see end of the document).**

a) It has the following characteristics:

Property	Units	Min.	Max.	Test Method
RON		95.0	102.0	EN ISO 5164
MON		85.0	90.0	EN ISO 5163
Oxygen	% (m/m)		2.7	ISO 22854 or EN 13132
Oxygen (E10 Fuels)	% (m/m)		3.7	ISO 22854 or EN 13132
Nitrogen	% (m/m)		0.2	ASTM D 4629
Benzene	% (V/V)		1.0	ISO 22854 or EN 238
Vapour pressure (DVPE)	kPa		95.0	EN 13016-1
Lead	mg/L		5.0	ICP-OES or AAS
Manganese	mg/L		2.0	ICP-OES or AAS
Density at 15°C	kg/m <sup>3</sup>	720.0	775.0	EN ISO 12185

Oxidation stability	minutes	360		EN ISO 7536
Existent gum	mg/100 mL		5.0	EN ISO 6246
Sulphur	mg/kg		10.0	EN ISO 20846 or 20884
Copper corrosion	rating		class 1	EN ISO 2160
<b>Distillation:</b>				EN ISO 3405
E at 70°C	% (V/V)	20.0	50.0	
E at 100°C	% (V/V)	46.0	71.0	
E at 150°C	% (V/V)	75.0		
Final Boiling Point	°C		210	
Residue	% (V/V)		2.0	
Appearance	Clear and bright			Visual inspection
Olefins	% (V/V)		18.0	EN ISO 22854
Aromatics	% (V/V)		35.0	EN ISO 22854
Total diolefins	% (m/m)		1.0	GC-MS or HPLC
<b>Oxygenates:</b>				EN ISO 22854* or EN 13132
Methanol	% (V/V)		3.0	
Ethanol (1)	% (V/V)		5.0	
Ethanol (E10) (1)	% (V/V)	5.0	10.0	
Isopropanol	% (V/V)		12.0	
Isobutanol	% (V/V)		15.0	
<i>tert</i> -Butanol	% (V/V)		15.0	
Ethers (C5 or higher)	% (V/V)		22.0	
Others (2)	% (V/V)		15.0	
<b>Property</b>	<b>Units</b>	<b>Min.</b>	<b>Max.</b>	<b>Test Method</b>
RON		95.0	110	EN ISO 5164
MON		85.0	100	EN ISO 5163
Vapour pressure (DVPE)	kPa	35.0	95.0	EN 13016-1
Lead	g/L		0.001	ICP-OES
Manganese	g/L		0.001	ICP-OES
Oxidation stability	Minutes	360		EN ISO 7536
Existent gum	mg/100 mL		5.0	EN ISO 6246
Sulphur	mg/kg		10.0	EN ISO 20846 or 20884
Copper corrosion	Rating		Class 1	EN ISO 2160
Distillation:				
Final Boiling Point	°C		210	EN ISO 3405
Residue	% (V/V)		2	EN ISO 3405
Appearance	Clear and bright			Visual inspection
Ethanol + higher alcohols	% (V/V)	75		EN 13132 or 14517
Higher alcohols (C3-C8)	% (V/V)		2.0	EN 13132 or 14517
Methanol	% (V/V)		1.0	EN 13132 or 14517
Ethers (5 or more C atoms)	% (V/V)		5.2	EN 13132 or 14517
Unleaded petrol as specified in 2.10.1.2	% (V/V)	14	25	
Water	% (V/V)		0.3	EN 12937

Inorganic chloride	mg/L		1	EN 15484
Acidity (as acetic acid)	% (m/m) (mg/L)		0.005 (40)	EN 15491

**Notes:**

\* Preferred method.

(1) Ethanol must be blended according to EN 15376.

(2) GC-MS methods may also be applied to fully deconvolute GC trace.

b) 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 gas chromatography and/or GC/MS.

c) 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

The total concentration of bicyclic naphthenes and bicyclic olefins may not be higher than 1% (m/m). The test method used will be gas chromatography.

d) Only the following oxygenates are permitted:

Methanol, Ethanol, n-Propyl alcohol, Isopropyl alcohol, n-Butyl alcohol, sec-Butyl alcohol, Isobutyl alcohol, tert-Butyl alcohol; Methyl tertiary butyl ether, Ethyl tertiary butyl ether, Tertiary amyl methyl ether, Diisopropyl ether.

e) Manganese is not permitted in concentrations above 2.0 m/L. For the present this is solely to cover possible minor contamination by other fuels.

Lead replacement petrols, although basically free of lead, are not an alternative to the use of unleaded petrol. Such petrols may contain unacceptable additives not consistent with the FIM Fuel Regulations.

**63.01.3 Ethanol E85 will comply with the FIM specification if:**

a) It has the following characteristics:

Property	Units	Min.	Max.	Test Method
RON		95.0	110	EN ISO 5164
MON		85.0	100	EN ISO 5163
Vapour pressure (DVPE)	kPa	35.0	95.0	EN 13016-1
Lead	g/L		0.001	ICP-OES
Manganese	g/L		0.001	ICP-OES
Oxidation stability	Minutes	360		EN ISO 7536
Existent gum	mg/100 mL		5.0	EN ISO 6246
Sulphur	mg/kg		10.0	EN ISO 20846 or 20884

Copper corrosion	Rating		Class 1	EN ISO 2160
<u>Distillation:</u>				
Final Boiling Point	°C		210	EN ISO 3405
Residue	% (V/V)		2	EN ISO 3405
Appearance	Clear and bright			Visual inspection
Ethanol + higher alcohols	% (V/V)	75		EN 13132 or 14517
Higher alcohols (C3-C8)	% (V/V)		2.0	EN 13132 or 14517
Methanol	% (V/V)		1.0	EN 13132 or 14517
Ethers (5 or more C atoms)	% (V/V)		5.2	EN 13132 or 14517
Unleaded petrol as specified in 2.10.1.2	% (V/V)	14	25	
Water	% (V/V)		0.3	EN 12937
Inorganic chloride	mg/L		1	EN 15484
Acidity (as acetic acid)	% (m/m) (mg/L)		0.005 (40)	EN 15491

### 63.02 Oil

For oil used in two stroke mixtures, the following tolerances on the fuel specifications will be allowed:

Density at 15°C	Plus/minus 30 kg/m <sup>3</sup>
Distillation residue	Not controlled

Any infringement of the fuel specifications will automatically result in the exclusion of the competitor from the entire meeting (see also Sporting Code Art. 140.1). The result of the competitors' fuel sample analysis (A or B Sample) more favourable to the competitor will be taken into account (See also Art. 63.05.3).

If the fuel available locally for the event is not of a sufficient quality for use by competitors, the FMN of the organising country must ask the FIM for a waiver in order to enable the use of fuel not corresponding to the characteristics defined above.

All possible measures must be taken to prevent the possible loss of waste oil so that it does not inconvenience a following rider.

### 63.03 Air

Only ambient air may be mixed with the fuel as an oxidant.

### 63.04 Primary Tests

**63.04.1** The FIM may require tests of fuels to be administered before, or at the time of delivery to, an event at which such fuels are to be used.

**63.04.2** Fuel companies which supply 'race' fuels (fuels other than those obtained at public fuel stations) to participating teams/riders must submit 10 litres (2 x



5 L) to the laboratory appointed by the FIM/DWO for analysis in accordance with the specification.

Providing the fuel is within the specification, a certificate containing a test report and batch number will be issued to the fuel company.

The fuel company must provide a copy of the test report number to their client rider/teams before they take part in a race.

Contact for fuel analysis: [fimfuels@intertek.com](mailto:fimfuels@intertek.com).

### **63.05 Fuel Sampling and Testing**

- 1) The FIM-appointed Official has the sole responsibility for the management and supervision during the taking of fuel samples.
- 2) The preferred fuel test method is Gas chromatography or GC Fingerprint method.

Gas chromatography (GC) is an analytical technique for separating compounds based primarily on their volatility and polarity. Gas chromatography provides both qualitative and quantitative information for individual compounds present in a sample. Gas chromatography is widely used for the analysis of fuels.

The GC Fingerprint is a comparison between the given reference and the fuel drawn from the competitor's motorcycle. With the fingerprint method any changes in the composition and concentration of the fuel against the reference is detected. The separation is done with a non polar column suitable for fuel analysis. The detection of the components is done with a flame ionisation detector.

- 3) If other test methods are required, fuel samples are transported to the appointed laboratory by an official courier, using the appropriate containers.
- 4) Riders selected for fuel controls are directed with their motorcycles to the inspection area.
- 5) Only new sample bottles are used for the fuel samples.
- 6) The fuel to be tested is transferred directly from the selected fuel tank into three vials (3 small sample containers), marked A, B and C and identified by reference to the motorcycle from which the sample was taken. The bottles are closed, sealed and labelled by the FIM appointed Official.
- 7) The Fuel Sample Declaration form (see 14) is filled out immediately, containing all information as shown on the sample sheet, including the riders' name and race number, date and place of fuel sampling. A responsible team member signs this declaration, after verifying that all the information is correct.
- 8) Samples A and B are given to the appointed laboratory staff, present at the event for analysis or be sent to the respective laboratory by the organiser if no

trackside laboratory is available. Sample B will be kept by the laboratory staff as a reserve sample, to be used for a second analysis if required. All samples are accompanied by a copy of the Fuel Sample Declaration form. Costs for the analyses of sample A and B are paid by FIM.

- 9) Sample C is handed over to the FIM, accompanied by a copy of the Fuel Sample Declaration form, for safeguarding in case of protests and/or a request for a counter-expertise by the FIM appointed laboratory. Costs for the analyses of sample C are paid by the team concerned.
- 10) As soon as possible after completing the testing, the Fuel Analyst/FIM appointed laboratory will report the results of the fuel sample analyses directly to the FIM appointed Official, with a copy to the rider, the relevant Commission Director and CTI Secretariat (via [ctr@fim.ch](mailto:ctr@fim.ch) and [cti@fim.ch](mailto:cti@fim.ch)).
- 11) In the case of non-conformity of the fuel, the FIM appointed Official must notify the results to the FIM, the Race Direction (or the International Jury) and the rider/ team representative concerned. Failure of the sample to conform to the FIM fuel specifications results in the disqualification of the competitor. The result of the competitor's fuel sample analysis ("A" or "B" sample) more favourable to the competitor is taken into account.
- 12) Within 48 hours of the receipt of the notification of the results from the analysis of sample A and/or B, the team must notify the FIM and the FIM-appointed Official if a counter-expertise of sample C is requested.
- 13) The Race Direction (or the International Jury) takes a decision, immediately following the notification of the results of the final expertise. Any appeal against the decision of the Race Direction (or the International Jury) is heard by the FIM. Stewards appointed for the event at which the decision is taken. This takes place after the C sample has been analysed. For events without a Panel of Stewards, the appeal is lodged before the CDI.
- 14) **Fuel Sample Declaration Form**



## FIM WORLD CHAMPIONSHIPS, CUPS AND PRIZE EVENTS Fuel Sample Declaration Form

Discipline	
Rider's name	
Rider's number	
Team	
Vehicle's make	

Fuel samples taken on date (dd/mm/yy)				
Fuel samples taken on:				
<b>MOTOCROSS</b>	<b>TRIAL</b>	<b>TRACK RACING</b>	<b>ENDURO/ISDE</b>	<b>RALLIES/BAJAS</b>
<input type="checkbox"/> Practice	<input type="checkbox"/> Day 1	<input type="checkbox"/> Heat n°__	<input type="checkbox"/> Day 1	<input type="checkbox"/> Day 1
<input type="checkbox"/> Qualifying race	<input type="checkbox"/> Day 2		<input type="checkbox"/> Day 2	<input type="checkbox"/> Day 2
<input type="checkbox"/> Race 1			<input type="checkbox"/> Day n°__	<input type="checkbox"/> Day n°__
<input type="checkbox"/> Race 2				

	Container label n°	Container seal n°
<b>Sample A</b>		
<b>Sample B</b>		
<b>Sample C</b>		

The above listed details refer to fuel samples taken from the fuel tank of the motorcycle specified after the race whilst in the Check Area for a period of 30 minutes. Sample "A" and "B" will go to the laboratory appointed by the FIM for analysis. Sample "C" will be safeguarded by the FIM in case a counter-expertise is required.

The serial numbers of the vial seals and labels have been verified and the accuracy of the listed information has been certified.

Team responsible's name	
Team responsible's signature	
FIM technical steward's name	
FIM technical steward's signature	
Date and time (dd/mm/yy, hh/mm)	

## **01.65 EQUIPMENT AND PROTECTIVE CLOTHING DURING PRACTICE AND RACE**

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.

### **65.01 Clothing and protectors**

In general, it is recommended to use suit, trousers, long-sleeve shirts and undergarments made of textiles which are not fully constituted of nylon or spandex (e.g. Lycra, Elastan), in order to avoid degradation in case of abrasion (friction).

#### For Motocross

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

Moreover, it is compulsory that riders/passengers wear, as a minimum, back and chest protectors, incorporated within the suit or worn separately. It is compulsory that

- back protectors comply with EN 1621-2, at least a "central back protector" with impact Level 1
- chest protectors comply with prEN 1621-3 (at least Level 1 and Type A).

Chest and back protectors must be clearly marked according with EN 1621-2/3.

#### For Snowmobiles

The rider must wear suitable clothing to afford protection against the cold and against injury in case of a fall, and padded knee-length boots or other solid footwear.

#### For Supermoto

Riders must wear a complete leather suit in one piece, with a minimum thickness of 1.2 mm, and with additional leather padding or other protection on the principal contact points (elbows, shoulders, fore-arms, hips, knees, etc.).

Sections of the leather suit not directly subject to 'crash' damage may use a small limited area or strip **not made of leather**.

### **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**

All disciplines riders/passengers shall wear gloves made of leather or other materials having equivalent properties.

### **65.04 Eye protection**

Riders/passengers shall wear goggles. The use of glasses, helmet visors and "tear offs" or "roll offs" is also permitted. 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, not moveable and made of the same material of the shell.**
- **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.

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 remove all approval marks 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.

**69.04**

The Chief Technical Steward/Technical Steward may ask a rider for the following checks before the rider is permitted to take part in practice or 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 INTERNATIONAL HELMET APPROVAL MARKS**

Helmets must conform to one of the recognised international standards:

EUROPE	ECE 22-05 (only "P" type)
JAPAN	JIS T 8133:2007 (valid until 31.12.2019) JIS T 8133:2015 (only "Type 2 Full face")
USA	SNELL M 2010 (valid until 31.12.2019) SNELL M 2015

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

EUROPE	 <p><b>051406/J-1952</b></p> <p>3/ 1 for Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 5 for Sweden, 6 for Belgium, 7 for Hungary, 8 for the Czech Republic, 9 for Spain, 10 for Yugoslavia, 11 for the United Kingdom, 12 for Austria, 13 for Luxembourg, 14 for Switzerland, 15 (vacant), 16 for Norway, 17 for Finland, 18 for Denmark, 19 for Romania, 20 for Poland, 21 for Portugal, 22 for the Russian Federation, 23 for Greece, 24 for Ireland, 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30 (vacant), 31 for Bosnia and Herzegovina, 32 for Latvia, 33 (vacant), 34 for Bulgaria, 35 (vacant), 36 for Lithuania, 37 for Turkey, 38 (vacant), 39 for Azerbaijan, 40 for The former Yugoslav Republic of Macedonia, 41 (vacant), 42 for the European Community (Approvals are granted by its Member States using their respective ECE symbol), 43 for Japan, 44 (vacant), 45 for Australia, 46 for Ukraine, 47 for South Africa and 48 for New Zealand. Subsequent numbers shall be assigned to other countries in the chronological order in which they ratify or accede to the Agreement Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions, and the numbers thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement.</p>
JAPAN	

	
USA	

### 01.73 NATIONAL COLOURS FOR HELMETS

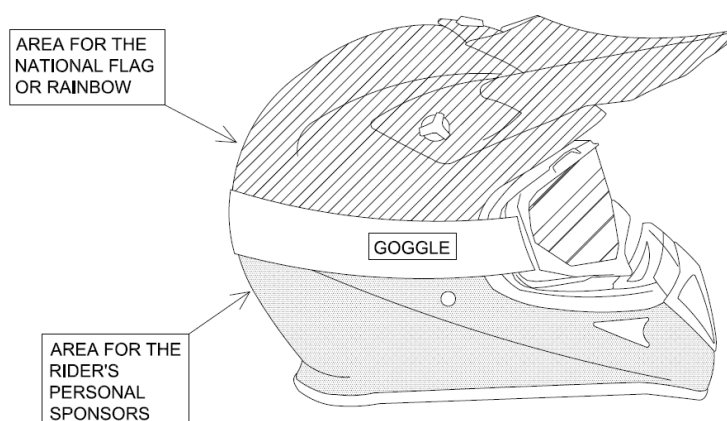
In competitions between national teams (e.g. FIM Motocross of Nations), it is compulsory that the helmet's overall graphics represent the colours of the team's national flag or the colours as mentioned in the table below. The national flag can be replicated in stripes, bands or other patterns.

Andorra	FMA	White with vertical blue, yellow and red bands
Argentina	CAMOD	White with blue horizontal band
Australia	MA	Green and yellow sides, red, white & blue representation of the Australian flag across the top
Austria	OeAMTC	Bright red with a 60 mm wide black band and the label of the OeAMTC in a white field on the front side
Belgium	FMB	Yellow
Brazil	CBM	Yellow and green
Bulgaria	BMF	Green and red
Canada	CMA	White and 3 Red Maple leaves, one on front and one on each side
Chile	FMC	Red with blue band and yellow stars
China	CMSA	Red and yellow
Czech Republic	ACCR	Blue with red, white and blue border
Denmark	DMU	Red and white
Finland	SML	White with blue cross
France	FFM	Blue
Germany	DMSB	White with black border
Great Britain	ACU	Green
Greece	ELPA	White with blue border
Hungary	MAMS	Red and green
Ireland	MCUI	Green and orange
Italy	FMI	Red with one green and one white horizontal band
Japan	MFJ	White with red circle on top
Kenya	KMSF	Black, Red, Green, with white bands and the country name KENYA on both sides.
Luxembourg	MUL	Purple
Mexico	FMM	White with green and red border
Monaco	MCM	Blue and white

Netherlands	KNMV	Orange
New Zealand	MNZ	White with black kiwi on front
Norway	NMF	Red and blue
Peru	FPEM	Red with 75 mm wide white strips and blue and yellow chequered border
Poland	PZM	White with red band
Portugal	FNM	White
Rumania	FRM	Black with vertical blue, yellow and red bands with national emblem.
Russia	MFR	White with a red border and a vertical red band with star
San Marino	FSM	White with the San Marino National emblem
Slovakia	SMF	Blue, red and white
South Africa	MSA	Black, green, blue and red with yellow and white bands
Spain	RFME	Yellow and red
Sweden	SVEMO	Blue and yellow
Switzerland	FMS	Red with white cross
Uruguay	FUM	Light blue
USA	AMA	Blue with 2 white bands

In addition, the defending FIM Team World Champion is allowed to wear the rainbow colours on the helmet.

The rider's personal sponsors may be part of the overall graphics or displayed in a separate and dedicated area below the goggles strap (usually horizontal). The helmet model and graphics of each of the riders of a team may be different.



The overall graphics on the helmet must always be approved, in any case, by the FMN of the team.

Whenever a team is using a helmet and there is a case of *force majeure* (e.g. change of rider, broken helmet, etc.), the helmet in question can be replaced by any other helmet, provided that it complies with the FIM Technical Rules for the current year and has been presented to the Technical Stewards of the event.



## **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)**

Starting numbers to be worn on sashes (bibs) or printed on the riders' jersey must be conforming to the following:

### **76.01**

The colour of the number must be in strong contrast with the colour of the background.

### **76.02**

Distance between the numbers: 1.5 cm

### **76.03**

Height of number: minimum 20 cm

### **76.04**

Width of number:   minimum 10 cm for one-digit numbers  
                          minimum 20 cm for two-digit numbers  
                          minimum 25 cm for three-digit numbers

### **76.05**

Width of stroke: 3 cm

### **76.06**

Minimum free space around the number without publicity: 5 cm

### **76.07**

Bibs if manufactured from plastic material must be perforated to provide adequate ventilation.

### **76.08**

Starting numbers used by riders on number sashes or tee-shirts must be in compliance with the starting number of the race in question. Furthermore the numbers must be worn during the practices as well as during the races.

## **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 (min. surface 50 sq. metres).
- 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**. 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 for measuring the cylinder capacity **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 cleaner)**
  - ✓ 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 before the official practice and before the race should last at least one hour, after the race last at least 30 min.
- The technical control must be carried out in conformity with the procedure and times fixed in the CMS 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.
- **An example of minimum verifications that shall be performed is given below:**

1. Sound test → sticker
2. Cut-off switch + self-closing throttle control
3. Make + model + fuel
4. Vehicle identification plate/chassis number → sticker
5. Registration plate
6. Weight + ballast
7. Fuel tank → sticker
8. Guard for the countershaft sprocket and rear sprocket
9. Handlebar protection
10. Front/rear disc brake protection
11. Helmet + national colours → sticker

- An overall inspection of the motorcycle must be carried out in conformity with the FIM rules. On accepted motorcycles a seal will be applied on the front of the main frame.
- The Technical Verifications will only be carried out when the Technical Verifications form of the motorcycle has been presented by the **rider or his/her mechanic**.

- The fuel tank shall contain a maximum of 0.5 litres of fuel. In case of doubt, the Chief Technical Steward will measure the weight with an empty tank.
- For the Technical Verifications taking place after the race, it shall be ensured that the selected machines used during the race go directly to the Closed Parc (Parc Fermé).

### **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 CTI Delegate, 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 six persons. At least one person must be a holder of an FIM SENIOR Technical Stewards Licence.  
A minimum number of scrutineers is required according to the following:
  - Checking of documentation: one
  - Sound test, silencer marking: two
  - Machine weight: one
  - Machine inspection, helmet and clothing: two
- **The Sound Control Officer (SCO) must be holder of an FIM Technical Stewards' license. 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.**
- Ten minutes before each start and in the waiting area, the technical steward will carry out the control of the seals and marks on the exhaust systems and the riders' equipment.
- During the event the technical steward will control the seals, marks on the exhaust systems and the riders' equipment in the repair zone. He must follow the work being carried out on the machines in order to ensure that no motorcycle becomes a source of danger.
- Immediately after the last race the first three motorcycles will be placed in a closed park for technical control. The machines must remain in the closed park for 30 minutes after the arrival of the winner, in case of a protest or should further examination be required.  
Competitors must retrieve their machines within 30 minutes after the opening of the closed park area, except for the machines which are chosen for disassembly.  
After this time limit, the closed park officials will no longer be responsible for the machines left behind.

- After the technical control has been completed the Chief Technical Steward will submit to the Clerk of the Course/FIM Race Director a list stating the names of the accepted riders and machines, the sound levels and weights of machines.
- 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.
- If the helmet is clearly defective, the Technical Steward must retain it. The organiser must send this helmet, together with the accident and medical report (and pictures and video, if available) to the Federation of the rider. If there are head injuries stated in the medical report, the helmet then must be sent to a neutral institute for examination.
- 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 Permanent Technical Delegate**

- **The FIM Permanent Technical Delegate must report any concern or deficiency related to the Technical Verifications to the Clerk of the Course/FIM Race Director and present proposals to resolve such concerns.**

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

- **The rider and/or the mechanic** 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 verification will be the rider **and/or the mechanic**, plus **one** other person. In addition, for Team events, the Team Manager may also be present.
- A rider remains at all times responsible that his/her machine and his/her personal protective gear are in conformity with the FIM Technical Rules for Trial motorcycles.

- **The rider and/or the mechanic** must present a clean motorcycle in conformity to the FIM rules and a duly filled in and confirmed Technical Verifications form.
- **A rider and/or the mechanic** must present one motorcycle for technical inspection under his name and number. As for the second motorcycle, there are two possibilities:
  - 1) A rider **and/or the mechanic** can present a second motorcycle for technical inspection under his name and number.
  - 2) A team or a group of riders/**mechanics** can present a second motorcycle for technical inspection. It can then be used by several riders, on condition that the motorcycle has been marked under each rider's name and number. In this case, the team presenting the motorcycle must indicate at the moment of technical inspection the names and numbers of the riders eligible to use it.
- The rider may change the motorcycle between races. The final choice must be made a minimum of 10 minutes before the start of each race.
- **The rider and/or the mechanic** must present the rider's protective wear (equipment), e.g. helmet and bib with prescribed starting number.
- **Any rider and/or the mechanic** 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**

##### **NOTES:**

- **EPVs (Group J) are exempted from sound level control.**
- **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.**

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.

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 (L<sub>WA</sub>) 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.

#### **79.01 Preparation of the sound meter**

For all FIM Championship and Prize events, a sound meter Class 1 (type 1) is required to measure the sound levels. For all other Championships, a sound meter of Class 1 or 2 (type 1 or 2) is required.

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.

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

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

- Activate the 'A' weighing
- FAST time weighting must be activated
- Select range High 80~130 dB
- Calibrate the sound meter at 93.5 dB or 113.5 dB to take into account the incidence of the wind foam ball
- Position the wind foam ball on the microphone
- Activate the function MAX MIN – set on MAX

#### **79.02 Set up of the sound meter and the motorcycle**

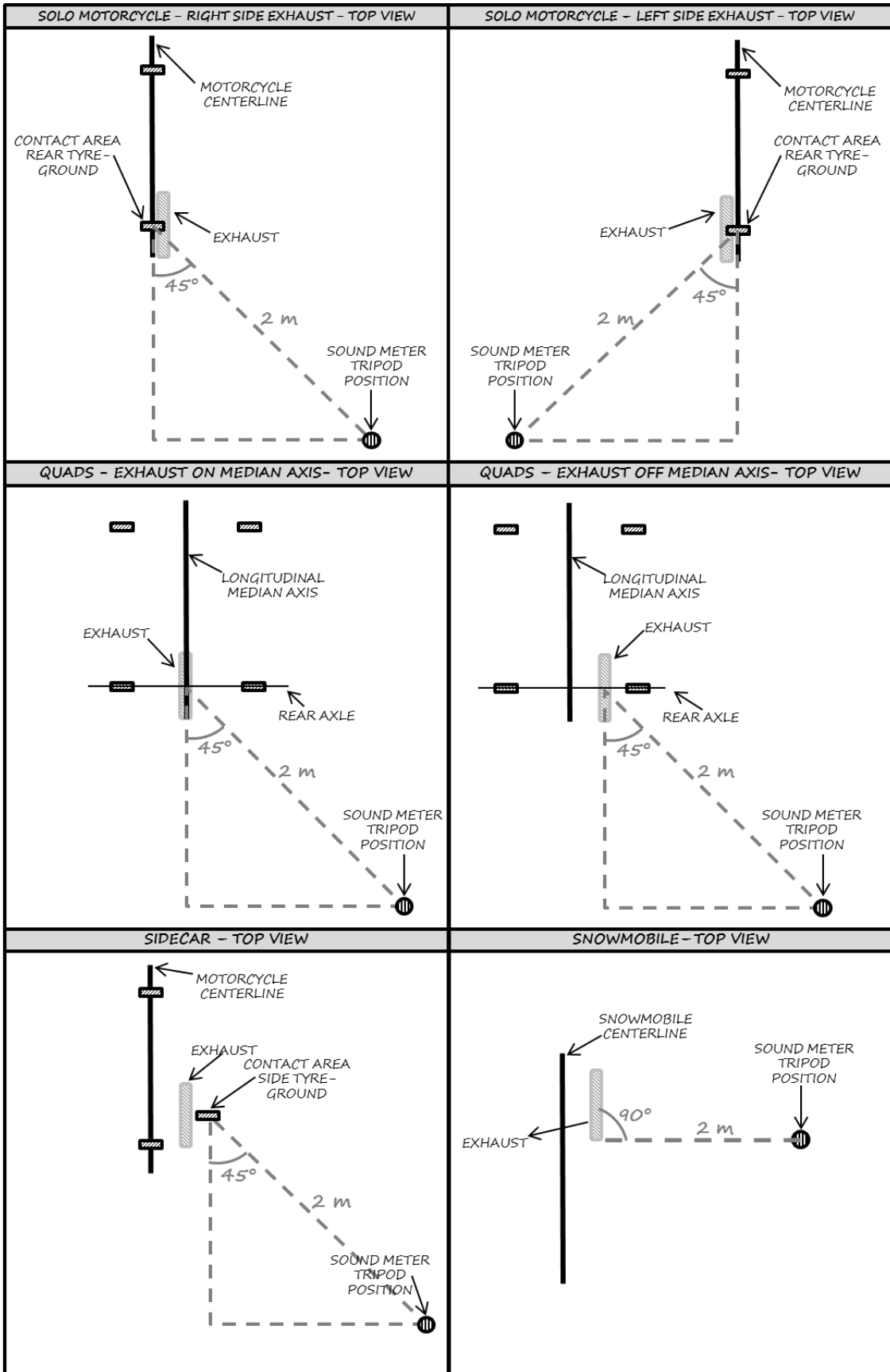
The sound levels will be measured with the microphone fixed on a tripod at a height of 1.35 m above the ground, in horizontal (levelled) position. It is helpful to have the microphone equipped with an extension cable to the sound meter.

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 (except for Snowmobiles): 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).
- 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). Note: the use of only one silencer is allowed for Snowmobiles.
- 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 side tyre touches the ground).
- 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).
- 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).

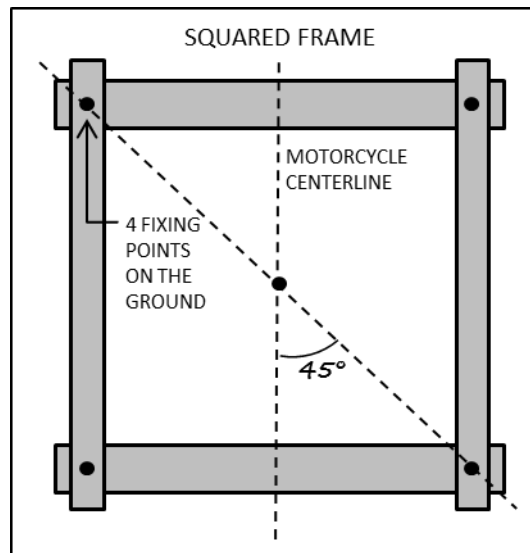




The sound level for engines with more than one cylinder will be measured on each exhaust end.

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.**



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 should not exceed 90 dB/A within a 5 m radius from the power source during tests.

### **79.03 The test procedure**

A technical steward (nominated as Sound Control Officer, "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.

The Sound Control Officer (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.

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.

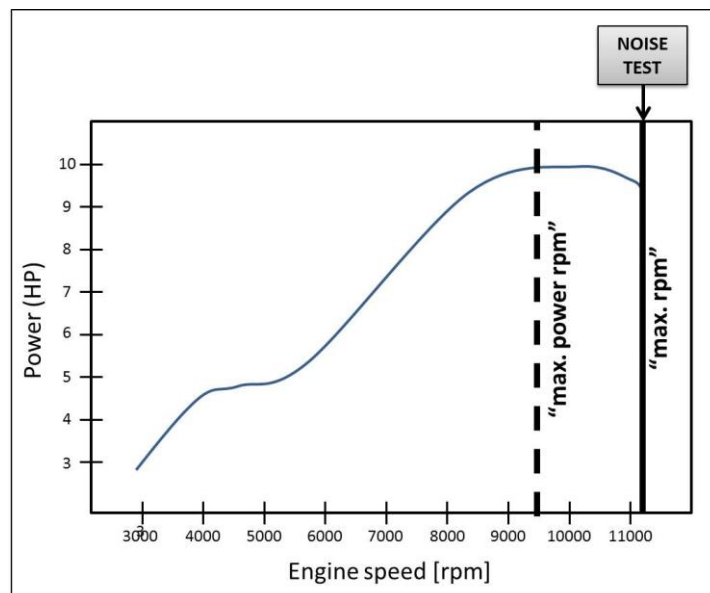
The measurement is made with motorcycle on its wheels, with a hot engine. During the sound test, only the rider may sit on the vehicle in the normal riding position.

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").

**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").**

**The "max. power rpm" values are provided in advance by the vehicle manufacturers, for each specific vehicle models (see Art. 79.08). If no value is provided, the FIM may use the value obtained from a dyno test.**



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. 79.08).

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. 79.08. The silencer can then be marked by the SCO at the end of the test.

The silencer shall not be changed after verification, except for the spare silencer (see Art. 79.05) that has also been checked and marked.

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. 79.08.  
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 silencer (in case the sound test was done before the race)
  - will receive a penalty (in case the sound test was done after the race).

For vehicles that have passed the sound test, the silencer is marked by the SCO at the end of the test.

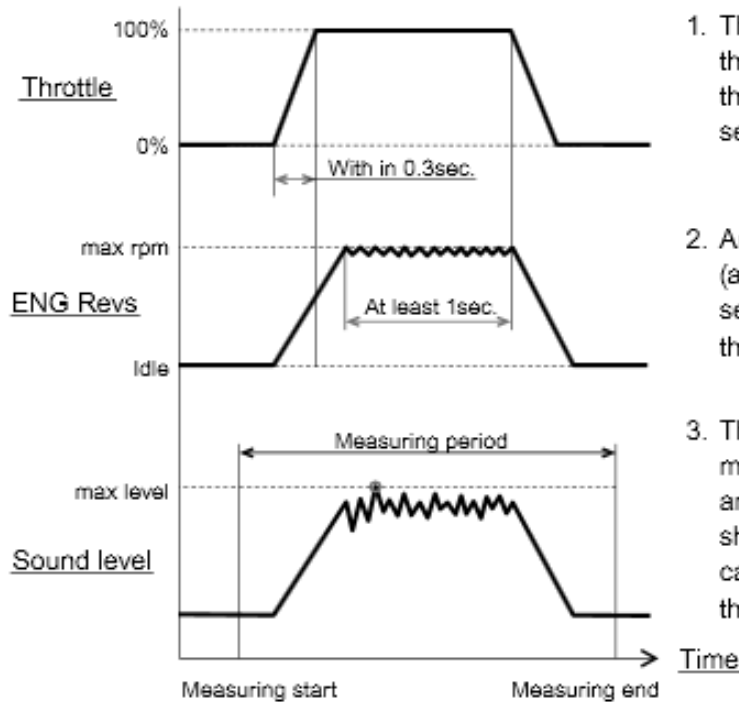
The silencer shall not be changed after verification, except for the spare silencer (see Art. 79.05) that has also been checked and marked.

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

The sound meter is then reset by pushing on the sideline and armed by pushing on the sideline again.

#### 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/her 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).

#### 79.04 Sound limits

MOTOCROSS World Championships, Cups and Prizes		
Discipline	Sound limit	
	Before practice, during practice, before race	After race
MXGP, MX2	114 dB/A	115 dB/A
Sidecars		
2-stroke	112 dB/A	113 dB/A
4-stroke	117 dB/A	118 dB/A
Junior MX		
2-stroke	111 dB/A	112 dB/A
4-stroke	114 dB/A	115 dB/A
Supermoto	117 dB/A	118 dB/A
Snowcross	114 dB/A	115 dB/A
Quad		
2-stroke	114 dB/A	115 dB/A
4-stroke	117 dB/A	118 dB/A

#### 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, which is estimated to be of 2 dB/A by using the current sound test equipment.**
- No deductions for ambient temperature, **pressure or altitude** are allowed.

#### 79.05 Spare silencers

The rider or the mechanic can present at the sound control, together with the vehicle, one (1) spare silencer to be checked.

Other spare silencers may be presented after all participants have presented their vehicles, or on the following days of the event.

#### 79.06

Action and decisions will depend on the Sporting Discipline concerned, and decisions taken during prior discussions with the FIM Permanent Technical Delegate and/or the Chief Technical Steward.

#### 79.07

In a competition which requires a final examination of machines before the results are announced, this examination must include a sound control measurement of at least three machines chosen at the discretion of the Clerk of the Course/FIM Race Director in co-operation with the Chief Technical Steward. Refer to each discipline for more info.

#### 79.08 "Max. power rpm" values

The value as provided in advance by the vehicle manufacturers, for each specific vehicle models, and/or measured with the dyno test, are reported here below.

<b>Make/model</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017 (tbc)</b>	<b>Dyno Test (for ref.)</b>
<b>Honda</b>					
CRF150	14300	14300	14300		
CRF250	11000	11000	11500		10600 (‘14)
CRF450	8500	9000	9000		8400
<b>Husqvarna</b>					
FC250	13000	13000	13000		12500 (‘16)
<b>FC350</b>	<b>12400</b>	<b>12400</b>	<b>12400</b>		
FC450	9500	9500	9500		9400
<b>Kawasaki</b>					
KX250	12000	12000	12000		12700 (‘14)
KX450	8500	8500	9000		8700
<b>KTM</b>					
250	13000	13000	13000		13700

					('14)
350	12400	12400	12400		12800
450	9500	9500	9500		9400
<b>Suzuki</b>					
RM250	12000	12000	12000		12600 ( '16)
RM450	9000	9000	9000		9200
<b>TM</b>					
250	12500	12500	12000		tbc
450	9500	9500	9500		tbc
<b>Yamaha</b>					
YZ250F	12000	12000	12000		12200 ( '14)
YZ450F	9500	9500	10000		9400

## **01.82 SPECIFICATIONS FOR SNOWMOBILES**

### **82.01 Introduction**

Snowmobiles are vehicles driven on one or more caterpillar tracks steered by skis generally situated at the front or side of the vehicle either permanently or temporarily attached. There are several types of snowmobiles.

**82.01.1** Snowmobiles equipped with 2 caterpillar tracks with one or two steering skis in front of the vehicle.

**82.01.2** Snowmobiles equipped with one caterpillar track with one or two steering skis in front.

**82.01.3** Snowmobiles equipped with one caterpillar track and skis.

For safety reasons, no windscreen of plastic or similar material shall be used.

### **82.02 General Specifications**

**82.02.1** The position of the engine is optional, except that it must be positioned in front of the rider.

**82.02.2** The rider must be completely visible.

**82.02.3** It is forbidden to add air foils or spoilers to the original hood or cowling.

**82.02.4** The use of Titanium is strictly forbidden.

**82.02.5** The rear tunnel opening must be enclosed with a comparable tunnel material.

**82.02.6** Front headlights(s) must be removed or covered.

**82.02.7** Machines must be equipped with red rear lamp, minimum power 20 W. Minimum dimensions of rear lamp: 40 mm x 50 mm.

**82.02.8** It is forbidden to drive on the track without hood or cowling.

### **82.03 Starting devices**

Snowmobiles must be equipped with an on-board mounted starting device.

The stand (support) used to lift the vehicle when on hold behind the start gate should be used for the sound control.

### **82.04 Open transmission guards**

Snowmobiles must be equipped with belt guards. The guards must be separate from the cowl configuration.

### **82.05 Exhaust pipes**

**82.05.1 The number of exhaust (chamber) is limited to one (1).**

**82.05.2** Exhaust fumes must not discharge in a manner as to raise snow, foul the tracks or brakes, or inconvenience a passenger, if there is one, or any other riders. All possible measures must be taken to prevent the possible loss of waste oil so that it does not inconvenience a following rider.

### **82.06 Handlebars**

The width of the handlebars must be no less than 500 mm and no more than 850 mm. No extensions are permitted. Ball ends on levers are not obligatory.

### **82.07 Control levers**

Snowmobiles must be equipped with control levers. Art. 01.35 is applicable.

### **82.08 Throttle controls/ignition cut out switch**

Snowmobiles must be equipped with throttle controls.

A snowmobile must also be equipped with an ignition cut out switch.

Art. 01.37 is applicable.

### **82.09 Footrests (See Art. 01.39)**



If snowmobile footrests are equipped with loops, the footrest must have a stopper which would prevent the riders foot entering by more than 1/3 of its length.

### **82.10 Brakes**

There must be at least one brake.

### **82.11 Snow Flaps**

Snowmobiles must be equipped with snow flaps at the rear. They must be made of an adequate material. There must be at least 30 mm overlap on each side of the machine tunnel and a maximum of 100 mm ground clearance when the machine is unloaded. The use of springs and/or elastic material to hold down the snow flaps is forbidden (see Diagram M).

### **82.13 Driving tracks**

These must be made of rubber or plastic. No modifications may be made to driving tracks. Anti-slip devices such as studs, spikes etc., cannot be fitted.

### **82.15 Steering skis**

The steering ski shall be designed to push away obstacles sideways and vertically (see Diagram M).

The front edge shall be raised in a curve with a diameter of not less than 100 mm which shall continue as far as a vertical line running through the centre point of the circle created by the curve. Material to be used: minimum 12 mm outside diameter.

Any guide rail must be made of material with a circular section and a minimum diameter of 10 mm. If it is equipped with anti-skid rail, the minimum profile angle is 60° and the maximum length 260 mm (see Diagram M).

The edges of steering skis must be rounded with a profile of steel or another metal of at least 5 mm (see Diagram M).

### **82.17 Number plates**

Number plates are compulsory. Art. 01.55 is applicable.

### **82.18 Number plate colours**

Up to 250 cc	green background	white numbers
350 cc	blue background	white numbers
500 cc	yellow background	black numbers
1050 cc	white background	black numbers
1300 cc	red background	white numbers

### **82.19 Fuel and Oil**

Art. 01.63 is applicable. Anti-freeze liquid is permitted.

## **82.20 Equipment and protective clothing**

Art. 01.65 is applicable.

## **82.21 Bibs**

Art. 01.76 is applicable.

## **82.22 Control/Verification**

Art. 01.77 is applicable.

## **82.23 Sound control**

Art. 01.79 is applicable.

The maximum sound level is: 112 dB/A (measured with the 2 metre max method).  
For details, see Art. 01.79

During a snowmobile sound test, the machine must be placed on a bridge 1m off the ground, with a microphone placed at an angle of 90° at a distance of 200 cm from the exhaust pipe. Hood and cowling must **remain** installed.

## **01.83 SPECIFICATIONS FOR QUAD RACERS**

### **83.01 Definition**

Refer to Art. 01.07/ - Group G/Quad Racers, for definition.

### **83.02 Type of motorcycle**

There is no restriction placed on the make, construction of type of motorcycle, other than specified below.

The cylinder capacity must be:

- min. 250 cc and
- max. 350 cc (2 cylinders max.) and 500 cc (1 cylinder).

The drive must be through the rear wheels only via a solid axle.

### **83.03 Wheels**

Wheel rim diameter max.: 12 inches.

There is no restriction for the size of the front wheel. It is forbidden to use wheels with spokes.

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

On the rear, the vehicle must have a brake on each wheel or a brake fixed solidly on the rear transmission axle of the wheels, operated by a lever on the handlebar or by a foot-operated pedal.

Wheels must be protected by good mudguards of soft, synthetic materials.

#### **83.04 Tyres**

Art. 01.49 is applicable.

#### **83.05 Overall width**

The maximum overall width cannot exceed 1300 mm.

#### **83.06 Protection**

A crash bar must be placed behind the seat. The length and width of the crash bar must end above the rear section of the chain sprocket.

A crash 'bar' or 'guard' must be fixed at the front and the rear of the vehicle. This protective barrier must be fitted in such a way that it is in alignment with the outside flange of the wheels.

A protective barrier (or 'guard') of a round profile (minimum diameter: 25 mm) must be installed on each side of the vehicle. 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.

#### **83.07 Control levers and handlebars**

Art. 01.33 and 01.35 are applicable.

#### **83.08 Throttle controls**

Art. 01.37 is applicable.

#### **83.09 Sound**

Art. 01.79 is applicable.

#### **83.10 Number plates**

Four number plates are required:

**83.10.1** One plate fixed to the front of the machine at the level of the head lamp, facing forward

**83.10.2** One plate on each side of the machine placed on the rear mudguard.

**83.10.3** One plate attached to the rear bumper.

**83.10.4** The plates must have a yellow background with black numbers. They must be placed centrally and as vertical as possible. See Art. 01.55 for dimensions.

**83.10.5** The rider must display his starting number on his jersey or a bib.

### **83.11 Helmets and clothing**

Art. 01.65 to 01.70 are applicable.

### **83.12 General**

The vehicle must be in perfect technical condition and must satisfy the requirements of the Technical Steward.

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### **Diagrams**

## Rule changes as of 01.01.2018

**63.01.2** Unleaded petrol (incl. E10) will comply with the FIM specification if:

It has the following characteristics:

Property	Units	Min.	Max.	Test Method
RON		95.0	102.0	EN ISO 5164 or <b>ASTM D2699</b>
MON		85.0	90.0	EN ISO 5163 or <b>ASTM D2700</b>
Oxygen (includes 10% ethanol allowance)	% (m/m)		<b>3.7</b>	ISO 22854 or EN 13132 or elemental analysis
Nitrogen	% (m/m)		0.2	ASTM D 4629 or <b>ASTM 5762</b>
Benzene	% (V/V)		1.0	ISO 22854 or <b>ASTM D6839 or ASTM D5580</b>
Vapour pressure (DVPE) (for winter events)	kPa		95.0 <b>(100.0)</b>	EN 13016-1 <b>(ASTM D5191)</b>
Lead	mg/L		5.0	ICP-OES or AAS
Manganese	mg/L		2.0	ICP-OES or AAS
Density at 15°C	kg/m <sup>3</sup>	720.0	<b>785.0</b>	EN ISO 12185 or <b>ASTM D4052</b>
Oxidation stability	minutes	360		EN ISO 7536 or <b>ASTM D525</b>
Sulphur	mg/kg		10.0	EN ISO 20846 or <b>ASTM D5453</b>
<u>Distillation:</u>				EN ISO 3405 or <b>ASTM D86</b>
E at 70°C	% (V/V)	20.0	50.0	
E at 100°C	% (V/V)	46.0	<b>72.0</b>	
E at 150°C	% (V/V)	75.0		
Final Boiling Point	°C		210	
Residue	% (V/V)		2.0	
Appearance	Clear and bright			Visual inspection
Olefins	% (V/V)		18.0	EN ISO 22854 or <b>ASTM D6839</b>
Aromatics	% (V/V)		35.0	EN ISO 22854 or <b>ASTM D6839</b>
Total diolefins	% (m/m)		1.0	GC-MS or HPLC
<u>Oxygenates:</u>				EN ISO 22854 or EN 13132
Methanol	% (V/V)		3.0	<b>The only oxygenates permitted are paraffinic mono-</b>
Ethanol (1)	% (V/V)		5.0	
Ethanol (E10) (1)	% (V/V)	5.0	10.0	

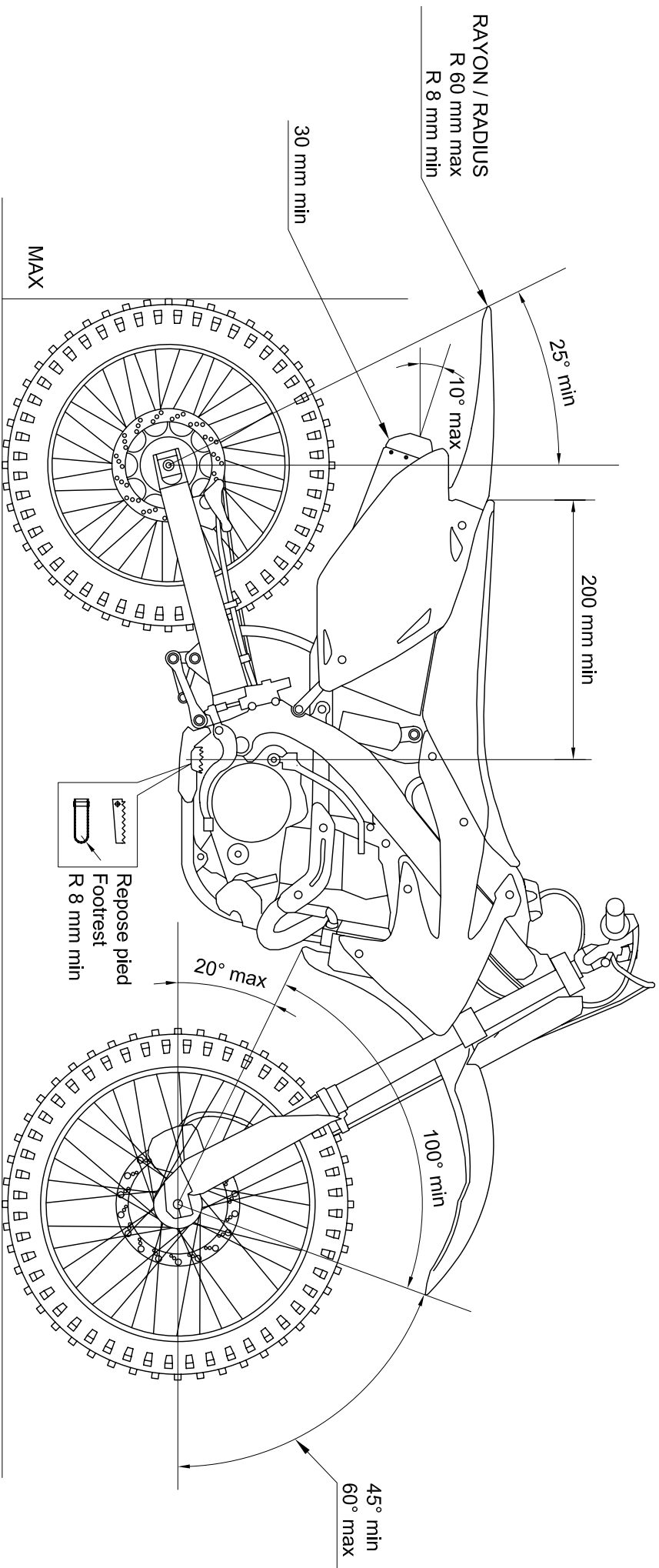
Isopropanol	% (V/V)		12.0	alcohols and paraffinic monoethers (of 5 or more carbon atoms per molecule) with a final boiling point below 210°C.
Isobutanol	% (V/V)		15.0	
<i>tert</i> -Butanol	% (V/V)		15.0	
Ethers (C5 or higher)	% (V/V)		22.0	
Others (2)	% (V/V)		15.0	

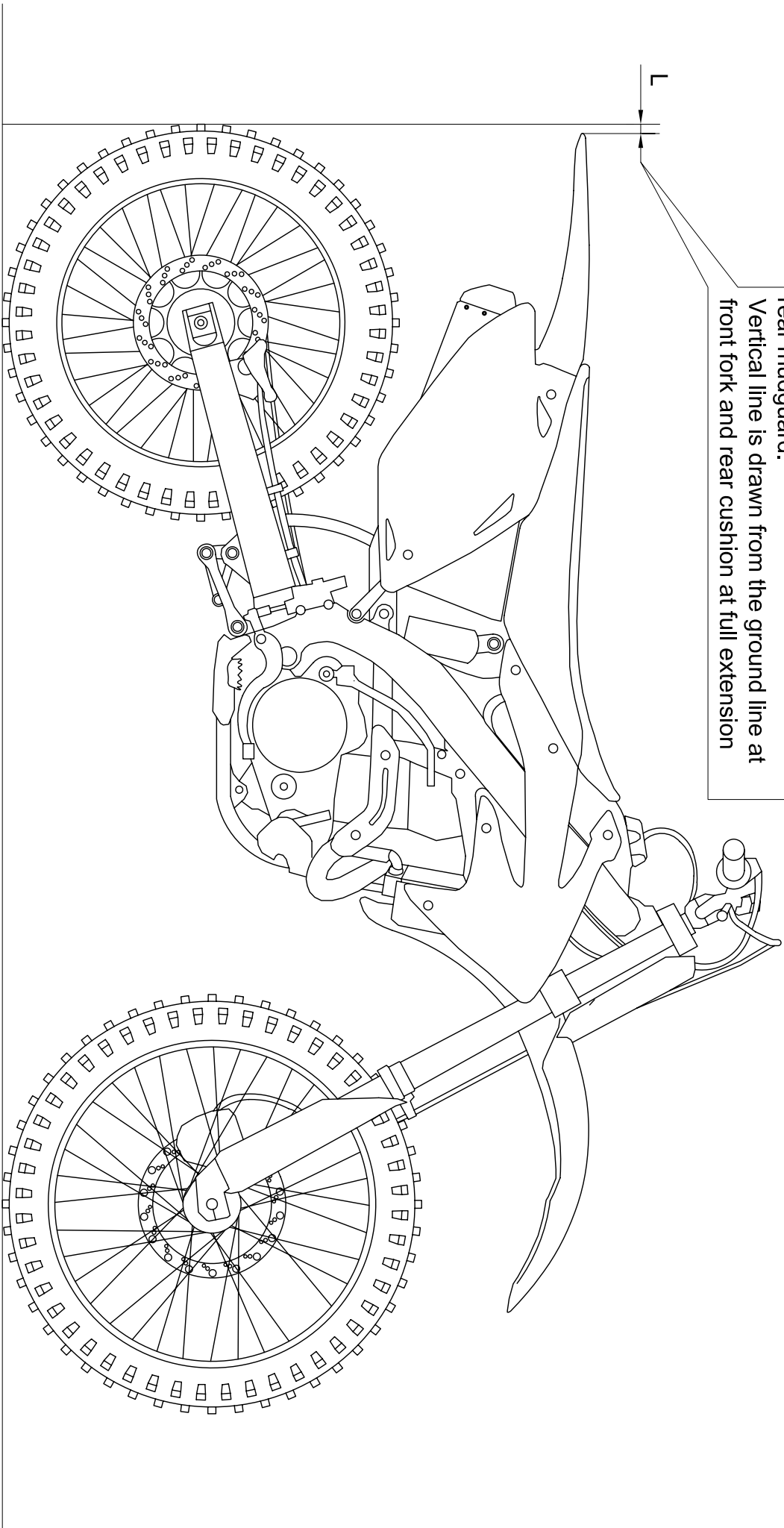
- a) The total of individual hydrocarbon components present at concentrations of less than 5% (m/m) must constitute at least 30% (m/m) of the fuel. The test method will be gas chromatography and/or GC/MS.
- b) The total concentration of naphthenes, olefins and aromatics classified by carbon number must not exceed the values given in the following table:

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

The total concentration of bicyclic naphthenes and bicyclic olefins may not be higher than 1% (m/m). The test method used will be gas chromatography.

- c) Lead replacement petrols, although basically free of lead, are not an alternative to the use of unleaded petrol. Such petrols may contain unacceptable additives not consistent with the FIM Fuel Regulations.





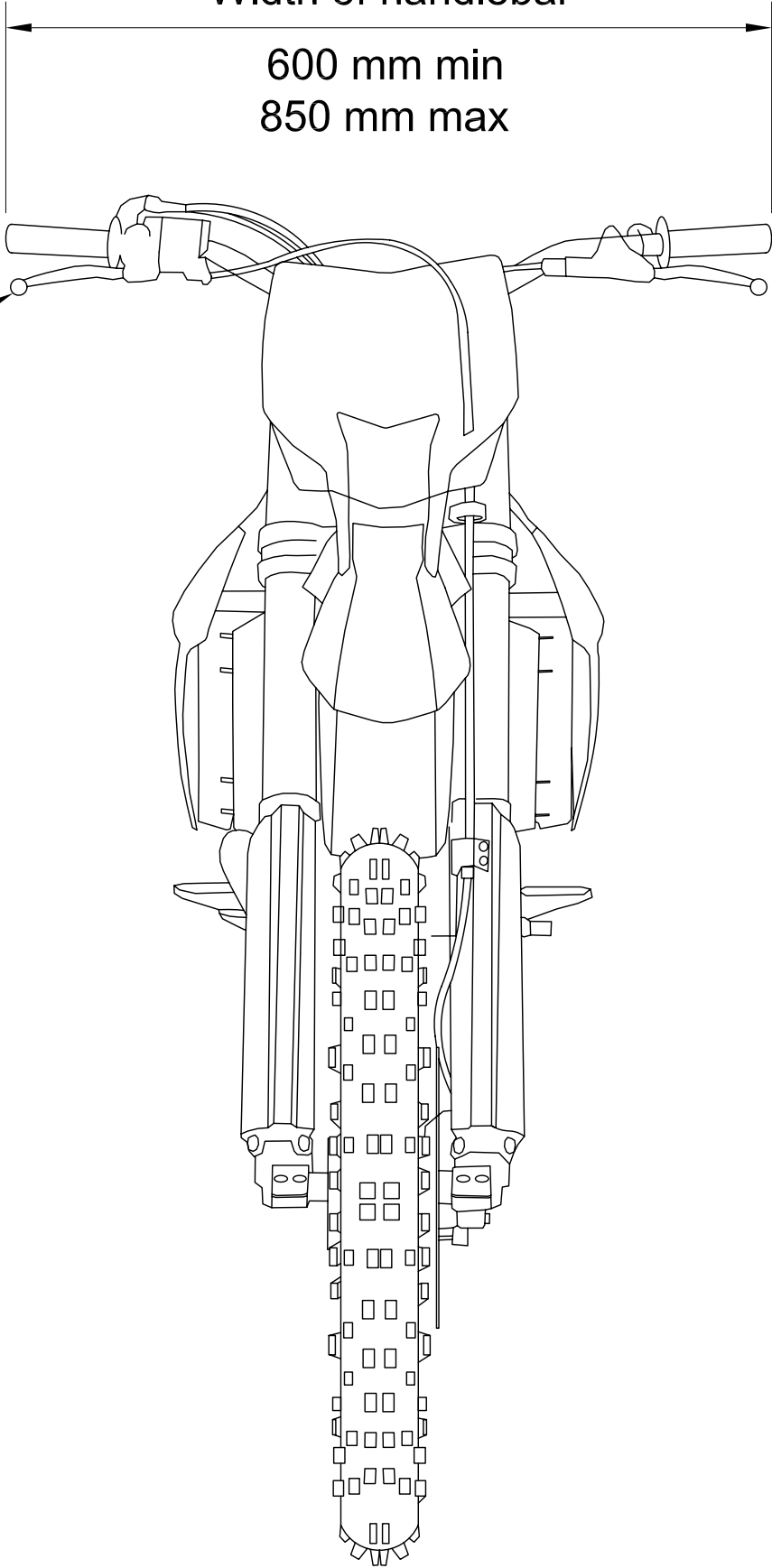
Define "L" from the vertical line drawn from the rear end of the rear tire to the rear end of the rear mudguard.  
Vertical line is drawn from the ground line at front fork and rear cushion at full extension



Largeur du guidon /  
Width of handlebar

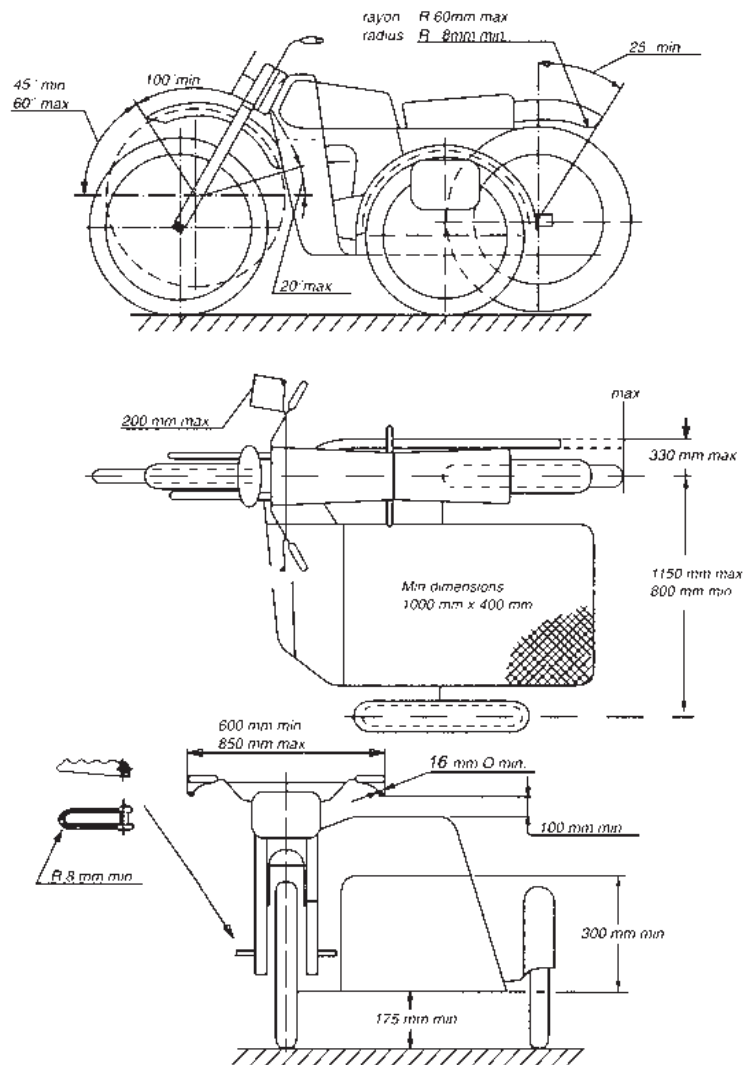
600 mm min  
850 mm max

16 mm Ø min



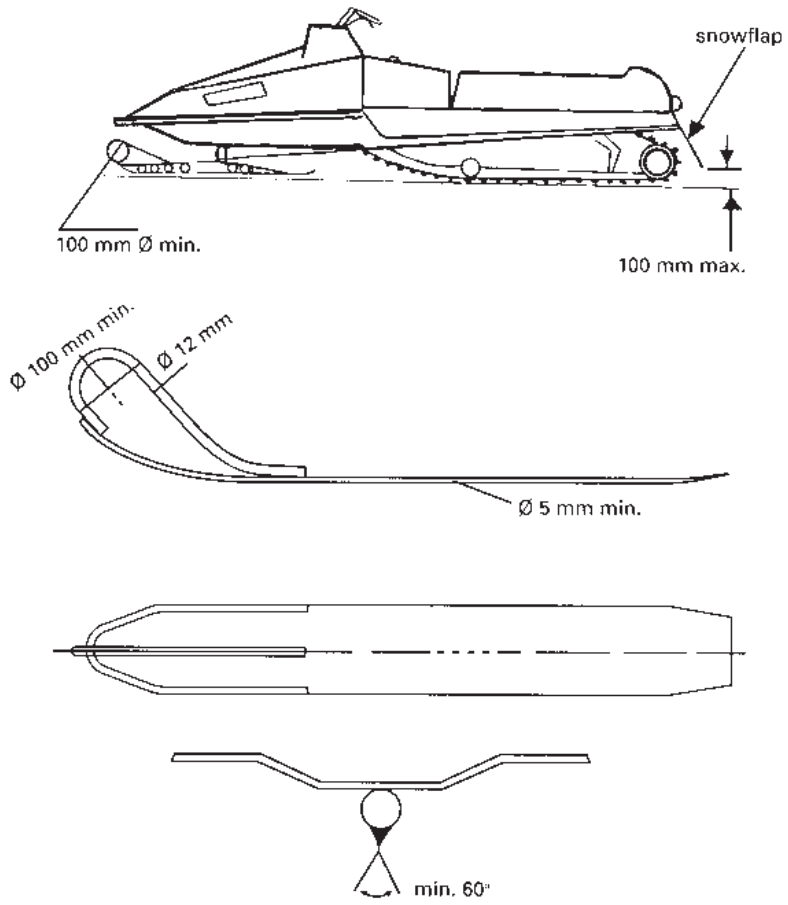
# SIDECAR

F



**SNOWMOBILE  
SCOOTER/NEIGE**

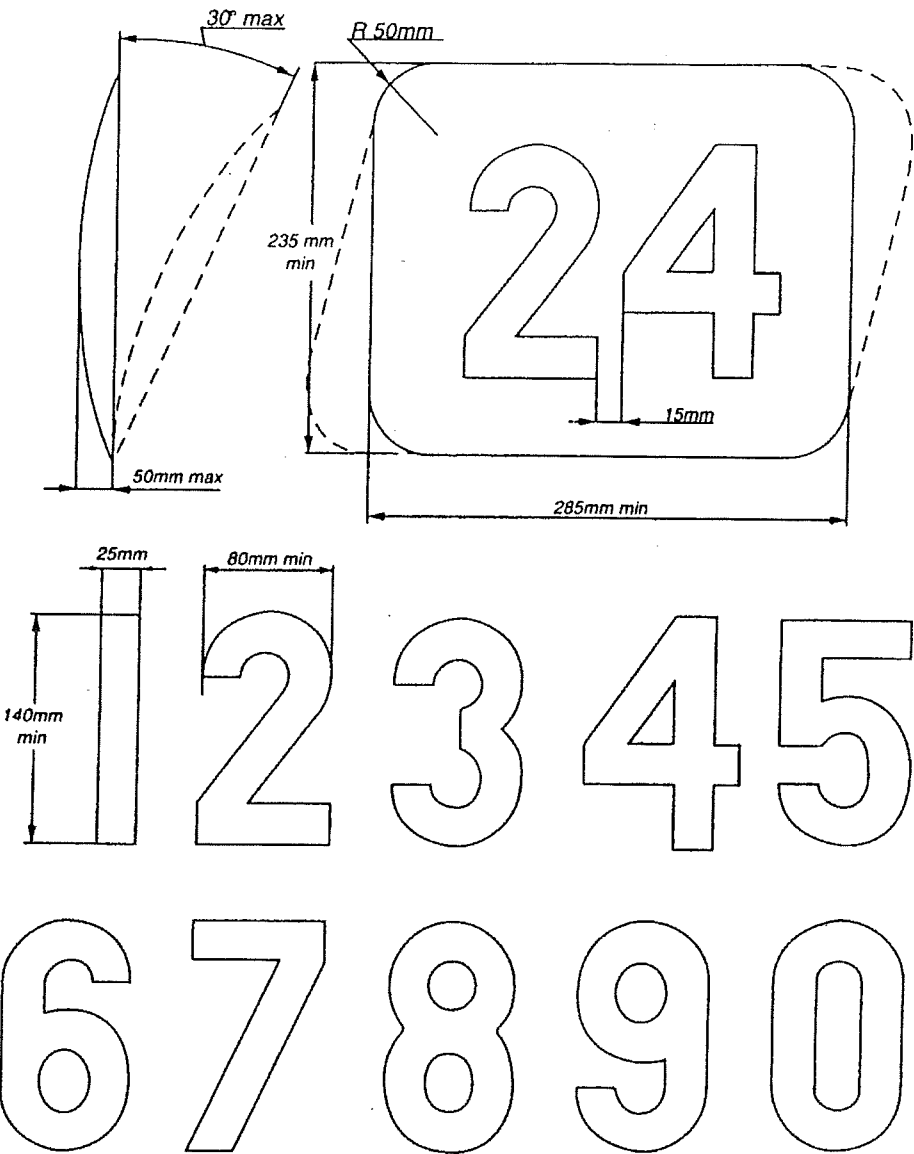
**M**



CMS

NUMBERS / NUMEROS

0



## **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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