

2^{ème} partie / 2nd part

**Technical Appendices for
International Road Racing Meetings**
(Including Appendices for Sprinters, Drag Racers, Electrical Vehicles and
Special Vehicles)

**Annexes Techniques des
Manifestations Internationales de Courses sur
Route**
(Annexes pour Sprinters, Dragsters, Véhicules électriques et
Véhicules Spéciaux inclus)

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02 TECHNICAL APPENDICES FOR INTERNATIONAL MEETINGS

2.1.1 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.

2.1.3 FREEDOM OF CONSTRUCTION

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

All solo motorcycles (Group A) must be constructed in such a way that they are entirely controlled by a rider. Motorcycles with Sidecars (Group B) must be constructed to carry a passenger.

2.1.5 CATEGORIES AND GROUPS

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 for Category I.

Category III

Electric vehicles.

These categories are divided into groups:

Category IV

Special vehicles not propelled by wheels in contact with the ground.

Category I

Group A1 - Solo Motorcycles

2-wheeler vehicles making only one track on the ground.

Group A2 - Scooters

Motorcycles with special characteristics.

A scooter is a motorised vehicle with 2 wheels, providing a seat for the rider and having a free space in front of the seat for the rider's legs.

The characteristics of a scooter are as follows:

The scooter must be fitted with a leg shield, of minimum 400 mm in width. The leg shield must start below the handlebar and extend down and to the rear, to either side of the seat, forming a platform with a minimum length of 250 mm and sufficient to fit the rider's feet.

The space between seat and handlebar shall be free of any obstructions. It must allow a rider to put his knees together, when seated normally with both feet on the platform.

The diameter of the wheel rims must not exceed 400 mm irrespective of engine capacities.

The scooter must be fitted with a starting device. The electrical equipment and lighting must conform to the International Convention for Road Vehicles.

Group A3 - Automatic 50 cc

Motorcycles driven by an engine capacity up to 50 cc and having automatic transmission.

Scooter specification: a scooter must have its crankcase/swing-arm constructed as one single, rigid unit. Its transmission must be by a continuous variator transmission (CVT).

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.

Group B2 - Motorcycles with permanent Sidecar

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-line 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.

Group B3 - Cycle-cars

3-wheeler vehicles making three tracks on the ground forming a complete integral unit and having accommodation for a rider and passenger.

A cycle-car is a motorcycle with 3 wheels differing from a Sidecar in that 2 of the wheels are mounted on the same geometric horizontal axis. These may be on the front or rear of the vehicle and shall ensure stability of the vehicle.

The passenger can be by the side of the rider but not necessarily in the same frontal alignment. He can also be placed behind the rider.

Steering must be by handlebars with a minimum length of 500 mm or by a wheel with a minimum diameter of 300 mm.

If bodywork does not enclose the wheels, they must be protected by mudguards.

The dimensions for Sidecar tyres and wheel diameters also apply to cycle-cars.

Category II

- Group C - Special 2 wheeler motorcycles
- Group D - Special 3 wheeler motorcycles
- Group E - Snowmobiles
- Group F - Sprinters and Drag Bikes (Dragsters)
- Group G - Quad Racers – 2 wheel driven
- Group H - Quad Racers – 4 wheel driven
- Group I - --

Category III

- Group J - Electric Vehicles (see Art. 01.82)

Category IV

Group Y - SPECIAL TWO WHEELED MOTORCYCLES

A maximum of two wheels (in the form of stabilisers or skids) may be fitted to the vehicle, only to aid stability at low speeds. These aids must be retracted during the record attempt.

2.2 CLASSES

Groups are again separated into classes according to cylinder capacities as detailed below. These classes must be observed for all meetings, with the exception of 'short distance' World Record Attempts:

Category I

Groups A1 and A2 Motorcycles

Class	over (cc)	up to (cc)
50	-	50
85	50	85
100	85	100
125	100	125
175	125	175
250	175	250
350	250	350
500	350	500
750	500	750
Supermono		4-stroke 800 single cylinder
1000	750	1000
1300	1000	1300
Unlimited	1300	open

Group A3 Mopeds - Automatics

Class	over (cc)	up to (cc)
50	-	50

Groups B1, B2 and B3 Sidecars

Same as groups A1 and A2 over 175 cc.

Category II

Groups C and D

Appendices governing the classes on these groups to be issued as each case is presented.

Group F

Sprint and Drag racing machines with a maximum engine capacity of 3000 cc.

Class 2000: over 1300 cc up to 2000 cc

Class 3000: over 2000 cc up to 3000 cc

2.2.1 MEASUREMENT OF CAPACITY

2.2.1.1 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 must be taken with the engine cold (at ambient temperature), to 1/100 mm limits.

2.2.1.2 Rotary engines

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

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

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

This engine is classified as a 4-stroke.

2.2.1.3 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.
Classified as a 4-stroke.

2.2.2 SUPERCHARGING

Supercharging by means of a device of any kind is forbidden in all meetings, except for record attempts, Drag racing and Sprinting.

The direct injection of fuel is not considered to be supercharging.

An engine whether 2-stroke or 4-stroke coming within any one of the recognised classes as 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 inspirating the fuel) does not exceed the maximum capacity of the class in question.

2.2.3 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.

2.2.4 MOTORCYCLE WEIGHTS

Weighing scales must have been certified by a National Institute within two years prior to use and the certificate must be available to the Technical Steward.

A 1 % tolerance in the weight of the machine at the post-race control is accepted.

A 2 kg discount, without fuel tank, irrespective of engine capacity, will be allowed.

2.2.4.1 Weights of motorcycles without fuel

The minimum weights are:

85cc		55 kg
125cc	Rider + machine	136 kg
250cc		100 kg
Sidecars	See Art. 2.3.19.1	
Supersport 600	See Art. 2.5.2	
Superstock 600 - 1000	See Art. 2.7.2	
Supermono up to 250	1 cylinder	85 kg
Supermono 250 up to 500	1 cylinder	90 kg
Supermono 500 up to 800	1 cilinder	95 kg

2.2.4.2 Ballast

The use of ballast is allowed to stay over the minimum weight limit. The use of ballast must be declared to the Chief Technical Steward at the preliminary checks.

Ballast must be made from solid metallic piece/s, firmly, securely connected, either through an adapter or directly to the main frame or engine, with minimum 2 steel bolts (min. 8 mm diameter, 8.8 grade or over). Fuel in the fuel tank can be used as ballast.

On three wheeled vehicles and cycle-cars, where the participation of a passenger is not compulsory, a ballast of 60 kg must be fixed to the machine on an area provided for this purpose. The ballast must be shown during verification and properly sealed to the motorcycles.

2.2.4.3 For Groups B1 and B2 at all competitions (except World Record attempts) a passenger must be carried.

2.2.4.4 For record attempts in Groups B1 and B2 the body of the motorcycles must be constructed in such a way as to allow accommodation of a passenger. If there is no passenger, a 60 kg ballast must be securely fixed to the Sidecar.

2.2.5 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

This applies where no commercial interests are involved.

2.2.6 DEFINITION OF A PROTOTYPE

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

2.3 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 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 section of the FIM Sporting Code or in the Supplementary Regulations for the competition in question.

2.3.1 Materials

The use of titanium in the construction of the frame, the front forks, the handlebars, the swing arms, the swing arm spindles and the wheel spindles is forbidden. For wheel spindles, the use of light alloys is also forbidden. The use of titanium alloy nuts and bolts is allowed.

2.3.1.1 Titanium test to be performed on the track: Magnetic test (titanium is not magnetic).

2.3.1.2 3 % nitric acid test (titanium does not react. If metal is steel, the drop will leave a black spot).

2.3.1.3 Specific mass of titanium alloys 4,5-5, of steel 7,5-8,7 can be ascertained by weighing the part and measuring its volume in a calibrated glass filled by water (intake valve, rocker, connecting rod, etc.)

2.3.1.4 In case of doubt, the test should take place at a Materials Testing Laboratory.

2.3.1.5 Aluminium alloys can be ascertained visually.

2.3.2 General specifications for motorcycles are as follows.

125 cc	over 80cc to 125cc	1 cylinder max	6 gears max.
250 cc	over 175cc to 250cc	2 cylinders max.	6 gears max.
500 cc	over 350cc to 500cc	4 cylinders max.	6 gears max.

S/cars	500cc maximum	2-stroke	4 cylinders max.	6 gears max.
	1000cc maximum	4-stroke	4 cylinders max.	6 gears max.

For Supersport 600

600cc	4 stroke	4 cylinders	6 gears
675cc	4 stroke	3 cylinders	6 gears
750cc	4 stroke	2 cylinders	6 gears

For Superstock 600

600cc	4 stroke	4 cylinders	6 gears
675cc	4 stroke	3 cylinders	6 gears
750cc	4 stroke	2 cylinders	6 gears

For Superstock 1000

1000cc	4 stroke	3 & 4 cylinders	6 gears
1200cc	4 stroke	2 cylinders	6 gears

For Supermono

Up to 250 cc.	4-stroke	1 cilinder max.	6 gears max.
250cc up to 500 cc	4-stroke	1 cylinder max.	6 gears max.
500 up to 800cc	4-stroke	1 cylinder max.	6 gears max.

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

2.3.2.2 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.

2.3.3 DEFINITION OF A MAIN 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.

2.3.4 STARTING DEVICES

Only compulsory for all classes in Endurance racing and the Supersport and Superstock classes.

2.3.5 OPEN TRANSMISSION GUARDS

2.3.5.1 For all motorcycles, including Sprinters, if the primary transmission is exposed, it must be fitted with a guard as a safety measure. The guard must be conceived in such manners that under no circumstances can the rider or the passenger come into accidental contact with the transmission parts. It must be designed to protect the rider from injuring his fingers.

2.3.5.2 For Sidecars, a guard is required if secondary transmission is not shielded by the bodywork.

2.3.5.3 A guard must be fitted to the countershaft sprocket for Sprinters.

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

2.3.6 EXHAUST PIPES

Exhaust pipes and silencers must fulfil all the requirements concerning noise control.

2.3.6.1 The end of the exhaust pipe, over a minimum distance of 30 mm must be horizontal and parallel to the central axis of the solo machine (with a tolerance of $\pm 10^\circ$).

2.3.6.2 Exhaust fumes must be discharged towards the rear but not in a manner as to raise dust, foul the tyres or brakes, or inconvenience a passenger, if there is one, or any other riders.

2.3.6.3 The extremity of the exhaust pipes on solo motorcycles must not pass the vertical tangent of the rear tyre, if they keep the exhaust pipes system as originally homologated (see diagrams A,B,C).

2.3.6.4 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, and at the end be of constant diameter over a distance of 30 mm.

2.3.7 HANDLEBARS

2.3.7.1 The width of handlebars is: Up to 80 cc, not less than 400 mm.

2.3.7.2 For all other machines (incl. Sidecars) not less than 450 mm.

2.3.7.4 The grips must be attached in such a way that at least the minimum width for handlebars is reached when measured between the outside ends of the grips.

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

2.3.7.6 The minimum angle of rotation of the handlebar on each side of the centre line or mid position must be of 15° for solo motorcycles and 20° Sidecars.

2.3.7.7 Whatever the position of the handlebars the front wheel must never touch the streamlining if any.

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

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

2.3.7.10 The repair by welding of light alloy handlebars is prohibited.

2.3.8 CONTROL LEVERS

2.3.8.1 All handlebar levers (clutch, brake, etc.) must be in principle ball ended (diameter of this ball to be at least 19 mm). This ball can also be flattened, but in any case the edges must be rounded (minimum thickness of this flattened part 14 mm). These ends must be permanently fixed and form an integral part of the lever.

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

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

2.3.9 THROTTLE CONTROLS AND IGNITION CUT-OUT SWITCH

2.3.9.1 Throttle controls must be self-closing when not held by the hand.

2.3.9.2 For Sidecars and special 3-wheeler motorcycles, an ignition cut-out must be 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.

The ignition cut-out switch 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 and strapped to the rider's right-hand wrist.

A spiral cable (similar to that of a telephone wire) of maximum 1 m extended length is permitted.

2.3.10 FUEL PUMPS

Electric fuel pumps must be wired through a circuit cut-out which will operate automatically in the event of an accident.

A test facility must be incorporated in the design of electrically operated fuel pumps for use at the technical control.

2.3.11 FOOTRESTS

2.3.11.1 Footrests 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 8 mm solid spherical radius (see diagrams A & C).

2.3.11.2 Non folding 'metallic' footrests must have an end (plug) which is permanently fixed, made of plastic, Teflon® or an equivalent type material (min. Ø 16mm).

2.3.12 BRAKES

2.3.12.1 Vehicles in Group A must have at least 2 efficient brakes (one on each wheel) operated independently and concentrically with the wheel.

The split of the front brake lines for both front brake callipers must be made above the lower fork bridge (lower triple clamp).

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

2.3.12.3 For Sidecars, a Sidecar wheel brake must be fitted.

2.3.12.4 All road racing vehicles in Group B2 must have the following braking system: One main system with at least two circuits operating separately. One of the circuits must work upon at least two of the three wheels.

2.3.12.5 If one system fails the other system must work efficiently.

2.3.13 MUDGUARDS AND WHEEL PROTECTION

Mudguards must comply with the following requirements:

2.3.13.1 They must project laterally beyond the tyre on each side.

2.3.13.2 The front mudguard must cover at least 100° of the circumference of the wheel. In this area, the wheel may be covered, respecting the angles mentioned below. The angle formed by one line drawn from the front edge of the mudguard to the centre of the wheel and one drawn horizontally through the centre of the wheel must be between 45° and 60°. The angle formed by one line drawn from the rear edge of the mudguard to the centre of the wheel and one drawn horizontally through the centre of the wheel shall not exceed 20°.

2.3.13.3 The rear mudguard must cover at least 120° of the circumference of the wheel. The angle formed by two lines, one drawn from the rear edge of the mudguard to the centre of the wheel and one drawn horizontally through the centre of the wheel shall not exceed 20° (see diagram A).

2.3.13.4 Mudguards are not required if there is streamlining. If there is no streamlining, mudguards are required. If the fairing or the saddle reaches the vertical tangent of the outside of the rear tyre (with a tolerance of - 50 mm) a rear mudguard is not required.

2.3.14 STREAMLINING

The streamlining of Solo machines must correspond to the following specifications:

2.3.14.1 The front wheel with the exception of the tyre and the part hidden behind the mudguard must be clearly visible from each side.

2.3.14.2 Bodywork must not extend beyond a line drawn vertically at the leading edge of the front tyre and a line drawn vertically at the rearward edge of the rear tyre. The suspension should be fully extended when the measurement is taken. Mudguards are not considered as streamlining.

2.3.14.3 No part of the streamlining must be to the rear of a vertical line drawn through the rear wheel axle and the rim of the rear wheel must be clearly visible over the 180° of its circumference to the rear of this line. No part of the motorcycle shall project to the rear of a vertical line drawn through the exterior edge of the rear wheel.

2.3.14.4 Air foils or spoilers may only be fitted on solo machines when they are an integral part of the fairing or seat. They must not exceed the width of the fairing nor the height of the handlebar. Sharp edges must be rounded off with a minimum radius of 8 mm.

2.3.14.5 The windscreen edge and the edges of all other exposed parts of the streamlining must be rounded.

2.3.14.6 In the normal driving position, the rider must be completely visible with the exception of his forearms (and his legs if it is a Sidecar) from either side from the rear and from above. The minimum space between the face of the rider, or his helmet and the streamlining (including the windscreen) must be 100 mm. It is forbidden to use transparent materials to evade these rules.

2.3.14.7 The maximum height of the back of the rider's seat is 150 mm. This will be measured from the lowest point of the rigid base of the seat to the uppermost part of the fairing behind the rider.

2.3.14.8 Whatever the position of the handlebars, there must be a space of at least 20 mm between the streamlining and the ends of the handlebars or other steering systems, including any attachments thereto.

2.3.14.9 The front inclination where the number plate is fixed must not exceed an angle of 30° to the rear of the vertical (see diagram A).

2.3.14.10 The width of the seat or anything to its rear shall not be more than 450 mm, exhaust systems excepted.

2.3.14.11 The fuel cap must be fitted in such a way that it does not protrude in relation to the tank profile and cannot be torn off in a crash.

2.3.14.12 For all four stroke motorcycles only, equipped with a fairing, the lower fairing has to be constructed to hold in case of an engine breakdown, at least half of the total oil and engine coolant capacity used in the engine. The lower edge of openings in the fairing must be positioned at least 50 mm above the bottom of the fairing.

The lower fairing should incorporate a maximum of two holes of 25mm. These holes must remain closed in dry conditions and must be only opened in « wet » race conditions as declared by the Clerk of the Course.

Minimum modifications with relation to the profile of the lower fairing are allowed, only to fulfil this rule.

2.3.15 INCLINATION AND SUSPENSION OF MOTORCYCLES

Solo motorcycles in road racing and production machine racing, when unloaded, must be capable of being inclined to an angle of 50° from the vertical without any part other than the tyre being in contact with the ground (see diagrams A and C).

2.3.16 WHEEL RIMS, TYRES (See Table 1)

2.3.16.1 All tyres will be measured mounted on the rim at a pressure of 1 kg/cm² (14 lb./sq.in.); measurements taken at a tyre section located at 90° from the ground.

2.3.16.2 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 except for tyre retention screws sometimes used to prevent tyre movement relative to the rim. If rim is modified for these purposes bolts, screws etc, must be fitted.

The maximum rear wheel rim widths are:

125cc	3.5"
250cc	5.5"
500cc	6.25"

For information, the distance is measured inside flange walls of the wheel rim in accordance with ETRTO.

2.3.17 TYRES FOR SOLOS (including Hill Climbs)

2.3.17.1 The width of tyres used in the individual classes must not be less than the values shown in Table 1

2.3.17.2 The minimum rim diameter is 400 mm.

2.3.17.3 Interior - fixture - width of tyre

The tyre must be mounted on a corresponding rim. The interior (fixture) width values for respective dimensions of tyres are shown in Table 1. The rim interior (fixture) must not be deformed or damaged.

2.3.17.4 Permitted maximum speed

The speed categories for use in individual classes are shown in Table 1. This does not apply to slick tyres.

2.3.17.5 Tyre surface tread pattern

2.3.17.6 The surface of the tyre can be smooth (i.e. without tread grooves) or treaded.

2.3.17.7 The tread pattern is unrestricted.

2.3.17.8 The tread pattern must be made by a manufacturer when producing the tyre.

2.3.17.9 Additional tread grooves, cuts, etc., are allowed provided that they are made by a tyre manufacturer or a person duly authorised by a tyre manufacturer by means of special purpose-built equipment.

2.3.17.10 Thus, subsequently modified tyres must bear the distinguishing mark or stamp of the manufacturer. This stamp must be placed near to the manufacturer's mark.

2.3.17.11 The choice of a certain type of tread pattern is left entirely up to the individual rider.

2.3.17.12 The use of 'slick' tyres will also be at the discretion of the rider. If conditions should become problematic however, he must take into account the recommendations of the Technical Stewards and if need be, of the appropriate representative of the tyre manufacturers.

2.3.17.13 As a safe minimum, the depth of the tyre tread over the whole pattern at pre-race control must be at least 2.5 mm. In the 80cc class only, this minimum depth is 1.5 mm.

2.3.17.14 Tyres which at the preliminary examination have a tread depth of less than 1.5 mm are considered as non-treaded tyres and the restrictions applying to slick tyres will then apply to them.

2.3.17.15 The surface of a slick tyre must contain three or more hollows at 120° intervals or less, indicating the limit of wear on the centre and shoulder areas of the tyre. When at least 2 of these indicator hollows become worn on different parts of the periphery, the tyre must no longer be used.

2.3.17.16 The minimum distance between the surface of the tyre (at its largest point) and any fixed parts of a motorcycle is shown in Table 1 .

2.3.17.17 To 'break in' the tyre surface

In order to obtain optimal tyre adhesion, new unused tyres can be adapted by scuffing the surface. The rules concerning grooves and hollows and the depth of the latter must however still be respected after any such scuffing.

The use of slick tyres is forbidden in all solo hill climb meetings.

There is no restriction on the tyres used at World Record attempts.

2.3.18 TYRES FOR SIDECARS

The appendices mentioned above for solo motorcycle tyres also apply to Sidecars. Slick tyres are authorised on Sidecars in hill climbs.

2.3.18.1 The maximum width of the front tyre tread measured from the point where the wall of the tyre finishes and the tread pattern starts, to the point where the tread pattern stops and the wall of the tyre's other side starts (only the section of the tread pattern normally in contact with the ground is measured) must not exceed **230 mm**.

2.3.18.2 The rear tyre must not exceed 254 mm, similarly measured.

2.3.18.3 When the springs are compressed to their maximum, there must still remain a minimum wheel clearance of 15 mm to every fixed part.

2.3.18.4 The minimum diameter of an inflated tyre must be 400 mm.

There is no restriction on the tyres used at World Record attempts.

2.3.19 ADDITIONAL SPECIFICATIONS VALID FOR SIDECARS

2.3.19.1 Maximum Capacities

Minimum capacity for two stroke engines	350cc
Maximum capacity for two stroke engines	500cc
Minimum capacity for four stroke engines	850cc
Maximum capacity for four stroke engines	1000cc

2.3.19.2 Minimum Weight

Minimum weight with rider and passenger fully equipped: 385 kg.

At any time during the meeting, the sidecar must exceed the minimum weight, regardless of the tank content.

2.3.19.3 Front Number Plate

The front inclination where the number plate is fixed must not exceed an angle of 30° to the rear of the vertical (see diagram A).

2.3.19.4 Fuel

All sidecar engines must function on normal unleaded fuel with a maximum lead content of 0.005 g/l (unleaded) and a maximum MON of 90 (see also Art. 2.1.5 for full specification).

2.3.19.5 Dimensions

Maximum dimensions are (see diagram B):

Overall width:	1700 mm (including the exhaust system)
Maximum overall height:	800 mm (with the exception of the airbox – max height: 950 mm).
Overall length:	3300 mm
Wheel base:	2300 mm

2.3.19.6 Dimensions of Passenger Space

The minimum dimensions of the passenger's space on the platform are (see Diagram B):

Length: 800 mm
Width: 300 mm
(both measured 150 mm above the platform).

Height of the screen protecting the passenger: 300 mm

2.3.19.7 Distance between Tracks

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.

2.3.19.8 Riders Position

The rider's position regardless of whether or not a driving seat is fitted, must be such that the rider's feet are positioned behind the knees when looking in the driving direction.

2.3.19.9 Passenger Visibility

Passengers must be completely visible from above and be able to lean out to either side of the Sidecar. For this purpose, the vehicle must be equipped with a suitable facility for the passenger to hold on to when leaning out. It is forbidden to use transparent materials to evade these rules.

2.3.19.10 Rider or Passenger's Position

Neither the rider, nor the passenger must be covered from above nor may they be attached to the vehicle in anyway.

The passenger must be able to lean out on either side.

2.3.19.11 Protection

Vehicles must have a solid and effective protection between the rider and the engine. This protection must prevent direct contact between the rider's body or his clothes and escaping flames or leaking fuel and oil.

2.3.19.12 Streamlining

The forward extremity of the streamlining shall be not more than 400 mm in front of the foremost part of the tyre (see diagram B).

The extreme rear edge of the streamlining must be not more than 400 mm beyond the extreme edge of the rear wheel (see diagram B).

The sidecar wheel must be enclosed by the fairing down to the height of its axle centreline.

2.3.19.13 Aerodynamic Devices

Spoilers and other aerodynamic devices are authorized on condition that they do not extend beyond the overall dimensions of the bodywork and are an integral part of the fairing and/or body.

2.3.19.14 Windscreen

The windscreen edge and the edges of all other exposed parts of the streamlining must be rounded.

2.3.19.15 Ground Clearance

The ground clearance measured over the entire length and width of the frame and other mechanical parts (engine, oil bay, exhaust and platforms) excluding the fairing, race ready, fully loaded with rider and passenger in a static racing position, must not be less than 65 mm with the handlebars in straight position.

No devices are permitted to reduce the ground clearance during the course of the race. After the race, a tolerance of - 5 mm is authorised. After a 'wet' race, this check is not performed.

2.3.19.16 Fixing of the Sidecar

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. If the angle of the inclination is changeable, it must be locked in such a way that it is completely secured and not only clamped on.

2.3.19.17 Banking Sidecars

Banking Sidecars are strictly forbidden.

2.3.19.18 Steering

The motorcycle must be steered by a handlebar.

The handlebar extremities must not be lower than the front wheel spindle nor more than 500 mm behind the front wheel spindle in the straight ahead position.

The steering axis must not be offset more than 75 mm from the front wheel centre line.

To reduce the torque in the steering it is allowed to displace the front wheel and the rear wheel. (See also Art. 01.05, Group B2).

2.3.19.19 Handlebars

Whatever the position of the handlebars, there must be a space of at least 20 mm between the streamlining and the ends of the handlebars or other steering systems, including any attachments thereto.

2.3.19.20 Suspension

Suspension of the front wheel must be designed so that under suspension action and in a straight ahead position, the wheel shall only move vertically and in a single plane relative to the motorcycle - the plane must be in the driving direction.

This must occur without changes to the camber or the side-tracking. The vertical travel of the front and rear wheel spindles under suspension action must be at least 20 mm.

The fixing nuts and bolts of the front and rear suspensions must be secured by a safety wire.

2.3.19.21 Drive

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

2.3.19.22 Wheels

The rear wheel and Sidecar wheel must be enclosed down to the level of the Sidecar platform on the inside.

2.3.19.23 Brakes

Only ferrous brake disks are allowed.
Carbon, carbon fiber brake disks are not allowed.
Carbon, carbon fiber brake pads are not allowed.

2.3.19.24 Fuel Tank

The fuel tank must be independently protected from the ground.

2.3.19.25 Fuel Cap

The fuel cap must be fitted in such a way that it does not protrude in relation to the fairing or the tank profile and cannot be torn off in a crash.

2.3.19.26 Battery

The battery must be covered in such a way that neither the rider nor the passenger can come directly into contact with the battery or its contents.

2.3.19.27 Engine

The engine must be positioned in such a way that the centre-line of the engine (by definition a position midway between centre lines of outermost cylinders for transversal engines, or the crankshaft for in-line engines) shall not exceed 160 mm beyond the centre-line of the rear wheel of the motorcycle. The engine must be positioned in front of the rear wheel.

2.3.19.27 (a) Two Stroke Engines

- Maximum capacity of 500cc.
- Prototype engine design is allowed.
- Maximum of 4 cylinders.
- Maximum of 6 speed transmission.

2.3.19.27.2(b) Four Stroke Engines

For all international Sidecars meetings, the name of the engine fitted in the sidecar is used to identify the 'manufacturer'.

- Motorcycle engines of mass production only. (Minimum production quantities: 1000 units/year).
- The maximum capacity of 1000cc.
- Maximum of 4 cylinders.
- The crankshaft is free.
- The stroke is free.
- Balancing is allowed.
- Lightening is allowed.

- Connecting rods may be changed, however the use of titanium or carbon is not allowed in their construction.
- Piston rings and pins may be changed.
- The original cylinder head may be modified, however the number of ports and valves must remain as originally produced by the manufacturer.
- Camshafts may be altered or replaced.
- The method of cam drive must remain as originally produced by the manufacturer.
- The ignition system may be altered or replaced.
- Maximum of a 6 speed transmission.
- The type of clutch must remain as originally produced by the manufacturer.
- Clutch springs and plates may be altered or replaced.
- The generator may be removed.
- The electric starter may be removed.
- Carburettors may be altered or replaced.
- The fuel injection can only be used as offered on the original engine by the manufacturer.
- The use of exotic materials is not allowed i.e. ceramics, metal matrix (aluminum beryllium).
- The oil lubrication system is free.
- **It is recommended that machines be equipped with a red light on the instrument panel. This light must flash in the event of oil pressure drop.**

2.3.19.28 Oil and Coolant Containment

In the area directly below the engine, the oil containment tray must be constructed to hold, in case of an engine breakdown at least half of the total oil and engine coolant capacity used in the engine (min 5 litres).

The surrounding edges of the tray must be at least 30 mm above the bottom of the tray.

This tray should incorporate a maximum of two holes of 25 mm in diameter and be closed with rubber plugs. These holes must remain closed in dry conditions and only opened when wet race conditions have been declared by the clerk of the course.

The frontal edge from the oil bay reservoir wall must be extended upwards to arrive just below (within 20 mm) the exhaust ports of the engine.

Holes for engine mounts (hangers) must be sealed.

From a vertical view, the engine must be located completely inside the oil bay platform.

The rear wheel must be protected from any possible oil spray. To make this protection, the engine and the rear wheel compartment must be separated. This separation must be created by installing a solid divider (wall) running from the top of

the inside of the bodywork to the bottom of the oil tray. This divider (wall) must overlap the rear edge of the oil tray down to the bottom.

4-stroke machines must use this tray.

Oil lines containing positive pressure, if replaced, must be of metal reinforced construction with swaged or treaded connectors. Manufactured solid construction oil lines, where practical, must be replaced also.

Oil cooler must not be mounted on or above the body of the sidecar.

The location of the oil tank and oil cooler should be placed in a location where it is least likely to be damaged in an accident.

2.3.19.29 Exhaust Pipe

The exhaust pipe must not extend beyond the width of the Sidecar and the furthest extremity of the exhaust pipe must not exceed the vertical line drawn at a tangent to the rear edge of the Sidecar body.

Exhaust pipes fitted to the side of the Sidecar must be covered so that it is impossible for the passenger to be burnt. The ends of the exhaust pipes fitted to the Sidecar must be so positioned or protected that it is impossible for them to become entangled with another machine.

2.3.19.30 Fog Lamp

Sidecars must be equipped with a functional rear red anti-fog lamp measuring a minimum of 35 cm² and a maximum of 100 cm² fitted with a 2.5 watt halogen bulb or 10 watt conventional bulb or LED lights.

The light must be installed at the rear of the main body (suspended part) and mounted above the driving wheel, at minimum 40 cm above the ground and ensure no obstruction from the fairing and/or the passenger.

The anti-fog lamp must be visible at all times.

Only fog lamps made by "ISA-EMS" and "LIFELINE" with the following references are allowed:

- BITS – Helios

- ISA – EMS 90x90 ref. (6085-2)
- ISA – EMS - 90x92 ref. (6085-0)
- ISA – EMS - 120x65 ref. (6085-4)
- LIFELINE 90x90 Radial rain light

- www.bits-racing.com

- www.isa-racing.de
- www.demon-tweeks.co.uk

2.3.20 NUMBER PLATES

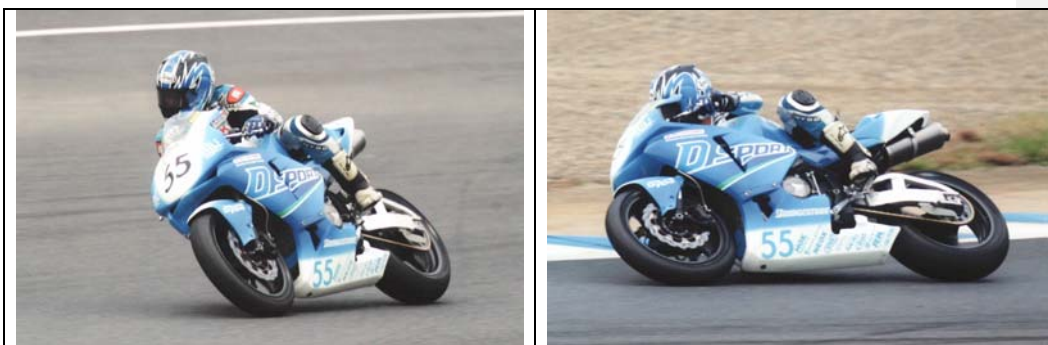
They must be fitted as follows:

2.3.20.1 They must be rectangular shape and made from a rigid and solid material with minimum measurements 285 mm x 235 mm (see diagram 0).

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

2.3.20.3 The allocated number (& plate) for the rider must be affixed in such a manner as to be clearly visible on the machine as follows:

- once on the front, either in the centre of the fairing or slightly off to one side;
- once, on each side of the motorcycle. Alternatively, once across the top of the rear seat section with the top of the number towards the rider. These numbers must be the same size as the front numbers.



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

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

Height of figure:	140 mm
Width of figure:	80 mm
Width of stroke:	25 mm
Space between 2 figures:	15 mm

2.3.20.6 Figures must conform to one of the forms as printed in diagram 0.

2.3.20.7 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.

2.3.20.8 A space of at least 5 cm must be left free around all number plates in which no advertising may appear. Riders of those motorcycles with number plates that do not comply with this rule will not be passed by the Chief Technical Steward for the race.

2.3.20.9 Number plate colours

The background colours and figures vary according to the class of motorcycle and the type of competition, the details being indicated in the SR for each meeting. The following colours shall be used; and they must be matt colours following the RAL colour table, i.e.:

BLACK	9005	RED	3020
BLUE	5010	GREEN	6002
YELLOW	1003	WHITE	9010
ORANGE	2007		

2.3.20.10 Road Races

3 wheelers and 85cc	White background	Black numbers
125cc	Black background	White numbers
250cc	Green background	White numbers
500cc	Yellow background	Black numbers
1000cc	White background	Black numbers

2.3.20.11 Supermono, Supersport

Supermono	Black background	Yellow numbers
Supersport 600	White background	Blue numbers
Superstock 600	Red background	Yellow numbers
Superstock 1000	Red background	White numbers

2.3.20.12 Drag Bikes

Pro Stock	Yellow background	Black numbers
Competition Bike	White background	Black numbers
Super Twins	Orange background	Black numbers

2.3.20.13 Automatic 50cc

European Trophy		Black background/white numbers
50cc Scooters	Standard class	Yellow background/black numbers
Group 2	Modified	White background/black numbers
Group 3	Prototypes	Black background/white numbers
Mopeds	Modified	Blue background/white numbers

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

**2.3.21 FUEL AND OIL TANKS
(with the exception of Dragsters and Sprinters)**

2.3.21.1 The maximum capacities of fuel tanks in solo competitions are:

Prototypes	24 litres
Supersport	As homologated
Superstock	As homologated
Sidecars	24 litres

2.3.21.2 Fuel must be contained in a single tank securely fixed to the machine. Seat tanks and auxiliary tanks are forbidden. The use of a quickly detachable replacement tank as a means of refuelling is strictly forbidden in all types of competition.

2.3.21.3 Moreover, the use of temporary filling material to reduce the capacity of a tank is forbidden.

2.3.21.4 Fuel tank must be completely filled with fuel cell foam (preferably with "Explosafe®").

2.3.21.5 Oil catch tanks and breather systems

Where an oil breather pipe is fitted, the outlet must discharge into a catch tank located in an easily accessible position and which must be emptied before the start of a race.

The minimum size of a catch tank shall be 250 cc for the gear and 500 cc for the engine (with exception of Supersport and Superstock motorcycles).

All 4-stroke motorcycles must have a closed breather system. The oil breather line must be connected and discharge in the airbox (See Diagram C).

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

2.3.21.6 Oil drain plugs and supply pipes

All oil drain plugs must be tight and must be drilled and wired in position. Oil supply lines must be correctly and securely wired in position. External oil filters and screws or bolts that enter an oil cavity must be safety wired.

2.3.21.7 Fuel tank breather pipes

Non-return valves must be fitted to fuel tank breather pipes and these have to discharge into a catch tank with a minimum volume of 250 cc made of a suitable material.

2.3.21.8 Fuel and oil filler caps

Fuel and oil filler caps, when closed, must be leak proof. Additionally, they must be securely locked to prevent accidental opening at any time.

2.5 SUPERSPORT TECHNICAL SPECIFICATIONS

Rules intended to permit changes to the homologated motorcycle in the interest of safety.

EVERYTHING THAT IS NOT AUTHORISED AND PRESCRIBED IN THIS RULE IS STRICTLY FORBIDDEN

Supersport motorcycles require an FIM homologation (see Art. 2.9). All motorcycles must comply in every respect with all the requirements for Road Racing as specified in the Technical Regulations, unless it is equipped as such on the homologated machine.

The appearance from both front, rear and the profile of Supersport motorcycles must (except when otherwise stated) conform to the homologated shape (as originally produced by the manufacturer. The appearance of the exhaust system is excluded from this rule.

2.5.1 Machine specifications

All items not mentioned in the following articles must remain as originally produced by the manufacturer for the homologated machine.

2.5.2 Displacement capacities

Over 400cc up to 600cc	4 stroke	4 cylinders
Over 500cc up to 675cc	4 stroke	3 cylinders
Over 600cc up to 750cc	4 stroke	2 cylinders

The displacement capacities must remain at the homologated size. Modifying the bore and stroke to reach class limits is not allowed.

2.5.3 Minimum Weights

The minimum weights will be:	600cc	four cylinders	158 kg
	675cc	three cylinders	162 kg
	750cc	two cylinders	166 kg

At any time of the event, the weight of the whole machine (including the tank and its contents) must not be less than the minimum weight with a tolerance of 1 kg.

In the final inspection at the end of the race, the checked machines will be weighed in the condition they were at the end of the race.

The established weight limit must be met in the condition the machine finished the race. Nothing can be added to the machine including water, oil, fuel or tyres.

During the practice and qualifying sessions every rider may be asked to submit his motorcycle to a weight control. In any case the rider and team must comply with this request.

The use of ballast is allowed to stay over the minimum weight limit. The use of ballast must be declared to the Chief Technical Steward at the preliminary checks.

2.5.4 Number Plate Colours

The background colours and figures (numbers) for Supersport are a white background with blue numbers: the RAL colour table values being 5010 for blue and 9010 for white.

<u>The sizes for all the front numbers are:</u>	Minimum height:	160 mm
	Minimum width:	80 mm
	Minimum stroke:	25 mm

<u>The sizes for all the side numbers are:</u>	Minimum height:	120 mm
	Minimum width:	60 mm
	Minimum stroke:	25 mm

The allocated number (& plate) for the rider must be affixed on the machine as follows:

- once on the front, either in the centre of the fairing or slightly off to one side;
- once, on each side of the motorcycle. Alternatively, once across the top of the rear seat section with the top of the number towards the rider.

These numbers must have the same size as the front numbers.

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

2.5.5 Fuel

All engines must function on normal unleaded fuel with a maximum lead content of 0.005 g/l (unleaded) and a maximum MON of 90 (see also Art. 2.10 for full fuel specifications).

2.5.6 Tyres

Tyres must be a fully molded type carrying all size and sidewall marking of the tyres for commercial sale to the public.

Tyres of W rating must be used.

The depth of the tyre treads must be at least 2.5 mm over the entire tyre pattern width at a pre-race control.

The tyres must have a positive and negative tread of 96% positive and minimum 4% negative (land and sea ratio). The maximum distance from the external edge of the tyre to 50% of the tread elements is 35 mm.

Each size, front and rear, must be available with the same tread pattern as the commercial tyres for the road use.

The tyres must have a DOT and/or E mark. The DOT and/or E mark must appear on the tyre sidewall.

Only when a race or practice has been declared “wet”, the use of a special tyre commonly known as a full wet tyre is allowed.

Wet tyres must be a fully moulded tyre, no hand cutting is allowed on molded tyres. The use of hand-cut tyres is not allowed.

Wet tyres do not need to carry DOT or E marks; however these tyres must be marked “Not for Highway Use” or “NHS”.

2.5.8 Engine

2.5.8.1 Carburation Instruments / Fuel injection system

Carburation instruments refer to throttle bodies and variable length intake tract devices.

Carburation instruments must be standard units as on the homologated model.

Throttle bodies intake insulators may be modified.

The injectors must be standard units as on the homologated motorcycle.

Bell mouths, including their fixing points, may be altered or replaced from those fitted by the manufacturer on the homologated machine.

Butterfly cannot be changed or modified.

2.5.8.2 Cylinder Head

Cylinder head must be as homologated. The following modifications are allowed.

1. Grinding of the cylinder head surface on the side of the gasket;
2. Modifications of the inlet and exhaust ports by taking off or adding material (welding is forbidden);
3. Original homologated valves guides may be cut or modified, but only on
4. Polishing of the combustion chamber;
5. Original valve seats must be used, but modifications are allowed to the shape;

6. Compression ratio is free, but the combustion chamber may be modified only by taking material off.

It is forbidden to add any material to the cylinder head unless as described above.

The compression ratio is free.

The combustion chamber may be modified.

Rocker arms (if any) must remain as homologated (material and dimensions).

Valves may be altered or replaced and the material may be changed, but maximum diameters and minimum weights must remain as homologated. The use of titanium valves is permitted only if the homologated machines are equipped with such kind of valves.

Valve springs may be changed.

Valve spring retainers may be replaced or modified, but their weight must be the same or higher than the original ones

2.5.8.3 Camshaft

The method of drive must remain as homologated.

The duration is free but the lift must remain as homologated.

The cam chain or cam belt tensioning device(s) are free.

At the technical checks: for direct cam drive systems, the cam lobe lift is measured; for non direct cam drive systems (i.e. with rocker arms), the valve lift is measured.

2.5.8.4 Cam Sprockets or Gears

Cam sprockets or cam gears may be modified or replaced to allow the degreeing of camshafts.

2.5.8.5 Cylinders

Cylinders must remain as homologated.

Only the following modifications to the cylinders are allowed. Cylinder head gasket surface may be machined to allow the adjustment of compression ratio or resurfacing to repair a warped cylinder surface deck.

Homologated materials and castings for cylinders must be used. The surface finish of the cylinder bore must remain as homologated.

Cylinder capacity must remain at the homologated size.

2.5.8.6 Pistons

Pistons must remain as homologated.

Polishing and lightening is not allowed.

2.5.8.7 Piston Rings

Piston rings must remain as homologated. No modifications are allowed.

2.5.8.8 Piston Pins and Clips

Piston pins and clips must remain as homologated. No modifications are allowed.

2.5.8.9 Connecting Rods

Connecting rods must remain as homologated.

Polishing and lightening is not allowed.

2.5.8.10 Crankshaft

Crankshaft must remain as homologated without modification.

Polishing and lightening is not allowed.

Modifications of the flywheels are not allowed.

2.5.8.11 Crankcase / Gearbox and all other Engine cases (i.e. ignition case, clutch case).

Crankcases must remain as homologated. No modifications are allowed (including painting, polishing and lightening).

Other engine cases must be made of the homologated material **with exclusion of lateral side covers.**

Lateral (side) covers may be altered, modified or replaced. If altered or modified, the cover must have at least the same resistance to impact as the original one. If replaced, the cover must be made in material of same or higher specific weight and the total weight of the cover must not be less than the original one.

Engine case guards in the form of strengthened engine side covers may be installed. These covers must be no lighter in weight than the standard part.

All lateral covers/engine cases containing oil and which could be in contact with the ground during a crash, must be protected by a second cover made from composite materials, type carbon or Kevlar®, aluminium or steel plates and/or bars are also

permitted. All these devices must be designed to be resistant against sudden shocks and must be fixed properly and securely.

Holes may be added in dry clutch covers to allow additional cooling.

The countershaft cover may be removed.

The addition of a crankcase protector at the countershaft is allowed.

2.5.8.12 Transmission / Gearbox

All transmission/gearbox ratios are free.

The number of gears must remain as homologated.

Primary gears must remain as homologated.

Quick-shift systems are allowed.

Countershaft sprocket, rear wheel sprocket, chain pitch and size may be changed.

Chain guard as long as it is not incorporated in the rear fender may be removed.

2.5.8.13 Clutch

Clutch type (wet or dry) and the way of operation (by cable or hydraulic) must remain as homologated.

Friction and drive discs may be changed.

Clutch springs may be changed.

The clutch basket (outer) may be reinforced.

The original clutch assembly may be modified for back torque limiting capabilities (slipper type).

It is allowed to change to an aftermarket clutch with back torque limiting capabilities (slipper type).

The use of electro-mechanical or electro-hydraulic actuating systems are not allowed.

2.5.8.14 Oil Pumps, water pumps and Oil Lines

Modifications are allowed but pump housing, mounting points and oil feed points must stay as original.

Oil lines may be modified or replaced. Oil lines containing positive pressure, if replaced, must be of metal reinforced construction with swaged or treaded connectors.

The internal parts of the water pump may be changed or modified. The drive ratio may be changed. The external appearance must remain as homologated.

2.5.8.15 Radiator and oil-coolers

The radiator may be changed only if it fits in the standard location and does not require any modifications to the main frame or to the fairings' outer appearance.

Modifications to the existing oil-cooler are allowed only if it does not require any modifications to the main frame or to the fairings' outer appearance. A heat exchanger (oil/water) may be exchanged by an oil-cooler.

Radiator fan and wiring may be changed, modified or removed.

Additional oil coolers are not allowed.

Oil cooler must not be mounted on or above the rear mudguard.

2.5.8.16 Air Box

The air box must remain as originally produced by the manufacturer on homologated machine.

The air filter element may be removed or replaced.

The air box drains must be sealed.

All motorcycles must have a closed breather system. All oil breather lines must be connected and discharge in the air box.

The original air ducts running from the fairing to the air box may be altered or replaced.

2.5.8.17 Fuel Supply

Fuel lines may be replaced from the fuel petcock (this part excluded) to the delivery pipe assy (excluded).

Quick connectors or dry brake quick connectors may be used.

Fuel vent lines may be replaced.

Fuel filters may be added.

No modification of the fuel pump is allowed. Original pressure regulator may be modified or changed.

2.5.8.18 Exhaust System

Exhaust pipes and silencers may be modified or changed. Catalytic converters must be removed.

The number of final exhaust silencer(s) must remain as homologated. The silencer(s) must be on the same side(s) of the homologated model.

For safety reasons, the exposed edge(s) of the exhaust pipe(s) outlet(s) must be rounded to avoid any sharp edges.

Wrapping of exhaust systems is not allowed except in the area of the riders foot or an area in contact with the fairing for protection from heat.

The noise limit for Supersport will be 102 dB/A (with a 3 dB/A tolerance after the race).

2.5.9 Electrics and Electronics

Connectors and switches are free.

2.5.9.1 Ignition/Engine Control System (ECU)

Ignition/engine control system (ECU) may be modified or changed.

Spark plugs, plug caps and wires may be replaced.

2.5.9.2 Generator, alternator, electric starter

Generator may be modified, removed or replaced.

The electric starter must operate normally and always be able to start the engine during the practices and race.

2.5.9.3 Additional Equipment

Additional electronic hardware equipment not on the original homologated motorcycle may be added (e.g. data acquisition, computers, recording equipment, traction control).

The addition of a device for infra red (IR) transmission of a signal between the racing rider and his team, used exclusively for lap timing, is allowed.

The addition of a GPS unit for lap timing/scoring purposes is allowed.

Telemetry is not allowed.

2.5.9.4 Wiring Harness

The wiring harness may be altered or replaced. Additional wiring harnesses may be added.

Cutting of the wiring harness is allowed.

2.5.9.5 Battery

The size and type of battery may be changed and relocated. Additional batteries may be added.

2.5.10 Frame and Body

2.5.10.1 Frame Body and Rear sub-frame

The frame must remain as originally produced by the manufacturer for the homologated machine.

Holes may be drilled on the frame only to fix approved components (i.e. fairing brackets, steering damper mount, sensors).

The sides of the frame-body may be covered by a protective part made of a composite material. These protectors must fit the form of the frame.

Nothing else may be added or removed from the frame body.

All motorcycles must display a vehicle identification number on the frame body (chassis number).

Engine mounting brackets or plates must remain as originally produced by the manufacturer for the homologated machine.

Additional seat brackets may be added, non-stressed protruding brackets may be removed if they do not affect the safety of the construction or assembly. Bolt-on accessories to the rear sub-frame may be removed.

The paint scheme is not restricted but polishing the frame body or sub-frame is not allowed.

2.5.10.2 Front Forks

Forks must remain as originally produced by the manufacturer for the homologated machine.

Standard original internal parts of the forks may be modified or changed. **No aftermarket or prototype electronically-controlled suspension parts may be used. If original electronic suspensions are used, they must be completely standard (any mechanical or electronic part must remain as homologated). The original electronic system must work properly in the event of an electric/electronic failure otherwise it cannot be homologated for FIM competitions.**

After market damper kits or valves may be installed.

Fork springs may be modified or replaced.

Fork caps may be modified or replaced to allow external adjustment.

Dust seals may be modified, changed or removed if the fork is totally oil-sealed.

The original surface finish of the fork tubes (stanchions, fork pipes) may be changed. Additional surface treatments are allowed.

The upper and lower fork clamps (triple clamp, fork bridges) must remain as originally produced by the manufacturer on the homologated machine.

The steering damper may be added or replaced with an aftermarket damper.

The steering damper cannot act as a steering lock limiting device.

2.5.10.3 Rear Fork (Swing arm)

The rear fork must remain as originally produced by the manufacturer for the homologated machine. A chain guard must be fitted in such a way to reduce the possibility that any part of the riders' body must become trapped between the lower chain run and the rear wheel sprocket.

Rear fork pivot bolt must remain as originally produced by the manufacturer for the homologated machine.

Rear axle chain adjuster may be modified or changed.

Rear wheel stand brackets may be added to the rear fork by welding or by bolts. Brackets must have rounded edges (with a large radius). Fastening screws must be recessed. An anchorage system or point(s) to keep the original rear brake caliper in place may be added to the rear swing-arm.

2.5.10.4 Rear Suspension Unit

Rear suspension unit may be changed or modified. The original attachments of the frame and rear fork must be as homologated.

Rear suspension unit spring(s) may be changed. **No aftermarket or prototype electronically-controlled suspension unit maybe used. If original electronic unit is used, it must be completely standard (any mechanical or electronic part must remain as homologated). The original electronic system must work properly in the event of an electric/electronic failure otherwise it cannot be homologated for FIM competitions.**

Rear suspension linkage must remain as originally produced by the manufacturer for the homologated machine.

2.5.10.5 Wheels

Wheels must remain as originally produced by the manufacturer at the time of sale into the dealer/distributor network for the homologated machine.

Any inner tube (if fitted) or inflation valves may be used.

Wheel balance weights may be discarded, changed or added to.

The speedometer drive may be removed and replaced with a spacer.

If the original design included a cushion drive for the rear wheel, it must remain as originally produced for the homologated machine.

Front and rear wheel axles must remain as originally produced by the manufacturer for the homologated machine.

Wheel diameter and rim width must remain as originally homologated.

2.5.10.6 Brakes

Front and rear brake discs may be changed but must fit the original caliper and mounting. However, the outside diameter, the ventilation system must remain as originally produced by the manufacturer for the homologated machine. Internally ventilated discs are not allowed if not homologated on the original model.

The brake disc carriers may be changed, but must retain the same off set and same type of mounting to the wheels.

Replacement brake discs must be of ferrous material.

Front and rear brake calipers as well as all the mounting points and mounting hardware (mount, carrier, hanger) must remain as originally produced by the manufacturer for the homologated machine (see Art. 2.5.10.3)

The front master cylinder must remain as originally produced by the manufacturer for the homologated machine, hand lever excluded.

Rear master cylinder must remain as originally produced by the manufacturer for the homologated machine.

Front and rear hydraulic brake lines may be changed. The brake fluid reservoir may be replaced and/or repositioned. Quick connectors may be used. The split of the front brake lines for both front brake calipers must be made above the lower edge of fork bridge (lower triple clamp).

Front and rear brake pads may be changed. Brake pad locking pins may be modified for quick change type.

Additional air ducts are not allowed.

2.5.10.7 Handle Bars and Hand Controls

Handle bars, throttle assembly and associated cables, hand controls and levers may be replaced (does not include brake master cylinder).

Handle bars and hand controls may be relocated.

Throttle controls must be self-closing when not held by the hand.

Electric starter switch and engine stop switch must be located on the handle bars.

2.5.10.8 Foot Rest/Foot Controls

Foot rest/foot controls may be relocated but brackets must be mounted to the frame at the original mounting points.

Foot rests may be rigidly mounted or a folding type which must incorporate a device to return them to the normal position.

The end of the foot rest must have at least an 8 mm solid spherical radius. (see diagram A & C).

Non folding footrests must have an end (plug) which is permanently fixed, made of aluminium, plastic, Teflon® or an equivalent type material (minimum radius 8mm). The plug surface must be designed to reach the widest possible area. The Chief Technical Steward has the right to refuse any plug not satisfying this safety aim.

2.5.10.9 Fuel Tank

Fuel tank must remain as originally produced by the manufacturer for the homologated machine.

All fuel tanks must be completely filled with fire retardant material (open-celled mesh, i.e. "Explosafe®").

Fuel tanks with tank breather pipes must be fitted with non-return valves that discharge into a catch tank with a minimum volume of 250 cc made of a suitable material.

Fuel caps may be changed. Fuel caps when closed, must be leak proof. Additionally, they must be securely locked to prevent accidental opening at any time.

2.5.10.10 Fairing/bodywork

- a) Fairing, front mudguards and body work must appear to be as originally produced by the manufacturer for the homologated machine.

- b) Fairing and body work may be replaced with cosmetic duplicates of the original parts. The material may be changed. The use of carbon fibre or Kevlar® materials is allowed.
- c) Size and dimensions must be the same as the original parts without any addition or subtractions of design elements.
- d) Wind screen may be replaced with transparent material only.
- e) The original combination instrument/fairing brackets may be replaced. All other fairing brackets may be altered or replaced.
- f) The original air ducts running between the fairing and the air box may be altered or replaced.
- g) The original air ducts into the airbox may be altered or replaced.
- h) The lower fairing has to be constructed to hold, in case of an engine breakdown, at least half of the total oil and engine coolant capacity used in the engine (minimum 5 litres). The lower edge of openings in the fairing must be positioned at least 50 mm above the bottom of the fairing.
- i) The lower fairing must incorporate a hole of 25 mm in the bottom of the front lower area. This hole must remain closed in dry conditions and must be only opened in wet race conditions as declared by the Race Director.
- j) Minimal changes are allowed to permit the use of an elevator (stand) for wheel changes and to add a small plastic protective cone to the frame or engine.
- k) Front mudguard must appear as originally supplied by the manufacturer for the homologated machine.
- l) Front mudguard may be replaced with cosmetic duplicates of the original parts.
- m) Front mudguard may be spaced upward for increased tyre clearance.
- n) Rear mudguard fixed on the swing-arm may be replaced with cosmetic duplicates of the original parts.
- o) Rear mudguards fixed on the swing-arm which incorporate the chain guard may be modified to accommodate larger diameter rear sprockets.
- p) The existing rear mudguard under the seat may be removed. A mudguard may be fitted directly onto the swing-arm (it may not cover more than 120 degrees of the wheel).

2.5.10.11 Seat

Seat, seat base and associated body work may be replaced with parts of similar appearance as originally produced by the manufacturer for the homologated machine. The use of carbon fibre or carbon composite materials is allowed.

The top portion of the rear body work around the seat may be modified to a solo seat.

Holes may be drilled in the seat or rear cowl to allow additional cooling. Holes which are bigger than 10mm must be covered with metal gauze or fine mesh. Mesh must be painted to match the surrounding material.

The appearance from both front rear and profile must conform in principle to the homologated shape.

The seat/rear cowl replacement must allow for proper number display.

All exposed edges must be rounded.

2.5.10.12 Fasteners

Standard fasteners may be replaced with fasteners of any material and design.

Aluminium fasteners may only be used in non-structural locations.

Titanium fasteners may be used in structural locations, but the strength and design must be equal to or exceed the strength of the standard fastener it is replacing.

Special steel fasteners may be used in structural locations, but the strength and design must be equal to or exceed the strength of the standard fastener it is replacing.

Fasteners may be drilled for safety wire, but intentional weight-saving modifications are not allowed.

Fairing/body work fasteners may be changed to the quick disconnect type.

2.5.11 The following items MAY BE altered or replaced from those fitted to the homologated motorcycle

Any type of lubrication, brake or suspension fluid may be used.

Bearings (ball, roller, taper, plain, etc.) of any type or brand may be used.

Gaskets and gasket materials.

Painted external surface finishes and decals.

It is recommended that machines be equipped with a red light on the instrument panel. This red light must flash in the event of oil pressure drop.

2.5.12 The following items MAY BE removed

Emission control items (anti-pollution) in or around the air box and engine (O2 sensors, air injection devices)

Tachometer.

Speedometer and related wheel spacers.

Bolt on accessories on a rear sub frame.

2.5.13 The Following Items MUST BE removed

Headlamp, rear lamp and turn signal indicators (when not incorporated in the fairing). Openings must be covered by suitable materials.

Rear-view mirrors.

Horn.

License plate bracket.

Tool box.

Helmet hooks and luggage carrier hooks

Passenger foot rests.

Passenger grab rails.

Safety bars, centre and side stands must be removed (fixed brackets must remain).

2.5.14 The following items MUST BE altered

Motorcycles must be equipped with a functional ignition kill-switch or -button mounted at least on one side of the handlebar (within reach of the hand while on the hand grips) that is capable of stopping a running engine.

All drain plugs must be wired. External oil filter(s) screws and bolts that enter an oil cavity must be safety wired (i.e. on crankcases, oil lines, oil coolers, etc.)

All motorcycles must have a closed breather system. The oil breather line must be connected and discharge in the air box.

Where breather or overflow pipes are fitted they must discharge via existing outlets. The original closed system must be retained, no direct atmospheric emission is permitted.

2.7 SUPERSTOCK 600 - 1000 TECHNICAL SPECIFICATIONS

Rules intended to limit changes to the homologated motorcycle in the interests of safety.

EVERYTHING THAT IS NOT AUTHORISED AND PRESCRIBED IN THIS RULE IS STRICTLY FORBIDDEN

The motorcycle must be homologated by the original manufacturer only. The respective model will be eligible for Superstock (SST) 600 or for Superstock (SST) 1000 competition, for a maximum period of 5 years.

As the name Superstock implies, the machines used are allowed limited modifications. Most modifications are only allowed for safety reasons.

Superstock motorcycles require an FIM homologation (see Art. 2.9 FIM Rule book concerning the World Championship rules for Superbike - Supersport and Superstock FIM Cup). All motorcycles must comply in every respect with all the requirements for Road Racing as specified in these Regulations, unless it is equipped as such on the homologated machine.

The appearance from both front, rear and the profile of Superstock motorcycles must (except when otherwise stated) conform to the homologated shape (as originally produced by the manufacturer). The appearance of the exhaust system is excluded from this rule.

2.7.1 Machine specifications

All items not mentioned in the following articles must remain as originally produced by the manufacturer for the homologated machine

2.7.2 Displacement capacities

Superstock 600

Over 400cc up to 600cc	4 stroke	4 cylinders
Over 500cc up to 675cc	4 stroke	3 cylinders
Over 600cc up to 750cc	4 stroke	2 cylinders

Superstock 1000

Over 600cc up to 1000cc	4-stroke	4 cylinders
Over 750cc up to 1000cc	4-stroke	3 cylinders
Over 850cc up to 1200cc	4-stroke	2 cylinders

The displacement capacities must remain at the homologated size. Modifying the bore and stroke to reach class limits is not allowed.

2.7.3 Minimum Weights

The FIM decides the minimum weight value for a homologated model as sold to the public by determining its dry weight.

The dry weight of a homologated motorcycle is defined as the total weight of the empty motorcycle as produced by the manufacturer (after removal of fuel, vehicle number plate, tools and main stand when fitted). To confirm the dry weight a minimum of three (3) motorcycles are weighed and compared. The result is rounded off to the nearest digit.

SST 600 machines : - minimum weight = dry weight minus 12 kg

Starting with all 2007 SST 600 models:
- minimum weight = dry weight minus 9 kg

SST 1000 machines: - minimum weight = dry weight minus 12 kg.

At any time of the event, the weight of the whole machine (including the tank and its contents) must not be less than the minimum weight, with a tolerance of 1 kg.

In the final inspection at the end of the race, the checked machines will be weighed in the condition they were at the end of the race.

2.7.4 Number Plate Colours

The background colours and figures for SST 600 are red background with yellow numbers. Conform to the RAL colours, red 3020 and yellow 1003.

The background colours and figures (numbers) for SST 1000 are red background with white numbers. Conform to the RAL colours, red 3020 and white 9010.

<u>The sizes for all the front numbers are:</u>	Minimum height:	160 mm
	Minimum width:	80 mm
	Minimum stroke:	25 mm

<u>The sizes for all the side numbers are:</u>	Minimum height:	120 mm
	Minimum width:	60 mm
	Minimum stroke:	25 mm

The allocated number (& plate) for the rider must be affixed on the machine as follows:

- once on the front, either in the centre of the fairing or slightly off to one side;
- once, on each side of the motorcycle. Alternatively, once across the top of the rear seat section with the top of the number towards the rider.

These numbers must have the same size as the front numbers.

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

2.7.5 Fuel

All engines must function on normal unleaded fuel with a maximum lead content of 0.005 g/l (unleaded) and a maximum MON of 90 (see Art. 2.10.1 for full specification)

2.7.6 Tyres

Tyres must be a fully molded type carrying all size and sidewall marking of the tyres for commercial sale to public.

Tyres with a minimum W rating must be used.

The depth of the tyre treads must be at least 2,5 mm. over the entire tyre pattern width at a pre-race control.

The tyres must have a positive and negative tread of 96% positive and minimum 4 % negative (land and sea ratio) .

The maximum distance from the external edge of the tyre to 50% of the tread elements is 35 mm.

Each size, front and rear, must be available with the same tread pattern as the commercial tyres for road use.

The tyres must have a DOT and/or E-mark, the DOT and/or E-mark must be on the tyre sidewall.

Only when a race or practice has been declared "wet", the use of a special tyre commonly known as a full wet tyre is allowed.

Wet tyres must be a fully molded tyre, no hand cutting is allowed on molded tyres.

The use of hand-cut tyres is not allowed.

Wet tyres do not need to carry a DOT and/or E-marks; however these tyres must be marked "not for highway use" or "NHS".

The use of tyre warmers is allowed.

All items not mentioned in the following articles must remain as originally produced by the manufacturer for the homologated machine.

2.7.8 Engine

2.7.8.1 Carburation Instruments / Fuel Injection System

Carburation instruments refer to throttle bodies and variable length intake tract devices.

Carburation instruments must be standard units as on the homologated model.

Bell mouths must **remain** as originally produced by the manufacturer for the homologated machine.

The injectors must **remain** standard units as on the homologated motorcycle.

2.7.8.2 Cylinder Head

No modifications are allowed.

No material may be added or removed from the cylinder head.

The cylinder head gasket may be changed.

The valves, valve seats, guides, springs, tappets, oil seals, shims, cotter valve, spring base and spring retainers must be as originally produced by the manufacturer for the homologated machine. Only normal maintenance interventions as prescribed by the Manufacturer in the model's Service Manual are authorised.

Valve spring shims are not allowed.

2.7.8.3 Camshaft

No modifications are allowed.

At the technical checks: for direct cam drive systems, the cam lobe lift is measured; for non direct cam drive systems (i.e. with rocker arms), the valve lift is measured.

The timing of the camshaft is free, however no machining of the camshaft sprocket is authorised.

2.7.8.4 Cam sprockets or Gears

No dimensional modifications are allowed.

2.7.8.5 Cylinders

No modifications are allowed.

2.7.8.6 Pistons

No modifications are allowed (including polishing and lightening).

2.7.8.7 Piston rings

No modifications are allowed.

2.7.8.8 Piston pins and Clips

No modifications are allowed.

2.7.8.9 Connecting rods

No modifications are allowed (including polishing and lightening).

2.7.8.10 Crankshaft

No modifications are allowed (including polishing and lightening).

2.7.8.11 Crankcase and all other Engine Cases (i.e. ignition case, clutch case, etc.)

No modifications to the crankcases are allowed (including painting, polishing and lightening).

Lateral (side) covers may be altered, modified or replaced. If altered or modified, the cover must have at least the same resistance to impact as the original one. If replaced, the cover must be made in material of same or higher specific weight and the total weight of the cover must not be less than the original one.

All lateral covers/engine cases containing oil and which could be in contact with the ground during a crash, must be protected by a second cover made from composite materials, type carbon or Kevlar®, aluminium or steel plates and/or bars are also permitted. All these devices must be designed to be resistant against sudden shocks and must be fixed properly and securely.

2.7.8.12 Transmission / Gearbox

An external quick-shift system on the gear selector (including wire and potentiometer) may be added.

Other modifications to gearbox or selector mechanism are not allowed.

Countershaft sprocket, rear wheel sprocket, chain pitch and size may be changed.

The sprocket cover may be modified or eliminated.

2.7.8.13 Clutch

No modifications are allowed.

Only friction and drive discs may be changed, but their number must remain as original.

Clutch springs may be changed.

2.7.8.14 Oil pumps and Oil lines

No pump modifications are allowed.

Oil lines may be modified or replaced. Oil lines containing positive pressure, if replaced, must be of metal reinforced construction with swaged or threaded connectors.

2.7.8.15 Radiator, cooling system and oil coolers

Protective meshes may be added in front of the oil and/or water radiator(s).

The radiator tubes to and from the engine may be changed, but the system must be maintained, with its original tanks.

Radiator fan and wiring may be removed. Thermal switches, water temperature sensor and thermostat may be removed inside the cooling system.

Radiator cap is free.

An additional water radiator may be fitted but the appearance of the front, the rear and the profile of the motorcycle must not be changed. Extra mounting brackets to accommodate the additional radiator are permitted.

2.7.8.16 Air box

The air box must remain as originally produced by the manufacturer on the homologated machine but the air box drains must be sealed.

The air filter element may be modified or replaced.

All motorcycles must have a closed breather system. All the oil breather lines must be connected and discharge in the airbox.

2.7.8.17 Fuel supply

Fuel lines from the fuel tank to the delivery pipe assembly (excluded) may be replaced but the fuel petcock must remain as originally produced by the manufacturer.

Quick connectors or dry break quick connectors may be used.

Fuel pressure regulator may be modified or changed

Fuel vent lines may be replaced.

Fuel filters may be added.

2.7.8.18 Exhaust system

Exhaust pipes and silencers may be modified or changed. Catalytic converters must be removed.

The number of the final exhaust silencer(s) must remain as homologated. The silencer(s) must be on the same side(s) of the homologated model.

For safety reasons, the exposed edges of the exhausts pipe(s) outlet must be rounded to avoid any sharp edges.

Wrapping of exhaust systems is not allowed except in the area of the riders foot or an area in contact with the fairing for protection from heat.

The maximum noise limit for Superstock (600 and 1000) shall be 102 dB/A (with a 3 dB/A tolerance after the race).

2.7.9 Electrics and Electronics

2.7.9.1 Ignition / Engine Control System (ECU)

The engine control unit (ECU) must be either:

- a) As Homologated and inner software may be changed.
- b) Or the ECU kit model (produced and/or approved by the machine Manufacturer) may be used. A special connector may be used to connect ECU and the original wire loom.
The retail price of the full system (software included) must not be more than 1.5 times higher than the price of the original system.
- c) In addition to option a) and b) mentioned above, external ignition and/or injection module/s may be added to the standard production ECU, but their total retail price cannot be higher than the complete ECU kit.

Central unit (ECU) may be relocated.

Spark plugs may be replaced.

2.7.9.2 Generator, alternator, electric starter

No modifications are allowed.

The electric starter must operate normally and always be able to start the engine during the event.

2.7.9.3 Additional equipment

Additional electronic hardware equipment not on the original homologated motorcycle cannot be added (e.g. data acquisition, computers, recording equipment). Original instruments **may** be altered or replaced. (see also 2.7.11).

The addition of a device for infra red (IR) transmission of a signal between the racing rider and his team, used exclusively for lap timing, is allowed.

The addition of a GPS unit for lap timing/scoring purposes is allowed.

Telemetry is not allowed.

2.7.9.4 Wiring harness

The original wire-loom may be modified as indicated hereafter:

The wiring loom may be replaced by the 'kit' wire harness loom, as supplied for the ECU Kit model, produced or approved by the Manufacturer of the motorcycle.

The wiring loom and the key/ignition lock may be relocated or replaced.

Cutting of the wiring harness is not allowed.

2.7.9.5 Battery

The battery may be replaced. If replaced, its nominal capacity must be equal to or higher than the homologated type.

2.7.10 Frame and body

2.7.10.1 Frame body and Rear sub frame

Frame must remain as originally produced by the manufacturer for the homologated machine. The sides of the frame-body may be covered by a protective part made of a composite material. These protectors must fit the form of the frame.

Holes may be drilled on the frame only to fix approved components (i.e. fairing brackets, steering damper mount).

Nothing may be added by welding or removed by machining from the frame body.

All motorcycles must display the manufacturers' vehicle identification number on the frame body (chassis number).

Engine mounting brackets or plates must remain as originally produced by the manufacturer for the homologated machine.

Rear sub frame may be changed or altered, but the **type of material** must remain as homologated, **or of higher specific weight.**

Additional seat brackets may be added, non-stressed protruding brackets may be removed if they do not affect the safety of the construction or assembly. Bolt-on accessories to the rear sub-frame may be removed.

Additional seat brackets may be added but none may be removed. Bolt-on accessories to the rear sub-frame may be removed.

The paint scheme is not restricted but polishing the frame body or sub frame is not allowed

2.7.10.2 Front Forks

Forks structure (spindle, stanchions, bridges, stem, etc.) must remain as originally produced by the manufacturer for the homologated machine.

Standard original internal parts of the forks may be modified.

After market damper kits or valves may be installed.

No aftermarket or prototype electronically-controlled suspension parts may be used. If original electronic suspensions are used, they must be completely standard (any mechanical or electronic part must remain as homologated). The original electronic system must work properly in the event of an electric/electronic failure otherwise it may not be homologated for FIM competitions.

The fork caps may be modified or changed to add spring preload/compression adjusters

Dust seals may be modified, changed or removed providing the fork remains totally oil-sealed.

Any quality and quantity of oil may be used in the front forks.

The height and position of the front fork in relation to the fork crowns is free.

The upper and lower fork clamps (triple clamp, fork bridges) must remain as originally produced by the manufacturer on the homologated machine.

Steering damper may be added or replaced with an after-market damper.

The steering damper cannot act as a steering lock limiting device.

2.7.10.3 Rear fork (Swing arm)

Every part of the rear fork must remain as originally produced by the manufacturer for the homologated machine (including rear fork pivot bolt and rear axle adjuster).

Rear wheel stand positioning (support) brackets may be added to the rear fork by welding or by bolts. Brackets must have rounded edges (with a large radius) viewed from all sides. Fastening screws must be recessed.

For safety reasons, it is compulsory to use a chain guard made from rigid plastic material, fitted in such a way to prevent trapping between the lower chain run and the final driven sprocket at the rear wheel.

2.7.10.4 Rear suspension unit

Rear suspension unit (shock absorber) may be modified or replaced, but the original attachments to the frame and rear fork (swing arm) must be used and the rear

suspension linkage must remain as originally produced by the manufacturer for the homologated machine.

Rear suspension unit spring may be changed.

No aftermarket or prototype electronically-controlled suspension unit maybe used. If original electronic unit is used, it must be completely standard (any mechanical or electronic part must remain as homologated). The original electronic system must work properly in the event of an electric/electronic failure otherwise it cannot be homologated for FIM competitions.

2.7.10.5 Wheels

Wheels must remain as originally produced by the manufacturer.

The speedometer drive may be removed and replaced with a spacer.

If the original design included a cushion drive for the rear wheel, it must remain as originally produced for the homologated machine.

No modifications of the wheel-axles or any fixing and mounting points for front brake caliper are authorised. Spacers may be modified. Modifications to the wheels to keep spacers in place are permitted.

Wheel diameter and rim width must remain as originally homologated.

Wheel balance weights may be discarded, changed or added to.

Any inner tube (if fitted) or inflation valves may be used.

2.7.10.6 Brakes

Brake disks can be replaced by aftermarket discs which comply with the following rules:

- **Brake discs and carrier must retain the same material as the homologated disc and carrier**
- **When a 'wave' type disc is homologated as the original part, the 'wave' shape of the replacement disc must remain exactly like the homologated disc. A 'wave' type disc can be replaced by round disc.**
- **The outside and inner diameter of the brake disc must remain the same as on the homologated disc**
- **The thickness of the brake disc may be increased by 20% and it must fit into the homologated brake caliper without any modification.**
- **The number of floaters must remain the same but the shape and type of floaters is free**

- **The fixing of the carrier on the wheel must remain the same like on the homologated disc.**
- **The ABS rotor wheel can be deleted, modified or replaced**

The front and rear brake caliper (mount, carrier, hanger) must remain as originally produced by the manufacturer for the homologated machine.

The rear brake caliper bracket may be mounted 'fixed' on the swing-arm, but the bracket must maintain the same mounting (fixing) points for the caliper as used on the homologated machine. A modification of these parts is authorised. The swing-arm may be modified for this reason to aid the location of the rear brake caliper bracket, by welding, drilling or by using a helicoil.

The front and rear master cylinder must remain as originally produced by the manufacturer for the homologated machine. Front and rear brake fluid reservoir may be changed with an aftermarket product

Front and rear hydraulic brake lines may be changed.

The split of the front brake lines for both front brake calipers must be made above the lower fork bridge (lower triple clamp).

"Quick" (or "dry-brake") connectors in the brake lines are authorised.

Front and rear brake pads may be changed. Brake pad locking pins may be modified for quick change type.

Additional air scoops or ducts are not allowed.

2.7.10.7 Handle Bars and Hand Controls

Handle bars may be replaced (does not include brake master cylinder).

Handle bars and hand controls may be relocated.

Throttle controls must be self closing when not held by the hand.

Throttle assembly and associated cables may be modified or replaced.

Clutch and brake lever may be exchanged by an after-market model. An adjuster to the brake lever is allowed.

Switches may be changed but electric starter switch and engine stop switch must be located on the handle bars.

2.7.10.8 Foot rest / Foot controls

Foot rest/foot controls may be relocated but brackets must be mounted to the frame at the original mounting points. Their two original points of fixture (for the footrest, foot-controls and on the shift shaft) must remain as original. Foot controls linkage may be modified. The original mounting points must remain.

Foot rests may be rigidly mounted or a folding type which must incorporate a device to return them to the normal position.

The end of the foot rest must have at least an 8 mm solid spherical radius. (see Diagram A & C).

Non folding footrests must have an end (plug) which is permanently fixed, made of aluminium, plastic, Teflon® or an equivalent type material (minimum radius 8mm). The plug surface must be designed to reach the widest possible area. The Chief Technical Steward has the right to refuse any plug not satisfying this safety aim.

2.7.10.9 Fuel tank

Fuel tank filler caps may be altered or replaced from those fitted to the homologated motorcycle, by a 'screw-on' type fuel cap (SAFETY).

All fuel tanks must be completely filled with fire retardant material (open-celled mesh, i.e. Explosafe®).

Fuel tank valve petcock must remain as originally produced by the manufacturer for the homologated machine.

The sides of the fuel tank may be covered by a protective part made of a composite material. These protectors must fit the shape of the fuel tank.

Fuel tanks with tank breather pipes must be fitted with non-return valves that discharge into a catch tank with a minimum volume of 250cc made of a suitable material.

2.7.10.10 Fairing / Body work

- a) Fairing and body work may be replaced with exact cosmetic duplicates of the original parts, but must appear to be as originally produced by the manufacturer for the homologated machine, with slight differences due the racing use (different pieces mix, attachment points, fairing bottom, etc). The material may be changed. The use of carbon fibre or carbon composite materials is not allowed.
- b) Overall size and dimensions must be the same as the original part.
- c) Wind screen may be replaced with a duplicate of transparent material. The height of the windscreen is free, within a tolerance of +/- 15 mm regarding to the vertical distance from/to the upper fork bridge.
- d) Motorcycles that were not originally equipped with streamlining are not allowed

to add streamlining in any form, with the exception of a lower fairing device, as described in (h). This device cannot exceed above a line drawn horizontally from wheel axle to wheel axle.

- e) The original combination instrument/fairing brackets may be replaced, but the use of titanium and carbon (or similar composite materials) is forbidden. All other fairing brackets may be altered or replaced.
- f) The original air ducts running between the fairing and the air box may be altered or replaced. Carbon fibre composites and other exotic materials are forbidden. Particle grills or “wire-meshes” originally installed in the openings for the air ducts may be taken away.
- g) The lower fairing has to be constructed to hold, in case of an engine breakdown, at least half of the total oil and engine coolant capacity used in the engine (minimum 5 litres). The lower edge of the openings in the fairing must be positioned at least 50 mm above the bottom of the fairing.
- h) The lower fairing must incorporate an opening of Ø 25 mm diameter in the front lower area. This hole must remain closed in dry conditions and must be only opened in wet race conditions as declared by the Race Director.
- i) Front mudguards may be replaced with a cosmetic duplicate of the original parts and may be spaced upward for increased tyre clearance.
- j) Rear mudguard fixed on the swing arm may be modified or changed but the original profile must be respected.
- k) Motorcycles may be equipped with inner ducts to improve the air stream towards the radiator but the appearance of the front, the rear and the profile of the motorcycle must not be changed.

2.7.10.11 Seat

The appearance from both front rear and profile must conform to the homologated shape.

Seat, seat base and associated body work may be replaced with parts of similar appearance as originally produced by the manufacturer for the homologated machine.

The top portion of the rear body work around the seat may be modified to a solo seat.

The seat/rear cowl replacement must allow for proper number display.

The homologated seat locking system (with plates, pins, rubber pads etc.) may be removed.

2.7.10.12 Fasteners

Standard fasteners may be replaced with fasteners of any material and design but titanium fasteners may not be used. The strength and design must be equal to or exceed the strength of the standard fastener it is replacing.

Fasteners may be drilled for safety wire, but intentional weight saving modifications are not allowed.

Fairing/body work fasteners may be changed to the quick disconnect type.

Aluminium fasteners may only be used in non-structural locations.

2.7.11 The following items MAY be altered or replaced from those fitted to the homologated motorcycle.

Any type of lubrication, brake or suspension fluid may be used.

Gaskets and gasket materials (with the exception of cylinder base gasket).

Instruments, instrument bracket(s) and associated cables.

Painted external surface finishes and decals.

Material for brackets connecting non original parts (fairing, exhaust, instruments, etc) to the frame (or engine) cannot be made from titanium or fibre reinforced composites.

Protective covers for engine, frame, chain, footrests, etc. may be made in other materials like fibre composite material if these parts do not replace original parts mounted on the homologated model.

It is recommended that machines be equipped with a red light on the instrument panel. This light must flash in the event of oil pressure drop.

2.7.12 The Following Items MAY BE Removed

Emission control items (anti-pollution) in or around the air box and engine (O2 sensors, air injection devices).

Tachometer.

Speedometer.

Chain guard as long as it is not incorporated in the rear fender.

Bolt on accessories on a rear sub frame.

2.7.13 The Following Items MUST BE Removed

Headlamp, rear lamp and turn signal indicators (when not incorporated in the fairing). Openings must be covered by suitable materials.

Rear-view mirrors.

Horn.

License plate bracket.

Toolkit.

Helmet hooks and luggage carrier hooks

Passenger foot rests.

Passenger grab rails.

Safety bars, centre and side stands must be removed (fixed brackets must remain).

2.7.14 The Following Items MUST BE Altered

Motorcycles must be equipped with a functional ignition kill switch or button mounted at least on one side of the handlebar (within reach of the hand while on the hand grips) that is capable of stopping a running engine.

All drain plugs must be wired. External oil filter(s) screws and bolts that enter an oil cavity must be safety wired (i.e. on crankcases, oil lines, oil coolers, etc.)

All motorcycles must have a closed breather system. The oil breather line must be connected and discharge in the airbox.

Where breather or overflow pipes are fitted they must discharge via existing outlets. The original closed system must be retained, no direct atmospheric emission is permitted.

2.8 TECHNICAL SPECIFICATIONS FOR SUPERMONO

2.8.1 Displacement capacities

Maximum capacities:

Supermono up to 250 cc.	Single cylinder type
Supermono 250 up to 500 cc.	Single cylinder type
Supermono 500 up to 800 cc.	Single cylinder type

Engines may operate on the four stroke principle only.

Engines must be normally aspirated.

No tolerance on capacities is permitted.

Engine capacity must be measured at ambient temperature.

2.8.2 Minimum Weights

Supermono up to 250 cc.	minimum weight	85 kg.
Supermono 250 up to 500 cc.	Minimum weight	90 kg.
Supermono 500 up to 800 cc.	minimum weight	95 kg.

Ballast may be added to achieve the minimum weights, but it must be securely fixed to the frame and must be declared to the Chief Technical Steward at the preliminary checks.

In the final inspection at the end of the race, the machines chosen will be weighed in the condition they finished the race. Nothing can be added to the machine including water, oil, fuel or tyres.

A 1% tolerance in the weight of the machine at the post race control is accepted.

2.8.3 Number Plate

Racing numbers must be affixed to the front and the two sides of the motorcycle so that they are clearly visible to the spectators and officials.

Number plates must be rectangular in shape with minimum measurements 285 mm x 235 mm (see diagram 0).

One plate must be fixed to the front inclined not more than 30° rearwards from the vertical. The others must be placed, one on each side of the motorcycle. 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. Holes can be perforated between the numbers on a front number plate. However, under no circumstances must the actual numbers be perforated.

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

There must be a clear area around the numbers of at least 50 mm.

The background colours and figures for Supermono are black background with yellow numbers. With the RAL colour table values being black 9005 and yellow being 1003.

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

2.8.5 Fuel

All Supermono engines must function on normal unleaded fuel with a maximum lead content of 0.005 g/l (unleaded) and a maximum MON of 90 (see also Art. 2.10.1 for full specification).

2.8.6 Machine Specifications

2.8.6.1 Main Frame Body

The use of titanium and/or magnesium in the construction of the frame is not permitted.

2.8.6.2 Front Forks

The use of titanium in the construction of the front forks is not permitted. The surface treatment is free.

There must be at least 15 degrees of movement of the steering each side of the centre line.

Stops must be fitted to ensure a clearance of at least 30 mm between the handlebar and the tank when at the extremes of lock.

The steering damper cannot act as a steering lock limiting device.

2.8.6.3 Rear Fork (Swing arm)

The use of titanium, magnesium and composites in the construction of the rear fork (swing arm) spindle is not permitted.

2.8.6.4 Suspension

No restrictions.

2.8.6.5 Wheels

Maximum front wheel rim width is 4.0 in.

Maximum rear wheel rim width is 6.25 in.

Minimum wheel diameter is 16 in.

The use of titanium or any other light alloy in the construction of the wheel spindles is not permitted.

2.8.6.6 Brakes

Supermonos must have a minimum of one brake on each wheel that is independently operated. The use of carbon fibre or carbon composite discs is not allowed.

2.8.6.7 Tyres

Racing tyres must be used.

2.8.6.8 Foot Rest/Foot Controls

Footrests 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 must be provided at the end of the footrest.

Non folding metallic footrests must have an end (plug) which is permanently fixed, made of plastic, Teflon® or equivalent type of material (min. radius of 8 mm).

2.8.6.9 Handlebars and Hand Controls

Handlebars must have a width of not less than 450 mm and their ends must be solid or rubber covered. The width of the handlebar is defined as the width measured between the outside of the handlebar grips or throttle twistgrips.

The use of titanium in the construction of handlebars is not permitted.

Throttle controls must be self closing when not held by the hand.

Levers must not be longer than 200 mm measured from the pivot point.

Engine stop switch must be located on the handlebars.

2.8.6.10 Fairing/Body Work

The front wheel with the exception of the tyre and the part hidden behind the mudguard must be clearly visible from each side.

Bodywork must not extend beyond a line drawn vertically at the leading edge of the front tyre. The suspension should be fully extended when the measurement is taken.

Mudguards shall not be considered as streamlining.

Mudguards are not compulsory. When fitted, front mudguards must not extend in front of a line drawn upwards and forwards at 45 degrees from a horizontal line through the front wheel spindle or below a line drawn horizontally and to the rear of the front wheel spindle.

The windscreen edge and the edges of all other exposed parts of the streamlining must be rounded.

The front inclination where the number plate is fixed must not exceed an angle of 30° to the rear of the vertical (see diagram A).

Whatever the position of the handlebars, there must be a space of at least 20 mm between the streamlining and the ends of the handlebars or other steering system, including any attachments thereto.

The maximum width of bodywork must not exceed 600 mm. The width of the seat or anything to its rear shall not be more than 450 mm, exhaust systems excepted.

The maximum height of the back of the riders seat is 150 mm. This will be measured from the lowest point of the rigid base of seat to the uppermost part of the fairing behind the rider.

No part of the streamlining (fairing) must be to the rear of a vertical line drawn through the rear wheel axle.

The rim of the rear wheel must be clearly visible over 180° of its circumference to the rear of this line.

There must be a clearance of at least 15 mm around the circumference of the tyre at all positions of the motorcycle suspension and all positions of the rear wheel adjustment.

No part of the motorcycle shall project to the rear of a vertical line drawn through the exterior edge of the rear tyre.

The motorcycle, unloaded, must be capable of being leaned at an angle of 50 degrees from the vertical without touching the ground, other than the tyres.

Air foils or spoilers may only be fitted on solo machines when they are an integral part of the fairing or seat. They must not exceed the width of the fairing nor the height of the handlebar. Sharp edges must be rounded off with a minimum radius of 8 mm. Moving aerodynamic devices are not permitted.

The rider in the normal driving position must be completely visible, with the exception of his forearms, from either side, from the rear and from above. In race position, the minimum space between the face of the rider, or his helmet and the streamlining (including the windscreen) must be 100 mm. It is forbidden to use transparent materials to evade these rules.

The fuel cap must be fitted in such a way that it does not protrude in relation to the tank profile and cannot be torn off in a crash.

The lower fairing has to be constructed to hold, in case of an engine breakdown, at least half of the total oil and engine coolant capacity used in the engine (min. 5 litres).

The lower fairing should incorporate a maximum of two holes of 25 mm. These holes must remain closed in dry conditions and can only be open in wet race conditions as declared by the Clerk of the Course.

All sharp edges must be rounded.

2.8.6.11 Fuel Tank

Fuel tank must be completely filled with a fire retardant material (i.e. "Explosafe").

Fuel tanks with tank breather pipes must be fitted with non-return valves that discharge into a catch tank with a minimum volume of 250 cc made of a suitable material.

Fuel caps, when closed, must be leak proof. Additionally, they must be secured to prevent accidental opening at any time.

The fuel cap must be fitted in such a way that it does not protrude in relation to the tank profile and cannot be torn off in a crash.

2.8.6.12 Seat

The seat/rear cowl must allow for proper number display.

The width of the seat shall not be more than 450 mm.

The maximum height of the back of the riders seat is 150 mm. This will be measured from the lowest point of the rigid base of seat to the uppermost part of the fairing behind the rider.

All exposed edges must be rounded.

2.8.6.15 Radiator and Oil Coolers

Oil cooler must not be mounted on or above the rear mudguard.

2.8.6.16 Air Box

The air box is compulsory and must be completely closed around the induction bell mouth and all engine breather tubes, with air ingress only above the lowest point of the bell mouths lip (see diagram C). Carburation instruments may be entirely within the airbox.

The air box drains must be sealed.

All Supermono motorcycles must have a closed breather system. The oil breather line must be connected and discharge in the airbox.

The breather system (airbox plus any breather oil collector box) must be capable in the event of drain pipe blockage, of retaining a minimum of 1000 cc of discharged fluid.

2.8.6.17 Carburation instruments

No restrictions

2.8.6.18 Fuel Supply

All fuel lines must be totally leak proof.

2.8.6.19 Oil Lines

Oil lines containing positive pressure must be of metal reinforced construction with swaged or treaded connectors.

2.8.6.20 Transmission/Gearbox

The maximum number of gears is limited to six speeds.

2.8.6.21 Exhaust System

Maximum noise limit is 105 dB/A, measured at a mean piston speed of 11 m/sec for 4-stroke engines.

The correct stroke must be marked on a clearly visible position of the crankcase.

The outlet of the exhaust must not extend behind a line drawn vertically through the edge of the rear tyre.

The last 30 mm of the pipe must be horizontal and parallel to the centre line of the motorcycle with a tolerance of +/- 10 degrees.

2.8.7 The following items MUST BE incorporated

Motorcycles must be equipped with a functional ignition kill switch or button mounted on either side of the handlebar (within reach of the hand while on the hand grips) that is capable of stopping a running engine.

Throttle controls must be self closing when not held by the hand.

Electric fuel pumps must be wired through a circuit cut out which will operate automatically in the event of an accident.

A test procedure for the circuit cut out must be incorporated in the design of electrically operated fuel pumps for use upon inspection.

Safety bars, centre and side stands, if fitted, must be removed.

All drain plugs must be wired. External oil filter(s) screws and bolts that enter an oil cavity must be safety wired.

All Supermono motorcycles must have a closed breather system. The oil breather line must be connected and discharge in the airbox.

The breather system (airbox plus any breather oil collector box) must be capable in the event of drain pipe blockage, of retaining a minimum of 1000 cc of discharged fluid.

Where an oil breather pipe is fitted, the outlet must discharge into a catch tank located in an easily accessible position and which must be emptied before the start of a race.

Oil cooler must not be mounted on or above the rear mudguard.

The minimum size of a catch tank shall be 250 cc for gear box breather pipes and 500 cc for engine breather pipes.

Head lamp, rear lamp and turn indicators, if fitted, must be removed. The openings must be covered by a suitable material.

2.8.8 Additional Equipment

Additional equipment may be fitted, however Art 01.18 Telemetry must be respected.

2.10 FUEL, OIL AND COOLANTS

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

2.10.1 Physical properties for unleaded fuel

2.10.1.1 Unleaded petrol must comply with the FIM specification.

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

(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)		4.0	EN 13132 or 14517
Nitrogen	% (m/m)		0.2	ASTM D 4629
Benzene	% (V/V)		1.0	EN 238 or EN 14517
Vapour pressure (DVPE)	kPa		95.0	EN 13016-1
Lead	g/L		0.005	EN 237 or ICP-OES
Manganese	g/L		0.005	ICP-OES
Density at 15°C	kg/m ³	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
Distillation:				
E at 70°C	% (V/V)	22.0	50.0	EN ISO 3405
E at 100°C	% (V/V)	46.0	71.0	EN ISO 3405
E at 150°C	% (V/V)	75.0		EN ISO 3405
Final Boiling Point	°C		210	EN ISO 3405
Residue	% (V/V)		2.0	EN ISO 3405
Appearance	Clear and bright			Visual inspection
Ethanol (*)	% (V/V)		10	EN 13132 or 14517
Olefins	% (V/V)		18.0	EN 14517 or 15553
Aromatics	% (V/V)		35.0	EN 14517 or 15553
Total diolefins	% (m/m)		1.0	GCMS/HPLC

(*) Shall conform to EN 15376

- (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, iso-propyl alcohol, iso-butyl alcohol, methyl tertiary butyl ether, ethyl tertiary butyl ether, tertiary amyl methyl ether, di-isopropyl ether, n-propyl alcohol, tertiary-butyl alcohol, n-butyl alcohol, secondary-butyl alcohol
- (e) Manganese is not permitted in concentrations above 0.005 g/l. For the present this is solely to cover possible minor contamination by other fuels. The fuel will contain no substance that is capable of an exothermic reaction in the absence of external oxygen.

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.

2.10.1.3 When Ethanol E85 is used, it will comply with the FIM specification and will have 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
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

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2.10.3 Air

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

2.10.4 Primary Tests

2.10.4.1 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.

2.10.4.2 The FIM may request any person or organisation, being a potential Official Supplier of fuel, to submit a sample for testing for conformity with the fuel specifications.

2.10.5 Fuel Test Procedures

2.10.5.1 Fuel tests may be administered at any time and place during the course of any meeting under the authority of the FIM.

2.10.5.2 The sole authority to request and direct the administration of fuel tests during the course of an international event lies with the President of the International Jury, by written document (Fuel Test Order).

The Jury President must deliver the Fuel Test Order to the Chief Technical Steward for the meeting who is responsible for the administration of the fuel tests.

The Fuel Test Order must nominate:

(a) The criteria (which may be random) for selection of the machines from which samples are to be taken; and

(b) The officials who must administer the tests.

(c) At least 3 of the characteristics specified in Arts. 2.10.1.2 to be the subject of the tests, or only 1 characteristic when using an ASTM approved "short test" or "field test method" for the detection of only one of the characteristics in a fuel sample.

2.10.5.3 Fuel tests must be administered according to the Fuel Test Order and must comply with the following procedures:

(a) Only nominated officials may take samples.

(b) Containers for holding samples:

(i) must be clean and constructed of robust, fuel non-reactive, impermeable material;

(ii) must be sealable;

(iii) must have provision for identification.

(c) Equipment used for the extraction of fuel from machines must be clean and constructed of fuel non-reactive material.

(d) The FMNRs must ensure that there is a supply of at least 12 containers (12 X 1 litre each).

(e) Each sample must be divided into two and placed in separate containers, (2 samples of maximum 1 litre each). Each sample may be initially tested for one of the characteristics, using an ASTM approved field test method. The results obtained from such a test must be given immediately to the International Jury. The containers must be immediately sealed and identified by reference to the machine from which the sample was taken. This information must be entered on a certificate (FIM Fuel Sample Certificate) which must certify the date, place and time of taking the sample, the identity of the machine from which the sample was taken, and the identity of its rider.

(f) Both samples (sample A and sample B) must remain in the control of the Technical Steward. The rider or the representative of the rider/ team must sign the FIM Fuel Sample Certificate acknowledging that a sample was taken, and must be given a copy of the Certificate.

(g) At the end of the meeting the Chief Technical Steward must deliver both samples (sample A and sample B) to a courier authorised by the FIM, Jury President. The Chief Technical Steward must return a copy of the Fuel Sample Certificate, signed by the courier, to the Jury President.

(h) The authorised courier must deliver both samples (sample A and sample B), together with copies of the relevant Fuel Sample Certificates, to an FIM authorised laboratory, where they must be tested for content in accordance with standard scientific procedures.

(i) The results obtained from such testing must be attached to the laboratory's copy of the Fuel Sample Certificate and delivered to the FIM as soon as practicable after the results have been obtained.

(j) In case of non conformity to the rules, the FIM must as soon as practicable after receipt of the results notify:

(i) the relevant riders or team representatives;

(ii) the relevant FMNR;

(iii) the Jury President for the relevant meeting.

2.10.5.4 The FIM may authorise one or more named laboratories for testing fuels. Such authorisation must be by written document.

2.10.5.5 A Jury may direct the administration of fuel tests during the course of any international meeting. Such direction must be by Fuel Test Order which must be delivered to the Chief Technical Steward.

Such Fuel Test Order has the same authority as if it had been issued by the CTI Bureau under Art. 2.10.5.2. The procedures for the administration of fuel tests under this Article must comply with the procedures under Arts. 2.10.5.2 and 2.10.5.3.

2.10.5.6 For tests under Art. 2.10.4 all characteristics specified in Art. 2.10.1.2 must be present for the tested fuel to comply.

2.10.5.7 For tests under Arts. 2.10.5.2 and 2.10.5.5 tested fuel must comply with the characteristics specified in the relevant Fuel Test Order.

2.10.5.8 Fuel Test Costs

2.10.5.9 The costs of fuel tests conducted under Arts. 2.10.4.1, 2.10.4.2 and 2.10.5.2 will be paid by the FIM.

2.10.5.10 The costs of fuel tests conducted under Art. 2.10.5.5. will be paid by the organiser of the meeting.

2.10.5.11 Where a fuel test is ordered by a Jury in relation to a protest, the party which loses the protest must bear the entire cost of the fuel test, or such proportion thereof as is directed by the Jury.

2.10.6 Fuel Storage

Fuel may only be stored in metal containers.

A maximum of 60 litres of fuel stored in a sealable can, is allowed in the competitor's pit.

Fire fighting equipment, protective devices and staff must conform to the requirements imposed by the local authorities and by-laws.

The organiser must have fire extinguishers of a size and type approved by the local by-laws, available to each competitor in the pit area.

2.10.7 Coolants

The only liquid engine coolants permitted other than lubricating oil shall be water or water mixed with ethyl alcohol.

2.11 PROTECTIVE CLOTHING AND HELMETS

2.11.1 Riders and passengers must wear a complete leather suit with additional leather padding or other protection on the principal contact points, knees, elbows, shoulders, hips etc.

2.11.2 Linings or undergarments must not be made of a synthetic material which might melt and cause damage to the riders' skin.

2.11.3 Riders must also wear leather gloves and boots, which with the suit provides complete coverage from the neck down.

2.11.4 Leather substitute materials may be used, providing they have been checked by the Chief Technical Steward.

2.11.5 Use of a back protector is highly recommended.

2.11.6 Riders must wear a helmet which is in good condition, provides a good fit and is properly fastened.

2.11.7 Helmets must be of the full face type and conform to one of the recognised international standards:

- Europe ECE 22-05, 'P'
- Japan JIS T 8133 : 2000
- USA SNELL M 2005 (**until 2012**)
SNELL M 2010

2.11.8 Visors must be made of a shatterproof material.

2.11.9 Disposable "tear-offs" are permitted.

2.11.10 Any question concerning the suitability or condition of the riders clothing and/or helmet shall be decided by the Chief Technical Steward, who may, if he so wishes, consult with the manufacturers of the product before making a final decision.

2.12 CONTROL

The rider is at all times responsible for his machine.

2.12.1 The Chief Technical Steward must be in attendance for an event at least 1 hour before the technical verifications are due to begin. He must inform the Clerk of the Course and/or the Jury President of his arrival.

2.12.2 He must ensure that all Technical Stewards, appointed for the event, carry out their duties in a proper manner.

2.12.3 He shall appoint the Technical Stewards to individual posts for the race, practices and final control.

2.12.4 Technical inspections will only be carried out when the technical specification form of the motorcycle has been distributed by the Organiser (during the preliminary controls).

2.12.5 One rider, or his mechanic, must be present with the machine for Technical control within the time limits stated in the Supplementary Regulations. The maximum number of persons present at the technical verification will be the rider, plus two others. In addition, the Team Manager will also be allowed.

2.12.6 The Chief Technical Steward must inform the International Jury of the results of the Technical control. The Chief Technical Steward will then draw up a list of accepted machines and submit this list to the Clerk of the Course.

2.12.7 The Chief Technical Steward has the right to inspect any part of the motorcycle at any time of the event.

2.12.8 Any rider failing to report as required below may be disqualified from the meeting. The International Jury may forbid any team who does not comply with the rules, or any rider who can be a danger to other participants or to spectators, to take part in the practice sessions or in the races.

2.12.9 The Technical control must be carried out in accordance with the procedure and times fixed in the Supplementary Regulations of the event.

2.12.10 The Chief Technical Steward will refuse any machine that does not have a correctly-positioned transponder attachment. The transponder must be fixed to the motorcycle in the position and orientation as shown in the Timekeeping information given to teams pre-season and available at each event. Positive attachment of the transponder bracket consists of a minimum of tie-wraps, but preferably by screw or rivet. Velcro or adhesive alone will not be accepted. The transponder retaining clip must also be secured by a tie-wrap.

2.12.11 The rider or mechanic must present a clean motorcycle and in conformity to the FIM rules. He must also present a duly filled in and confirmed technical card.

2.12.12 An overall inspection of the motorcycle must be carried out in conformity with the FIM rules. Accepted motorcycles will be marked with paint or a sticker.

Chief Technical Steward has the final authority in case of a dispute on the conformity of the parts in question and for acceptance thereof.

2.12.13 The rider is permitted to use whichever motorcycle he chooses from the accepted motorcycles.

2.12.14 Before each practice the Technical Steward must confirm that the motorcycle has passed the Technical control by checking the Technical control sticker before the motorcycles go on the track.

2.12.15 Only accepted motorcycles may be used in a race and practice. A change of motorcycle is accepted in accordance with the prescriptions of the sporting appendix.

2.12.16 All machines must be controlled before they are placed in the closed park area. Only one (1) motorcycle per team qualified for the race is accepted in the closed park area.

2.12.17 Approximately 30 minutes after the Technical control has been completed, the Chief Technical Steward must submit to the International Jury list of accepted motorcycles and riders in the individual classes.

2.12.18 If a motorcycle is involved in an accident, the Chief Technical Steward must check the machine (together with the helmet and clothing of the rider involved), to ensure that no defect of a serious nature has occurred.

If a machine was stopped with a black flag with orange disc, the Chief Technical Steward must check the machine.

In both cases, it is the responsibility of the team to present the machine, together with helmet and clothing of the fallen rider, for this re-examination in case they wish to continue.

If the helmet is clearly defective, the Chief Technical Steward must retain this helmet.

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.

2.12.19 The rider must present his equipment. The helmet must be marked.

2.12.20 The rider may present several motorcycles for Technical inspection.

2.12.21 Noise should be checked by random choice during practice as well as after the race. On request of rider, team or mechanic, noise of their own motorcycles can be checked at any time during the event.

2.12.22 Weight should be checked by random choice during practices as well as after the race.

The random weight check during practices will be held with minimum disturbance to the riders. The weight scales will be placed in the pit-lane. The actual place is decided by the Chief Technical Steward.

On request of rider, team or mechanic, weight and noise of their own motorcycles can be checked at any time during the event.

2.13 VERIFICATION GUIDELINES FOR TECHNICAL STEWARDS

- Make sure all necessary measures and administrative equipment are in place at least 1 hour before the Technical control (see separate list) is due to open (time in Supplementary Regulations).
- Decide who is doing what and note decisions. "Efficiency" must be the watchword. Always keep cheerful and remember the reasons for Technical controls: SAFETY AND FAIRNESS.
- Be well informed. Make sure your FMN has supplied you with all technical "updates" that may have been issued subsequent to the printing of the Technical Rule Books.
Copies of all homologation documents must be in your possession.
- Inspection must take place under cover with a large enough area (min. surface 100 sq. metres) to handle the technical verifications in two lines.

- Weighing apparatus must be accurate and practical. Certified master weights and their certificate must be available for verifying.

Rules regarding noise level and measurement must be respected.

2.13.1 Preparations, procedures

At each circuit, an area must be designated as the Technical control Area. In this area, under the control of the Chief Technical Steward, suitable equipment will be available to conduct proper inspections.

The Technical control will be carried out in accordance with the schedule set out in the Supplementary Regulations.

Technical Stewards must be available throughout the entire event to check motorcycles and equipment as required by the Chief Technical Steward.

Presentation of a machine will be deemed as an implicit statement of conformity with the technical regulations.

The Technical Stewards must inspect the motorcycles for obvious safety omissions.

The Technical Stewards must inspect that the motorcycle conforms to all technical rules laid out in the Regulations.

1) All classes

All machines will be required for weight and/or noise check at the pre-race technical inspection.

The scales and noise meter will be available to the teams or riders for pre-race checking in the technical Technical control area.

Noise test should take place in a clear area adjacent to the Technical control at least 5 metres from any possible noise reflecting obstruction.

The riders and teams must be aware that the weight and noise may be controlled at random during practice in the pit-lane and at the end of the race.

Claiming that the noise and weight were not officially controlled before the race will not be grounds for appeal. Conformity of the rules is the responsibility of the rider and the team (or the participants).

The Chief Technical Steward reserves the right to spot check the weight and noise of any machines on pit row during free practice and official practice. This can occur at any time during the free practice and in the first forty minutes of any official (timed) practice. This will be carried out with the least possible inconvenience to the rider or the team.

Machines arriving later than the first free practice must be controlled in the technical Technical control area.

At the conclusion of the inspections, a small sticker or coloured mark will be placed on the frame indicating that the machine had passed inspection

The Technical Stewards must re-inspect any machine that has been involved in an accident.

The Technical Stewards must be available, based on instructions from the Chief Technical Steward, to re-inspect any motorcycle for technical compliance during the meeting.

During the technical inspection in the closed park the mechanics must assist with the inspections. A maximum of two (2) team members per rider is allowed in the closed park during the post-race technical inspection. Downloading of data is allowed in the closed park.

Representatives of the tyre manufacturers are allowed in the closed park.

2) Practice

- Dry Practice

Every machine used in free or official practice may be checked.

The minimum checks are weight and noise. The Chief Technical Steward may request other checks.

- Wet practice

The Chief Technical Steward may perform certain checks during/after a wet practice.

3) Final inspection at the end of the race

In accordance with the instructions of the Jury President and/or the Chief Technical Steward.

4) Appointment and attendance

The Technical Stewards must be present and available during the opening hours of the Technical control area. The Chief Technical Steward will instruct the Technical Stewards to verify motorcycles for compliance with technical and safety rules.

5) Administration day/ Technical control:

For all riders/teams

min. 4 people

Tasks: Inspection of machine safety, clothing and helmets
(NO NOISE OR WEIGHT CONTROL)

Administration tasks: 1 person

6) Saturday/Sunday: Technical control during race day

Before race: safety checks on start grid: as required

After race: Technical control noise weight and carburation instruments 4 people

Displacement checks 2 people

Administration 1 person

NOTE: This is the required minimum of Technical Stewards. The number may of course be higher.

All final verification points to be decided in co-operation with the International Jury President and the Chief Technical Steward. Post-race checks are under extreme pressure. It is important to be very well organised.

Chief Technical Steward must present a report to the Jury after the technical verifications.

7) Minimum Equipment list

- Revolution meter
- Sound meter and calibrator
- Slide caliper
- Depth gauge
- Steel measuring tape
- Seals
- Weighing apparatus (scales) with calibration weights
- Tools for measuring engine capacity
- Tools for measuring valve lift
- Weighing apparatus for investigation of valve weights
- Colour for marking parts
- Magnet for materials testing
- Computer to read homologation CD-Rom

Documents list

- Regulations of the CURRENT YEAR
- Supplementary Regulations
- Homologation documents
- CD-Rom with homologations
- Technical control forms
- Writing materials

OFFICIAL FIM SPECIFICATION DECLARATION FOR ROAD RACING

All sections must be completed by the Technical Steward in the presence of the rider or rider's representative (See also Art. 01.77)

Particulars of the Meeting :

Title of the meeting :
Place :

IMN N° :
Date of the meeting :

Particulars of the Rider :

Rider's Name :
Nationality :
Rider's Licence N° :

Rider's first name :
Date of birth :
Medical examination :

Section I	1st Machine	2nd Machine
(1 FMN Senior Technical Steward + 1 Assistant)		
Administration		
Equipment and protective clothing		
Helmet (Standard + No.)		
Machine (Make + Type)		
Bore and Stroke		
Frame No.		
Section II		
(1 FMN Senior Technical Steward + 1 Assistant)		
Noise dB/A		
Ignition cut-out alternator		
Section III		
(1 FMN Senior Technical Steward + 1 Assistant)		
Fire retardant material (56.01.4)		
Weight		
Fuel tank with fix points		
Oil catch tank		
Breather system (4-stroke)		
Section IV		
(1 FMN Senior Technical Steward + 1 Assistant)		
Brakes/Tyres		
Bearing (Wheels, steering unit)		
Number + Plates		
Fairing		
Fuel tank		
Throttle control		
Oil drain/Filler plugs, etc. wired		
Ground clearance (Sidecar)		

OFFICIAL FIM SPECIFICATION DECLARATION

Comments : _____

Name of Technical Steward: _____

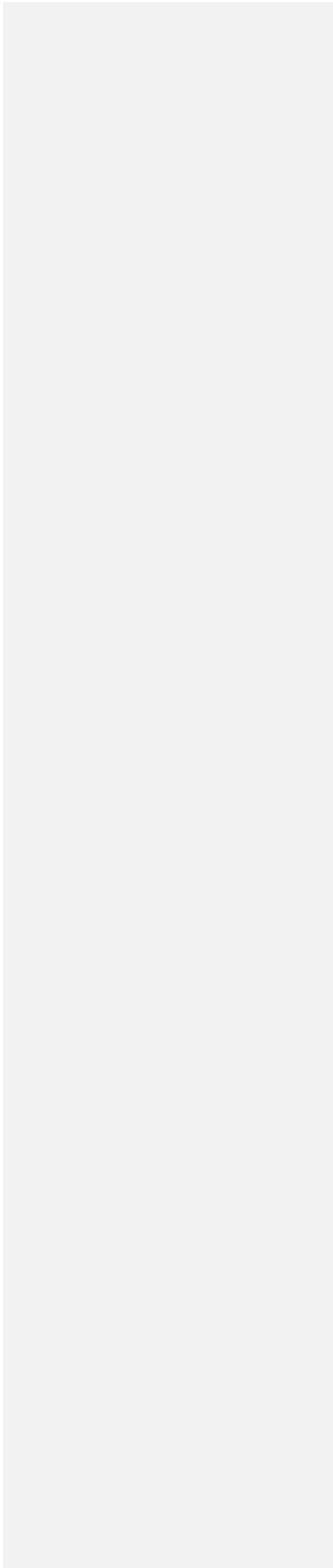
International Official's Licence N: _____

Acceptance of a machine for competition does not preclude the possibility of further post-race control to ensure compliance with the competition Technical rules.

Acceptance stamp of
Technical Steward

I hereby declare that the
information given above is
accurate in every respect

Signature : _____ Rider's signature : _____



2.14 SOUND CONTROL

Noise limits in force (with the exception of Supersport 600, Superstock 600 & 1000 motorcycles, for Drag Racing Competition and Pro Stock machines and for motorcycles in World Records)

Noise will be controlled to: Max. 105 dB/A measured at a mean piston speed of 11 m/sec. The fixed RPM specified in Art. 2.12.6 may be used.

2.14.1 With the microphone placed at 50 cm from the exhaust pipe at an angle of 45° measured from the centre-line of the exhaust end and at the height of the exhaust pipe, but at least 20 cm above the ground. If this is not possible, the measurement can be taken at 45° upwards.

2.14.2 During a noise test, machines not equipped with a gear box neutral must be placed on a stand.

2.14.3 The silencers will be marked when they are checked and it is not allowed to change them after the verification, except for any spare silencer which has also been checked and marked.

2.14.4 The rider shall keep his engine running out of gear and shall increase the engine speed until it reaches the specified Revolutions Per Minute (RPM). Measurements must be taken when the specified RPM is reached.

2.14.5 The RPM depends upon the mean piston speed corresponding to the stroke of the engine.

The RPM will be given by the relationship:

$$N = \frac{30,000 \times \text{cm}}{l}$$

in which N = prescribed RPM of engine
 cm = fixed mean piston speed in m/s
 l = stroke in mm

2.14.6 Noise control

Due to the similarity of the piston stroke in different engine configurations within the capacity classes, the noise test will be conducted at a fixed RPM. For reference only, the mean piston speed at which the noise test is conducted, is calculated at 13 m/sec (2-stroke engines) and 11 m/sec (4-stroke-engines).

	1 cylinder	2 cylinders	3 cylinders	4 cylinders
125 cc (2-stroke)	7,000 RPM			
250 cc (2-stroke)		7,000 RPM		
500 cc (2-stroke)		5,500 RPM	7,000 RPM	7,000 RPM

2.14.6.1 For Supermono class, the test RPM will continue to depend upon the mean piston speed corresponding to the stroke of the engine, according to the following table.

Stroke in mm	2-stroke	4-stroke	Stroke in mm	2-stroke	4-stroke
30	13,000	11,000	66	5,909	5,000
31	12,580	10,645	67	5,820	4,925
32	12,187	10,313	68	5,735	4,853
33	11,818	10,000	69	5,652	4,783
34	11,470	9,706	70	5,571	4,714
35	11,142	9,429	71	5,492	4,648
36	10,833	9,167	72	5,416	4,583
37	10,540	8,919	73	5,342	4,521
38	10,263	8,684	74	5,270	4,459
39	10,000	8,462	75	5,200	4,400
40	9,750	8,250	76	5,132	4,342
41	9,512	8,049	77	5,065	4,286
42	9,285	7,857	78	5,000	4,231
43	9,069	7,674	79	4,937	4,177
44	8,863	7,500	80	4,875	4,125
45	8,666	7,333	81	4,815	4,074
46	8,478	7,174	82	4,756	4,024
47	8,297	7,021	83	4,699	3,976
48	8,125	6,875	84	4,643	3,929
49	7,959	6,735	85	4,588	3,882
50	7,800	6,600	86	4,535	3,837
51	7,647	6,471	87	4,483	3,793
52	7,500	6,346	88	4,432	3,750
53	7,358	6,226	89	4,382	3,708
54	7,222	6,111	90	4,333	3,667
55	7,090	6,000	91	4,286	3,626
56	6,964	5,893	92	4,239	3,587
57	6,842	5,789	93	4,194	3,548
58	6,724	5,690	94	4,149	3,510
59	6,610	5,593	95	4,105	3,474
60	6,500	5,500	96	4,063	3,438
61	6,393	5,410	97	4,021	3,402
62	6,290	5,323	98	3,980	3,367
63	6,190	5,238	99	3,939	3,333
64	6,093	5,156	100	3,900	3,300
65	6,000	5,077			

For Supermono class only, when presented for examination, the correct stroke must be stamped in a clearly visible position on the crankcase.

2.14.6.2 For Wankel engines, the noise level will be measured at 6 000 RPM.

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

2.14.8 A machine which does not comply with the noise limits may be presented several times at pre-race control.

2.14.9 The surrounding noise should not exceed 90 dB/A within a 5 metres radius from the power source during tests.

2.14.10 Apparatus for noise control must be to international standard IEC 651, Type 1 or Type 2.

The sound level meter must be equipped with a calibrator for control and adjustment of the meter during periods of use.

2.14.11 Noise control during a competition

In a competition which requires noise control tests during the event, machines must comply with the noise limits without the tolerance in Art. 2.14.

2.14.12 Noise control after the competition

In a competition which requires a final examination of machines before the results are announced, this examination must include a noise control measurement of at least the first three machines listed in the final classification of each class and/or category. At this final test, there will be a 3 dB/A tolerance permitted.

2.15 GUIDELINES FOR USE OF SOUND LEVEL METERS

2.15.1 The Noise Control Officer (NCO) must arrive in sufficient time for discussions with the Technical Delegate and other Technical Stewards in order that a suitable test site and testing policy can be agreed.

2.15.2 Sound level measuring equipment must 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.

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

2.15.3 Before testing, the NCO should if possible liaise with a maximum of two holders of FIM Sponsor's or Manufacturer's licences, or team managers, who have noise test equipment including calibrators, in order to agree the accuracy of the official sound level meter.

2.15.4 Tests should not take place in rain or excessively damp conditions. Machines considered excessively noisy must be individually tested if conditions allow.

2.15.5 In other than moderate wind, machines should face forward in the wind direction. (Mechanical noise will blow forward, away from microphone).

2.15.6 'Slow' meter response must be used.

2.15.7 'A' weighted setting on sound level meter.

2.15.8 Always round down meter reading, that is: 104.9 dB/A = 105 dB/A.

2.15.9 Correction

Type 1 meter : deduct 1 dB/A
Type 2 meter : deduct 2 dB/A

2.15.10 Ambient temperature

Below 10° Celsius: deduct 1 dB/A
Below 0° Celsius : deduct 2 dB/A

All tolerances are accumulative. Action and decisions will be taken after discussions with Chief Technical Steward.

02.81 ADDITIONAL SPECIFICATIONS FOR SPECIAL VEHICLES USED FOR WORLD RECORDS (SHORT DISTANCE)

81.01 General

No part of a motorcycle (with the exception of extreme aerodynamic vehicles, also known as 'Streamliners') may extend beyond the wheels. No airfoils, spoilers or movable external control surfaces are allowed.

The seat shall not be placed directly above the rear wheel.

Only rear wheel drive is permitted.

**81.02 Number plates
(For 'non-streamlined' and 'partially streamlined' motorcycles)**

Each vehicle shall have two, fully visible white number plates which shall not be obscured by the rider in position. Each number plate shall be placed on either side of the machine.

The minimum sizes for number plates are: 150 mm (7") in height x 200 mm (8") in width.

Number plates may be painted on the streamlining. For light coloured bodywork, there shall be a black line of 6 mm (1/4") minimum width all around the perimeter of the white background.

Number plates which are not part of the streamlining shall be made of flexible materials only (i.e. ABS plastics, etc.). All other materials are prohibited.

All corners and edges shall be rounded (with a radius) and without any sharp edges.

81.03 Fuel

Fuel shall be liquid at ambient pressure and temperature and shall be used as such.

81.04 Fuel supply and shut-off valve

The vehicles shall have an efficient fuel shut-off which the rider can activate when he/she is in position.

All pressurised fuel lines, including non-valved fuel lines shall be reinforced by braided steel.

Nitrous oxide applications shall have a protected shut-off valve system in case of accident.

81.05 Air induction

Air induction created solely by depression and/or with the aid of pressure created by passive external systems (i.e. 'ram' air) is considered as naturally aspirated.

Air induction enhanced by active devices such as supercharging or turbo-charging is considered as forced induction.

81.06 Supercharging

Superchargers and turbochargers shall be separated from the rider, either by a cover of steel plate at least 3 mm thick or a ballistic blanket that meets SEMA specifications 14-1, or by a vehicle or engine structure that provides equivalent protection.

81.07 Engine cut-off

Two shut-off switches are required to stop the engine/motor power (including any nitrous oxide systems).

The rider shall be able to operate one cut-off switch with his hands placed on the handlebars.

The other cut-off switch shall be located on the outside of the cockpit.

81.08 Hand and Foot controls

Throttles shall be self-closing.

Foot operated throttles shall have a toe clip.

Hand controls (clutch and brake levers) shall have a ball end with a minimum diameter of 12.5 mm (1/2"). Flattened ball lever ends are acceptable if all edges are rounded. All control ends shall be an integral part of the lever.

Foot operated controls shall pivot independently.

When riders are in their riding position, a minimum distance of 250 mm (10") between thumbs shall be respected.

All handlebars shall extend outside each fork tube by minimum of 150 mm (6"). (This rule is not applicable to 'Streamliners'.)

Steering stops shall limit the rider's hands from touching the fairing or tank at full right and left travel.

Riders may be asked to demonstrate their ability to operate the vehicle with their controls set up.

81.09 Steering Dampers

A hydraulic steering damper is required in classes that have a record speed of 200 km/h (125 mph) or more. The hydraulic damper may not act as a fork stop.

81.10 Foot rests

Only one pair of functional footrests is allowed. All footrests shall be able to fold.

Footrests shall be positioned in front of the rear axle.

81.11 Brakes

At least one (1) efficient brake is required and shall be operated by hand or foot.

81.12 Transmission / chain covers

All transmission drives shall be protected with a guard which covers, at least, the outer perimeter from the top half of the first sprocket to the rearmost portion of the final sprocket.

81.13 Lights (front and rear)

Headlamps, if not removed, shall be at least taped in a crisscross pattern to hold potential broken glass.

81.14 Mirrors

'Stand alone' type rear view mirrors shall be removed.

Mirrors, when not removed and incorporated into a fairing (bodywork), shall be taped.

81.15 Safety and locking devices

Engine and transmission oil lines, when containing positive pressure shall have swaged connectors. All fluid drain plugs shall be 'safety' wired.

Axle fasteners shall have a secondary functional anti-rotation or locking device. Washers may not be used for this purpose.

81.16 Tyres

The minimum tread depth for tyres with ratings of under 320 km/h (200 mph) is 2.5 mm.

Tyres that exhibit cords shall be prohibited.

All vehicle tyres (tubeless included) are required to have metal valve caps and metal valve stems.

Angled valve stems may be safety wired to resist centrifugal force deflection.

Participants using under-rated tyres may be excluded from competition.

The rider has the sole responsibility of inspecting the condition of the tyres before and after each run.

81.17 'NON STREAMLINED' Vehicles (Open Class)

Any type of aerodynamic aid or streamlining device is prohibited in this class.

Objects are considered 'streamlined' if they control the airflow around the motorcycle and/or rider or are placed to reduce aerodynamic drag.

81.18 'PARTIALLY STREAMLINED' Vehicles

Aerodynamic aids or streamlining devices are allowed with the following restrictions:

When viewed from either side, at least 180° of the lower part of the front tyre and wheel shall remain visible and a continuous section (min 135°) of the lower/rear half of the rear wheel shall always remain visible.

The rider, when in racing position, shall be completely visible from either side of the motorcycle and from above, without having to look through any material. Hands may be hidden when viewed from above.

Front and rear streamlining shall each have a minimum of three (3) mounting points.

81.19 STREAMLINED (Special Construction Vehicles, or 'Streamliners')

In order for a vehicle to be defined as a 'Streamliner':

The rider shall be inside an enclosed compartment. A firewall shall separate the rider from the engine compartment. A substantial roll bar or equivalent structure shall be securely fitted to a part of the frame.

Full streamlining, including those which extend beyond the wheels, is allowed. With the following exceptions:

No movable external control surfaces are allowed. No airfoils or spoilers are allowed if not integrated in the basic streamlined form. Only one (1) single rear fixed vertical fin is allowed

The vehicle, unloaded, must be capable of being leaned at an angle of 20° degrees (minimum) from the vertical position without touching the ground, other than the tyres.

81.19.01 Numbers and background

Each vehicle shall have numbers and letters. Numbers and letters shall be of one solid colour and in contrast with the background area colour.

Minimum size of the background area: 250 mm x 300 mm (10" x 12")

Minimum size for the numbers: 200 mm x 30 mm (8" x 1-1/4")

81.19.02 Frame construction

The constructor of a frame made of other than high grade steel shall submit frame structure information that documents the durability of the structure. Constructors may be asked to provide test certificates on components and on stress examination as required.

81.19.03 Canopy / Windshield

The canopy windshield shall be constructed of shatterproof plastic and provide a minimum of 120° of forward horizontal vision when the rider is in place.

The canopy assembly shall be removable from the inside or the outside without the use of any tools.

The outside of the Streamliner shall have clear markings with specific instructions for canopy removal.

The rider shall be able to exit the cockpit of the Streamliner, be it up-right or on its side, without any outside assistance.

81.19.04 External operation and emergency controls

All exterior access, operation points and all controls required for 'Main Ignition Shut-off' and for 'Canopy Release', shall be marked and clearly visible on the exterior of the Streamliner body.

81.19.05 Batteries

Two emergency battery cut-out switches are mandatory; one inside within reach of the rider and one outside the Streamliner.

All batteries shall be securely mounted. Batteries mounted in the rider's compartment shall be on the inside of an acid spill-proof and sealed box.

'Tie'-down straps or elastic cords shall not be used to hold batteries in place.

81.19.06 Roll bars

A Streamliner shall have a minimum of one (1) roll bar. It is recommended that Streamliners have a minimum of two (2) roll bars: one in front of the rider's head and one behind the rider's head.

Roll bars should have a minimum outside diameter of 31.5 mm (1 1/4"), a wall thickness of at least 2.2 mm (.090") and a steel cap of at least of 2.2 mm (.090") thick.

The roll bar shall surround a minimum of 140° of the upper part of the rider's head. The roll bar shall be braced on each side of the main frame.

Whilst wearing a helmet, there shall not be more than 5 cm (2") head movement within the roll bar. Fireproof padding may be added.

Any other roll cage design shall be tested for strength and have had a finite element study to prove this.

81.19.07 Rider's compartment / Cockpit

The roll cage and all interior panels shall prevent the rider's arms and/or legs from extending outside the rider's compartment. All mounting tabs, brackets and protrusions shall be free of sharp edges.

The rider's compartment shall have an outside air source.

All riders (with complete attire) shall demonstrate the ability to exit the compartment within 30 seconds without assistance.

81.19.08 Fuel shut-off

Streamliners shall have a positive fuel shut-off safety valve which can be activated from the rider's compartment.

81.19.09 Engine compartments

Engine and fuel compartments shall be sealed off from the rider with at least one firewall.

Engine and fuel compartments shall have at least one 25 mm (1") opening for drainage.

Wiring, steering linkage and controls shall be sealed through firewalls to avoid leakage into the rider's compartment.

81.19.10 Fuel containment

Fuel and oil tanks are not permitted inside the rider's compartment.

Fuel lines shall not run through the rider's compartment.

Fuel compartments shall have at least one 25 mm (1") opening for drainage.

81.19.11 Steering Mechanism

All parts of the steering mechanism, including links, rods and cables shall be able to move freely throughout the Streamliner body, including the firewall, without excessive play.

The steering assembly shall be directly and securely mounted to the frame.

All steering components shall use bolts of grade '5' quality minimum.

Welding on steering components shall be scrutinized and may be subject to x-ray certification.

The handlebar/steering assembly in the cockpit shall be mounted in such a way as to allow the rider to evacuate rapidly in an emergency situation.

Quick disconnects for handlebars are permitted.

81.19.12 Wheel protection

A bulkhead shall separate the rider from the front wheel.

The front wheel shall be shielded to protect the rider in case of a tyre failure.

Each tyre compartment shall be sealed to prevent any dust, salt, etc., from entering the driver's compartment.

81.19.13 Skids and other supports

Motorcycle Streamliners which use skids shall have a positive 'up' and 'down'-locking feature. These positions shall be made visible to the rider when seated in the cockpit.

Skids shall have a turned up front edge to prevent digging into the track surface and shall be raised to the up position as soon the Streamliner is rolling and has found stability.

81.19.14 Fire extinguishers

Fire extinguisher(s) shall be able to extinguish a fire in both rider and engine compartments.

The minimum capacity for fire extinguishers required onboard Streamliners shall be:

- for speeds up to 250 km/h (150 mph): 2 kg / 5lbs.
- for speeds exceeding 250 km/h (150 mph): 5 kg / 10lbs.

A manual fire extinguisher control system is mandatory and shall be within reach of the rider. Once engaged, it shall stay activated and be capable of extinguishing a fire.

The fire extinguishing control system shall also be able to be activated from the exterior of the Streamliner.

Automatic systems with a heat-sensing switch shall also have a manual control to override the fire extinguishing system.

Extinguishing agents shall be approved and certified for use in confined spaces.

All nozzles, lines, and valves shall be securely mounted. Hose clamps may not be used to fix these parts.

The installation of extinguishers shall be made according to the manufacturer's specifications. All fire extinguishing equipment certifications/inspection tags shall not be older than twelve months.

81.19.15 Parachutes

All Streamliners are required to have one functional parachute.

Where speeds over 400 km/h (250 mph) are to be reached, two (2) parachutes are required: one low speed parachute and one high speed parachute.

All parachutes shall be mounted on a part of the frame structure.

Automatic parachute deployment actuators are required for:

- Streamliners with an 'open' tail section: the parachute shall automatically deploy at 45° from upright.

- Streamliners with a closed tail section: the parachute shall automatically deploy at 40° from upright.

The rider shall be able to activate the parachute without his hands leaving the steering mechanism.

Parachute system operations shall be inspected for rider-activated deployment and automatic deployment at left and right angles.

Any failure in parachute operation or handling problems associated with parachute operation will require a re-inspection by the Technical Stewards.

81.19.16 Helmets and clothing

Helmets shall meet current FIM Helmet Standards for Road Racing.

A neck brace is required.

Helmet liners, neck-brace and helmet balaclavas shall be made with fire-retardant materials (i.e. NOMEX®).

The minimum standard for the riders' suits, gloves, and boots is SFI 3-2A/15.

81.19.17 Seat belts and other harness systems

A 'five point' seat belt/harness system is required to hold the rider's body.

Shoulder and seat belts shall be installed according to the manufacturers' specifications. A label shall show the date of manufacture and the date of inspection (not older than 5 years).

Shoulder and seat belts shall be attached to a part of the main frame structure. The harness mounting points on the frame shall be directly in line with the direction of pull. Bolts cannot be mounted by pushing through the webbing of the harness. Belt and harness mounting hardware shall not be exposed.

Shoulder harnesses shall not be able to slip off the rider's shoulders when seated in position with all belts fastened and adjusted.

Belt/harness systems with latch release shall have a cover over the latch release which prevents arm restraints from activating the latch assembly inadvertently.

Arm restraints are mandatory with anchor points on the harness assembly and secured to the frame.

Leg restraints are compulsory for any Streamliner where it is possible for the rider's legs to be outside the rider's compartment from any position while the Streamliner is rolling.

Net type leg restraints are acceptable as long as the net allows the rider to exit the Streamliner without assistance.

81.19.18 Test runs

All new Streamliners shall have made a minimum of three successful trial runs to demonstrate stability and control prior to a record attempt.

The mandatory runs shall be at speeds which represent a percentage of the respective class record or of the Streamliners' design speed to be attained:

Run #1 shall not be more than 50% of the intended class-speed record.

Run #2 shall not be more than 70% of the intended class-speed record.

Run #3 shall not be more than 85% of the intended class-speed record.

Any rider exceeding the speed increment may be subjected to disciplinary action.

Each test run will included parachute deployment and a demonstration of the total control by the rider of the Streamliner in operation.

Trial runs shall be closely observed by FMN and/or FIM representatives prior to advancing to the next speed increment.

81.19.19 Rules on assisted starting for Streamliners

In addition to any on-board starting devices, a 'push' type or 'tow'-start method is allowed, if deemed safe by the FIM Steward.

The maximum distance for an assisted start is 400 metres, counting from the starting point. No assisted starts shall take place within 800 meter (1/2 mile) from the first timing mark.

Once the '400' metre marker has been passed by the streamliner, no assistance vehicle is permitted to be on the track during the record attempt.

A flag (min 30 cm x 30 cm / 12"x 12") attached to the middle of the towline, shall be visible to the rider.

81.19.20 Support crew

The Streamliner support crew shall present their pre-run checklist and must present it to the Technical Stewards at the initial vehicle inspection.

2.82 TECHNICAL RULES FOR SOLAR OR ELECTRICAL POWERED VEHICLES

Introduction

Electric propulsion motorcycles are Category III vehicles with 2 wheels having traction on one wheel, driven by a motor (or motors) operated by means of electricity only. Wheels must normally be in contact with the ground.

In the races organised by FIA, with the agreement of FIM, the solar and/or electrically powered motorcycles are classified in the Category IV of the FIA-FIM Alternative Energies Commission regulations under the name of "Solar and/or electrically powered lightweight vehicles".

82.01 Groups and classes

82.01.1 Solar electrically powered vehicles

Vehicles propelled by the direct or indirect conversion of solar energy.

82.01.2 Electrically powered vehicles

Vehicles which use electric energy stored on board and which is not necessary or essentially propelled by the conversion of solar energy.

82.01.3 Weight classes

The solar and/or electrically powered motorcycles are divided into two weight classes as follows:

- CLASS 1: Motorcycles up to 150 kg. Pedal drive is permitted in exceptional circumstances at the organiser's discretion.
- CLASS 2: Motorcycles over 150 kg and up to 300 kg. Pedal drive is not permitted.

82.02 Vehicle technical passport

In the races promoted by FIA and under Alternative Energies Commission regulations, all motorcycles must receive an homologation by FIA through a technical passport.

The passport contains an exact description of the vehicle along with all the data necessary for the identification of the model concerned. The technical passport must contain drawings of the power circuit of the vehicle and its location in it (see article 1.4.6. of FIA technical rules). The technical passport must be presented at Technical Control.

The organiser has the right to refuse or allow a competitor to take part in the meeting if the said competitor fails to submit the technical passport of the motorcycle. It shall be the responsibility of the competitor to obtain the technical passport for the vehicle, along with any amendments or addenda to the said form, from the FIA.

82.03 Vehicle road licence

In the races promoted by FIA and under Alternative Energies Commission regulations (races on closed track promoted by FMNs or FIM excluded), motorcycles must possess an official national licence (individual testing or vehicle type testing), or must at least fulfil all the conditions necessary for obtaining a national or state licence of the country where the meeting is taking place.

82.04 IEC Publications (Guidelines)

If no specific rule exists in these Technical Appendices, the relevant IEC Standard (International Electro-technical Commission Standard) or Report has to be observed. These IEC Publications, which are available from the national representative or member of the IEC, are the following:

- **IEC 529** Degrees of protection provided by enclosures (IP Code).
- **IEC 718** Electrical equipment for the supply of energy to battery powered road vehicles (This International Standard applies to the charging of batteries forelectrical road vehicles. The aspects covered include battery chargers, their effects upon the electricity supply system and the connection of their batteries to the power supply source).
- **IEC 783** Wiring and connectors for the road vehicles
(This report is applicable to cabling and connectors used in battery electric road vehicles).
- **IEC 784** Instruments for electric road vehicles
(This report is applicable to the instrumentation of electric road vehicles, excluding those items which are used as instrumentation in vehicles with internal combustion engines).
- **IEC 785** Rotating machines for electric road vehicles
(This report is applicable to rotating electrical machines [traction motors and auxiliary motors] of electric road vehicles including hybrids, which are fed from the main traction batteries).
- **IEC786** Controllers for electric road vehicles
(This report is applicable to the equipment on electric vehicles which control the rate of energy transfer between the traction battery or batteries and the motor or motors).

82.05 General Prescription

All motorcycles must comply in every respect with all the requirements for road racing as specified in the Road Racing Technical Rules, unless not specifically reported in this set of rules.

82.06 Minimum Weight

This is the actual minimum weight of the empty motorcycle (without any of the supporting tools used during a meeting). All the liquid tanks (lubrication, cooling, braking) must be at their normal level defined by the manufacturer.

82.07 Dimensions

The maximum length must not exceed the 5.0 meters and the maximum width must not exceed the 1,2 meters.

82.08 Ballast

It is permitted to make up the weight by using one or several ballast, provided that they are strong and unitary blocks, fixed by means of tools and able to have seals affixed to them by the Technical Stewards. An accumulator cannot be used as ballast.

82.09 Engine

Only electric motors, of various designs, may be used. Other types of motors are expressly prohibited. A label made from durable material must be affixed in an easily accessible location and must permanently display the name of the manufacturer, the motor number, the nominal power output, the type of motor, the nominal voltage and the IP protection.

82.10 Transmission

The propulsion of the motorcycles must be effected via the wheel (or the wheels if three-wheels). In race conditions, the vehicle must be capable of effecting a standing start on an uphill slope with a gradient of 18%.

82.11 Chassis / Frame

The use of titanium in the construction of the chassis/frame or any important structure is forbidden. The use of titanium alloy nuts and bolts is allowed.

82.12 Wheels and Tyres

A wheel consists of the flange and the rim. A complete wheel is defined as the flange, rim and tyre. The wheels must be equipped with pneumatic tyres.

Only wheels and tyres which have already been approved for public road use may be used.

Heating of tyres by any method or their treatment by any chemical substance is prohibited.

For circuit races, motorcycles will be able to use special tyres, but these must be made by a recognised manufacturer.

82.13 Chassis number

A unique number must be embossed visibly on an easily accessible part of the chassis. In addition, a label made from durable material must be affixed in a easily accessible location and must permanently display the name of the manufacturer, the make of the vehicle and its chassis number.

82.14 Bodywork

Bodywork externally: all the entirely suspended parts of the vehicle licked by the air-stream.

All parts of the bodywork must be fully finished and manufactured with due care.

82.15 Lighting

All lighting equipment and head must comply with the legal requirements of the country in which the meeting is taking place, or with the International Conventions on road traffic. Only lighting equipment bearing the EU test mark or a national equivalent may be used.

The lighting equipment (if it exists) must be in working order throughout the duration of the meeting, even if the entire meeting is run in daylight.

Throughout the duration of the meeting, the on-board accumulator and/or circuit must have a voltage of 13 volts, with a tolerance of +/- 1 volt, for a 12 volt lighting installation. For any other installation, the voltage must be appropriate to that of the lighting installation. This must be the case when the vehicle's accumulator is partially or totally discharged.

In race, motorcycles can remove or must tape all lights.

82.16 Conformity with the appendices

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

82.17 Electrical equipment

82.17.1 Accumulator (storage battery)

The accumulator must be defined as any equipment used for the intermediate storage of electrical energy supplied by the solar generator or by the charging unit. The accumulator must be checked and sealed at Technical Control. The Technical Stewards may permit, that the accumulator may be changed (partially or as a whole) during the meeting, under the control of the Chief Technical Steward.

Any on-board accumulator is considered as an integral part of the vehicle's accumulator. All on-board electrical equipment, unless consisting of items originally powered by dry batteries, small accumulator or their own solar cells, must receive its energy supply from the vehicle's official accumulator (this also applies to communication's equipment).

The following accumulators are permitted:

- Lead-Acid
- Nickel-Cadmium
- Nickel-Iron
- Zinc-Bromium
- Nickel-Metal-Hydrate
- Lithium

Request for additions to this list must be sent to the Commission 3 months in advance, giving full details of chemistry. A fee may be required.

Accumulators, more than 5% of whose weight consists of gold, silver or platinum, are not allowed.

82.17.2 Operating voltage

The voltage is limited to 1000 volts between two points (See Art 82 for safety provisions).

82.17.3 Energy capacity of the accumulator

The capacity C1 is the capacity of the accumulator in Ah at a battery temperature of 25°C and for a complete battery discharge within a maximum of 1 hour.

The capacity C5 is the capacity of the accumulator in Ah at a battery temperature of 25°C and for a complete battery discharge within a maximum of 5 hours.

The capacity C20 is the capacity of the accumulator in Ah at a battery temperature of 25°C and for a complete battery discharge within a maximum of 20 hours.

The energy is calculated as the result of the product of the nominal voltage of the vehicle's accumulator in volts and the capacity C5 in Ah. The energy capacity must be expressed in kWh.

82.17.4 Charging the accumulator

The vehicle's accumulators must be charged at the times and locations determined by the organiser of the meeting. Vehicles must recharge their accumulators at the main recharging station ("grid compounding station").

By day between 08.00 a.m. and 08.00 p.m., the minimum charging time will be 1 hour and the maximum charging 4 hours.

By night, between 08.00 p.m. and 08.00 a.m., the minimum charging time will be 8 hours.

82.17.5 Measurement conditions of the maximum voltage

The maximum voltage has to be measured at least 15 minutes after the end of charging of the accumulator.

82.17.6 Energy recovery

It is permitted to recover energy generated by the kinetic energy of the vehicle. It is not permitted to have stored energy in such devices before the start of the meeting.

82.17.7 Use of outside energy sources

The use of any other source of energy in any form whatsoever with the aim of improving the performance of the vehicle is strictly prohibited. The cooling system must be driven only by the vehicle's official accumulator.

82.18 Solar generator

82.18.1 Solar cell

A solar cell is a photo-voltaic element which is used to convert solar radiation into electrical energy. All types of solar cells may be used.

82.18.2 Module

A module consists of several solar cells put together to make one mechanical unit.

82.18.3 Solar generator

A solar generator is the interconnection of modules made up of any number of solar cells. Throughout the duration of the meeting, the size of the solar generator must be neither increased, nor reduced.

In the event of a defect, individual modules may be replaced. It is also permitted to optimise, by electronic means, the operation point of the solar generator.

The solar generator must be firmly fixed to the competing motorcycle, and installed in such a way that its position in relation to the motorcycle cannot be changed whilst the vehicle is in motion. The entire active surface of the solar generator must be exposed to the sun when the motorcycle is in motion.

To charge the accumulators while the vehicle is at standstill, the position of the solar generator's surface may be altered or the motorcycle may be jacked up.

Between the solar generator and the accumulator, two measuring points (plus and minus polarity) must be inserted, allowing the measurement of the total solar generator output.

During the measurement, the entire generator must be electrically separated from the remaining vehicle circuit.

The solar generator may be used to generate electricity for the competing motorcycles as follows:

Two wheel vehicles may carry a solar generator of maximum output 120 Wp. The stationary solar generator system must have a power output of at least 200 Wp.

82.18.4 Measurements

All data and measurements and the calculations based upon them for solar generators and other parts of the electrical equipment must be valid at an ambient temperature of 25°C.

When the solar generator power output is to be converted from ambient temperature to cell temperature, the following operation must be applied:

The power at an ambient temperature of 25°C, multiplied by 1.17, equals the power of generator for a cell temperature of 25°C.

The tolerance for measuring the electrical circuits is +/- 5%. Maximum power point (MPP): This is the maximum power for a solar radiation of 1 kW/m² at the level of the solar generator.

82.19 Certificate of access to solar energy recharging station

At Technical Control, all motorcycles must present an official certificate for the possession of, or the right to obtain, power from such a station (grid compounding station).

82.20 Charging units

Charging units are not compulsory on board solar and/or electrical motorcycles (FIA Category IV).

82.21 Charging from the mains

For each vehicle designed for mains power charging, there must be an officially assigned mains power connection (socket) at the grid compounding station. The socket and the plug of the charging unit cable of the vehicle must

be marked during the meeting with the starting number of the motorcycle. Schuko-sockets (German - system) or IEC sockets will normally be used.

The organiser must publish the kind of sockets in the latest communication.

Each socket must be protected by a corresponding automatic fuse (see current of the charging unit) and an automatic ground fault current interrupter (FI) with 0,03 Ampere release current.

During possible random checks, the mains voltage and current consumption will be measured with a volt- and an ampere-meter at the official socket of the motorcycle at the grid compounding station over a period of 1 to 2 minutes.

In cases where the effective (root-mean-square) mains current ("I eff") of the charging unit exceeds the following maximum values, measured at the official socket of the vehicle at the grid compounding station, the competitor shall be fined.

Nominal mains voltage	Effective mains current (I eff)
100 V to 130 V	32 Ampere
200 V to 250 V	16 Ampere

The charging energy obtained from the grid compounding station must be measured for rallies and may be measured for races by the organiser using energy meters (counter). An official is required to monitor the grid compounding station continuously.

Where a motorcycle's accumulator is charged by means of a socket other than the official assigned socket or by means of a socket belonging to another competitor, the guilty competitor shall be excluded.

82.22 Electrical drawings

One electrical drawing (A4 dimension) of all essential power circuits of the electrical equipment of the motorcycle is compulsory.

This circuit drawing must contain accumulators, fuses, circuit breakers, power switches, capacitors, motor controller or chopper, motor(s), charging units and junction cables.

All components in the circuit drawing must be labelled with their detailed electrical specifications. A second drawing of the vehicle in plan form (from above) must show the location of these components within the vehicle.

Both said electrical drawings are an integral part of the vehicle technical passport.

82.23 Safety equipment

82.23.1 Dangerous construction

Any motorcycle whose construction is deemed to be dangerous must be excluded by the Technical Stewards of the meeting.

82.23.2 Optional devices

If any device is optional, it must be fitted in a way that complies with the appendices.

82.23.3 Cables, lines and electric equipment

Brake lines, electrical cables and electrical equipment must be protected against any risk of damages (stones, corrosion, mechanical failure, etc.) when fitted outside the vehicle. If the series production fitting is retained, no additional protection is necessary.

82.23.4 Brakes

Art. 01.41 of the Road Racing Technical Rules is valid in general. In general, minimum mean braking deceleration must be:

- Both brakes together: 4.5 m/s^2
- One brake alone: 2.5 m/s^2

82.23.5 Rear view

On open road, the rear view must be ensured by means of two mirrors. During races on closed tracks, the rear mirrors must be taken off.

82.23.6 Electrical safety

All vehicles must comply exactly with the regulations of the national authorities with regard to the standardisation and control of low-voltage electrical installations (see Art. 82.14.2 regarding operating voltage).

Likewise, the regulations of the IEC (International Electro-technical Commission Standard) (e.g. IEC 529,718,783,784,785 and 786), or of the national representative or member of the IEC (e.g. VDE/SEV) must be observed.

In no part of electrical equipment may there be voltages of more than 500 volt referred to earth and system ground respectively (system ground is the ground of the electrical equipment). Between system ground and chassis or body of the vehicle no more than 50 volts are allowed.

The voltage is limited to 1000 volt between two points. In cases where the voltage of the power circuit exceeds 42 volt, this power circuit must be separated from the onboard circuit by an adequate insulator.

Symbols warning of 'High Voltage' must be displayed on or near the electrical equipment protective covers; the symbol must comprise a black flash of lightning inside a yellow triangle with a black border. The sides of the triangle must measure at least 12 cm.

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

All parts of the electrical equipment must be protected using at least IP 44 type protection (dust proof and splash proof). However, it is recommended that IP 55 type protection be used (fully dust - and splash proof) (See e.g. IEC 529 – art. 4.2).

82.23.7 General circuit breaker – 'Emergency Stop'

The general circuit must include a red button - the Emergency Stop Button - and a yellow disc of at least 8 cm in diameter reading 'Emergency' in red or black letters.

When seated in a normal riding position, the rider must be capable of interrupting all electrical transmission between the accumulators and the energy consumers by means of a spark-proof general circuit breaker - the Emergency Stop Button - situated in front of him. This button must be located in such a way that it can be also operated from outside the vehicle.

In order to prevent contact melting of the general circuit breaker its [$I^2 t$] (ampere square seconds characteristics, representing heat energy dissipated on the breaker contacts during switching) must be sufficient to guarantee proper operation of the circuit breaker, even under surge current conditions, in particular those occurring during the connection of the accumulator to the power plug.

82.23.8 Fuses (over-current trip switches)

An over-current trip 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 and circuit breakers (but never the motor circuit breaker) count as over-current trips. Extra fast electronic circuit fuses and fast fuses are appropriate. The fuses must be in an easily accessible location and as close as possible to the accumulator at both polarities.

All electrical cables inside the motorcycle must be protected by means of over currents trips rated according to the diameter of the individual conductors. Over-current trips must under no circumstances replace the circuit breaker (Emergency Stop Button).

82.23.9 General electric 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.

82.23.10 Insulation resistance

Every part of the electrical equipment must have a minimum insulation resistance between all live components and earth.

- For equipment with up to 300 volt to earth, the insulation resistance must reach the following value: 250 k Ohms.
- For equipment with more than 300 volt to earth, the insulation resistance must reach the following value: 500 k Ohms.

The measurement of the insulation resistance must be carried out using a d.c. voltage of at least 100 volt.

82.23.11 Dielectric strength

All electrical equipment of the vehicle conducting electrically must fulfil the following conditions:

With regard to the dielectric strength, a distinction must be made between material with light, normal or reinforced insulation.

Normal insulation is insulation which can withstand a test voltage of at least 2000 volt at 50 hertz for a period of one minute. It must only be used for electrical circuits with a nominal voltage not exceeding 500 volt.

Reinforced insulation is insulation which can withstand a test voltage of at least 4000 volt at 50 hertz for a period of one minute. It must only be used for components with a nominal voltage not exceeding 1000 volt.

Light insulation must not be used (except for the on board circuit). All electrically live parts must be protected against accidental contact. Insulating material not having sufficient mechanical resistance, i.e. paint coating, enamel, oxides, fibre coatings (soaked or not) or insulating tapes are not accepted.

All electrically conducting non live parts must be connected with the motorcycle ground.

82.23.12 Capacitors

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

82.23.13 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 body using metal clamps with an insulating covering, fixed by bolts and nuts (bolts with a diameter of at least 10 mm).

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 accumulator from the rider. Each accumulator box must include an air intake with its exit.

82.23.14 Horn

All vehicles must be fitted with a homologated acoustic horn, capable of generating an uninterrupted sound of 90 dB(A).

82.23.15 Speedometer

Motorcycles running on open road must be fitted with a speedometer which must be situated within the driver's field of vision. The indicated speed must not be less than the actual speed of the vehicle.

2.83 TECHNICAL RULES FOR DRAG RACING MOTORCYCLES

83.01 GENERAL CONSTRUCTION

83.01.1 Brakes

Motorcycles must be equipped with two independent brakes, working on two wheels. Disc brake minimum diameter 175 mm, drum brake minimum diameter 150 mm. Motorcycles over 500 cc must have front disc brake.

Minimum 250 x 5 mm for single disc. Minimum 220 x 5 mm for dual discs.

83.01.2 Wheels

The motorcycle must be equipped with a front wheel made for a motorcycle. The rear rim should not be more than 50 mm narrower than contact surface of rear tyre. The minimum front rim should be WM 1 x 16".

83.01.3 Tyres and Tubes

Tyres should be slick type, or have a minimum tread depth of 2 mm. Motorcycles with top speed exceeding 200 km/h should have front tyres with at least 'V'-rating,

or be of road racing type. Tubes for rear tyres should be of natural rubber, racing type. (See also Art. 49.06.10). Metal dust caps with rubber gasket must be fitted.

83.01.4 Frames

Stress-bearing tubes in the frame should be at least 20 x 1,5 mm. If a single backbone tube is used, it should be at least 50 mm. The engine should not be a stressed part of the frame. The engine should be located so that a safe weight distribution is achieved.

83.01.5 Ground Clearance

Minimum ground clearance with rider in position and 0.5 bar tyre pressure is 50 mm. It must be possible to lean the motorcycle 12 degrees to each side from the upright position, without any part of the motorcycle, except the wheels, touching the ground.

83.01.6 Front Forks

The front fork must be of the hydraulic type. Fork tubes may not extend more than 30 mm above the top fork crown. Minimum stroke: 50 mm. No part of the motorcycle, except the wheels, may touch the ground with the forks bottomed.

Top fork tubes must have a minimum diameter of: 350-750 cc motorcycles, 28 mm, 750 cc and larger, 32 mm.

83.01.7 Handlebars - See Art. 01.33

83.01.8 Control Levers - See Art. 01.35

83.01.9 Streamlining

Streamlining must be made so the rider can jump on and off the motorcycle without removing any parts of it. It must not create difficulties for the rider to control the motorcycle.

83.01.10 Seats

Seats must be constructed to give the rider a safe riding position, and must not be dangerously uncomfortable.

83.01.11 Wheeliebars

Wheeliebars are permitted, and strongly recommended in Competition Bike, Funny Bike and Pro Stock Bike.

83.01.12 Protective Covers

All open transmissions must have a cover to prevent accidental contact with rotating parts. Mechanically driven compressors must have a cover of at least 3 mm steel, 5

mm aluminium or approved explosion-proof blanket. Outboard mounted clutches must have a cover of at least 3 mm aluminium, or 1 mm steel.

83.01.13 Compressors

Mechanically driven compressors, on motorcycles running on nitromethane, must have a "pop-off valve", rubber connection to the intake manifold or some other device to protect it from explosions.

83.01.14 Fuel Tanks

Fuel tank must be securely mounted to the frame.

83.01.15 Fuel Systems

All motorcycles must have operational fuel shut-off valves. All fuel lines must be locked or wired. Pump driven fuel injection systems must have high pressure tubes such as aeroquip or similar. Motorcycles running other fuels than gasoline or alcohol, and engines which cannot be stopped with the ignition must have a fast acting fuel shut-off valve. It must be positioned so the rider can operate it from the handlebar with both hands on the handlebar.

It must also be designed to shut off the fuel to the engine if the rider leaves the motorcycle, and must work in any direction. The shut-off valve must always be connected to the rider by a cord of not more than one metre extended length when starting the engine.

83.01.16 Carburettors and Fuel Injection

All motorcycles must have the throttle controlled by a hand operated twist grip, incorporating a positive acting spring attached directly to the carburettor mechanism.

The throttle must close automatically upon releasing the twist grip. For any motorcycle running on nitromethane fuel, it is mandatory to have a positive return cable as well as a return spring, i.e. a push-pull twist grip.

Motorcycles using automatic clutches must be fitted with a safety device that will prevent the throttle opening whilst the assistant pushes the machine back to the starting line after the burn out.

83.01.17 Kill Switch

The motorcycle must be equipped with an electrical contact which disconnects all electricity to the engine (and nitrous oxide system, if used) if the rider should lose control of the motorcycle. This must be connected to the rider whenever the engine is started.

83.01.18 Oil Catch Tanks

Where an oil breather pipe is fitted, the outlet must discharge into a catch tank. (See also Arts. 56.02 and 56.04). The catch tank capacity being of 0.5 litre for atmospheric engines and 2 litres for supercharged engines.

83.01.19 Safety Wiring

All oil drain plugs and nuts and bolts that will cause an instant oil leak if they come lose, must be safety-wired. Other nuts and bolts must be secured by any locking agents.

83.01.20 Chain

Chain should be of closed type without master link, or the master link should be safety-wired.

83.01.21 Exhaust Pipes

Exhaust pipes may not extend behind the rear wheel, and should be directed away from the rider, gas tank and tyres. Flexible pipes are not allowed.

83.01.22 Gear Change

The gear change mechanism must be constructed so it can be operated by the rider with both hands on the handlebar.

83.01.23 Ballast

The ballast must be securely fastened to the frame or the engine.

83.01.24 Starting

All motorcycles must be self-starting. Rollers or push-start are not allowed.

A portable starting device which operates with the motorcycle clutch, working as a neutral, with the drive disengaged, is permitted.

83.01.25 Centrifugal Clutches

Motorcycles with engine driven centrifugal clutches may not be run in the pits unless the rear wheel is elevated off the ground on a strong, safe support stand.

83.01.26 Car Engines

Car engines are only allowed if the motorcycle is constructed so the weight and weight distribution is similar to a motorcycle with a motorcycle engine.

83.01.27 Computers

Computers may be used, during practice, for information gathering only. All electronic systems, including electronically assisted traction control system, apart

from the ignition and injection, are strictly forbidden during the race. Throttle operation, shifting, clutch actuation, and braking, etc. are to be solely under the control of the rider.

83.01.28 Number plates - See Art. 2.3.20

83.02 Additional Specifications for PRO BIKES

83.02.1 Definition

This class will be for standard appearance (factory produced motorcycles available to the general public, modified for drag racing) gasoline burning motorcycles.

83.02.2 Frames

After market frames are permitted. Steering head geometry, trail and wheel base may be changed if done in a safe and professional manner. Steering head angle may not be less than standard rake or more than 40 degrees maximum rake. Maximum wheel base is 1780 mm, measured from the most extendible point on the swing arm.

83.02.3 Front Suspension

Minimum usable travel: 40 mm, inner tube diameter minimum 34 mm. Replacement front ends are allowed. A steering dampener is recommended and may not act as a fork stop

83.02.4 Brakes

Hydraulic type, minimum front brake diameter: dual 200 mm X 5 mm width; single 250 mm diameter X 5 mm

83.02.5 Controls

All handlebar controls must remain in standard location. Replacement bars are permitted. Welded aluminium bars are prohibited. Welded steel or chrome-moly extensions are allowed but cannot extend more than 100 mm from standard location. Minimum handlebar width is 500 mm.

Brake pedals and foot pegs may be rear set, but must be at least 380 mm in front of rear axle. Foot pegs must be rounded with a solid spherical radius of not less than 8 mm.

83.02.6 Body

All main body parts must have standard appearance and shape and cannot be mixed between models. Body parts must have originally been produced with a motorcycle, with an engine capacity of 750 cc or larger.

Replacement parts must have retained the shape of the standard parts they replace. Lower portion of the fairing may be modified for exhaust pipe clearance or removed completely.

The body must have a simulated head- and taillight of the same configuration and design from the specific body it replaces. Additional holes for air passage are prohibited.

All aerodynamic devices are prohibited unless originally incorporated in the same OEM of that year.

The windscreen may be trimmed.

83.02.7 Seats

A custom seat with an additional support to prevent the rider from sliding to the rear is permitted. The seat/tail section and rear fender may be incorporated in one unit. Minimum seat height from lowest point of seat to ground is 500 mm.

83.02.8 Wheels

Replacement wheels are permitted front and rear. Front: 16" minimum, 19" maximum, or as standard. Rear: 15" minimum.

83.02.9 Tyres

Front tyre minimum width 2.75". Maximum rear tyre (rubber on ground) 10

83.02.10 Wheeliebar

Maximum length of 3,300 mm from centre of front axle to centre of wheeliebar axle, measured in a straight line from axle to axle. Wheels must be non metallic.

83.02.11 Engine

Manufacturer of the engine will determine the make of the bike. The engine must be of a type specifically designed and manufactured for a production motorcycle. The original manufacturer's crankshaft and its standard stroke must be used. Any modifications to the main engine cases are not allowed, except for repair purposes. Two cylinder and two stroke engine crank and cases may be changed.

83.02.12 Cylinder head

Cylinder head casting must be manufactured by the same manufacturer of the main engine cases. The original cylinder head casting can be modified.

83.02.13 Fuel Injection

Original Equipment Manufacturer (OEM) electronic fuel injection modifications are unlimited provided the injector bodies are OEM parts.

83.02.14 Ignition

Any ignition is allowed, including magnetos.

83.02.15 Fuel

Pump fuel or racing gasolene is permitted. As of 01.01.2001, fuel must comply with the specifications as written in Art. 01.63.

83.02.16 Weight Limits

Minimum weights of bike and rider equipped with:

2-valve DOHC	265 kg	max. 1500 cc
4 or 5 valve	265 kg	max. 1300 cc
4 or 5 valve	270 kg	max. 1350 cc
4 or 5 valve	280 kg	max. 1500 cc
2 cylinder / pushrod	250 kg	max. 2300 cc
2 cylinder	220 kg	max. 1000 cc
2-stroke	220 kg/n ^o allowed	max. 1000 cc

83.02.17 Transmission

Any transmission with a minimum of four forward and a maximum of six forward gears may be used. The transmission must be shifted from gear to gear manually or by air shifter. RPM or computer-shifted gear boxes are prohibited. The transmission must be contained within the standard crankcases, except for two cylinder or 2-stroke engines.

2.84 TECHNICAL RULES FOR SPRINTERS

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

84.01 Specification of vehicle

All machines must be Category II motorcycles and also comply with the following requirements.

84.02 Size of tyres

There is no restriction on the type or size of tyres to be used.

84.03 Mudguards

Mudguards are not compulsory.

84.04 Exhaust pipes

The end of the exhaust pipe or pipes may project beyond any part of the vehicle or its body work. Any provision for the discharge of waste or surplus oil must be so made that it does not inconvenience a following rider.

84.05 Superchargers

The use of superchargers is permitted (see Art. 2.2.2).

84.06 Handlebars

The minimum angle of rotation of the handlebars, each side of the centre-line mid-position must be 20°.

Whatever the position of the handlebars, it must not be possible for the front wheel to come into contact with any part of the streamlining.

It is compulsory to fit a stop or stops or other devices to ensure a minimum clearance of 30 mm between the handlebars and tank, when on full lock, to prevent the trapping of the rider's fingers.

84.07 Footrests

The footrests for the rider must be positioned to give easy access to any control pedal. The ends of the footrest must be rounded with a spherical radius of not less than 8 mm (see Art. 39).

84.08 Streamlining

Unless otherwise stated in the Supplementary Regulations, there is no restriction on the type of streamlining of a motorcycle, except that there must be a clearance of at least 20 mm between the streamlining and the extremities of the handlebars or other form of steering device, including any attachments thereto, whatever the position of the handlebars.

Should the streamlining totally enclose the rider and/or passenger, a fire wall must be installed between the engine and the rider and passenger and, a substantial roll bar must be securely fitted.

Any streamlining must be approved by the Technical Steward, before the motorcycle can be driven in any meeting or in the practice.

84.09 Additional Specifications for THREE WHEEL SPRINTERS

All vehicles in groups B1 and B2 shall comply with the following:

84.09.1 The three road wheels may be disposed to give either two or three tracks.

84.09.2 The wheel track, or lateral distance between tracks must be at least 800 mm.

84.09.3 The position of the engine is optional. The engine may drive one or more road wheels.

84.09.4 The provision of the coach work or streamlining is optional, but the vehicle must have accommodation for one or more passengers.

84.09.5 The passenger must always be completely protected from the road wheels and drive (both primary and final), either by mudguards or some other means.

84.09.6 A passenger or ballast must be carried in addition to the rider. If a passenger is replaced by ballast, the ballast must weight not less than 60 kg and must be securely affixed under the supervision of the Technical Steward.

2.85 TECHNICAL RULES FOR SCOOTERS AND AUTOMATIC 50 CC

85.01 General specifications

All vehicles must belong to Category I, Group A2 and Group A3, as specified in this Appendix and must comply with the following requirements.

A minimum quantity of 1000 units per year must be produced by the manufacturers and homologated for road use and conform to the Vienna Convention of 1968.

In case of conflict, the following specifications have priority.

85.02 Classes

- 50 cc Scooter
- Moped

85.03 Weight

- 50 cc Scooter: 65 kg
- Moped: 55 kg

85.04 Materials

It is forbidden to use the following materials: composite fibres, magnesium and titanium.

85.05 Engine

The original crankcase/swing-arm unit may be modified, but from parts normally available from commercial or retail sources. (They shall appear on a manufacturer's

range catalogue or an equipment retailer's catalogue, specialised in parts for competition).

Devices aimed at automatically modifying distribution diagrams of the engine are forbidden (fixed port and/or valve, inlet and exhaust timing only, if not installed on the originally homologated model, with the exception of the CDI).

85.06 Carburettor

The section of the carburettor (venturi) must be :

- 50 cc Scooter: Maximum \varnothing 19 mm
- Moped: Maximum \varnothing 19 mm

85.07 Cooling system

- 50 cc Scooter: Same system as original
- Moped: Free

85.08 Exhaust Pipe

See Arts. 2.3.6. Devices aimed at automatically modifying exhaust pipe volumes are forbidden.

85.09 Transmission

85.09.1 Transmissions must, in principle, be automatic. However, it is permitted to incorporate a manually operated transmission ratio locking device, except for scooters.

85.09.2 Manual clutch forbidden.

85.09.3 Exposed rotating parts of engine or transmission must be fitted with guards in such a manner that under no circumstances can the rider come into accidental contact. The original clutch basket must be reinforced with a steel ring.

85.10 Main frame

For Moped: Main frame and frame parts normally available from commercial or retail sources. They shall appear on the Moped manufacturer's range catalogue or adaptable spare parts lists available to the general public.

For Scooters: The original frame may be only reinforced, the engine/swing-arm mounting can be reinforced, and the rubber absorption blocks may be substituted by bearings.

85.11 Handlebar

The width of the handlebar shall be between 400 mm and 650 mm maximum.

85.12 Mudguards

Front mudguards are compulsory, if mounted on the originally homologated model.

85.12.1 Scooter supplementary

No other fairings or aerodynamic devices may be used, apart from the original streamlining or fairing.

85.13 Fairing/Body work

For scooters only, the headlight fairing, if originally mounted must turn with the handlebars.

85.14 Footrests

For safety reasons, pedals must be removed for competition racing. Footrests (except for Scooters) must be of the folding type or made from easily breakable material (plastic, etc.)

For scooters, the rider will drive with his feet on the platform for footrests (Art. 2.2 RRTR: category I - group A3).

85.15 Tyres

Only tyres normally available from commercial or retail sources as equipment for road use are permitted. They shall appear on the tyre manufacturer's range catalogue or tyre specification lists available to the general public.

For mopeds, the total width of the tyre, mounted, shall not be more than 3.00" or 80 mm.

For scooters, tyres must be as original and the maximum rim diameter must not exceed 400 mm. Tyre dimensions are free, but compatible with the ETRTO.

85.16 Ignition cut-out

An ignition cut-out must be 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. It 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 and strapped to the rider's right-hand wrist. A spiral cable (similar to that of a telephone wire) of maximum 1 m extended length is permitted. The handlebars and the forks cannot be used as part of the electrical circuit: compulsory for mopeds, recommended for scooters.

85.17 Noise

The maximum noise level is 95 dB/A, measured at 5,000 RPM. During the noise control, the moped must be placed on a stand. The rider shall keep his engine running and shall increase the engine speed until it reaches the RPM level indicated above.

85.18 Fuel and Oil Tank

Must remain as original.
