



2019 TECHNICAL REGULATIONS

# 2. TECHNICAL REGULATIONS

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

# 2.1 Introduction

# 2.1.1

The Championship is for motorcycles, i.e. vehicles with two wheels that make one track propelled only by an internal combustion engine, controlled by one rider.

# 2.1.2

Providing that the following Regulations are complied with, the constructors are free to be innovative with regard to design, materials and overall construction of the motorcycle.

# 2.1.3

In the Technical Regulations section, the term "Organiser" refers to the Championship Organiser and/or Promoter.

# 2.2 Classes

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The following classes will be accommodated, which will be designated by engine type:

<u>Moto3<sup>™</sup> Junior</u> (ref. Section 2.3)	Up	to	250cc.	4-stroke	only,	single	cylinder	only,
(161. Section 2.3)	max	kimu	um cylind	ler bore 8 <sup>-</sup>	1mm.			

European Moto2<sup>™</sup> (ref. Appendices 5 & 6) Moto2<sup>™</sup> Official Engine & Superstock 600 class also allowed.

European Talent Cup (ref. Appendix 7) HONDA NSF 250 (Type MR03) Official Motorcycle

# Appendix 7

## 5.6 EUROPEAN TALENT CUP TECHNICAL SPECIFICATIONS

The following rules are intended to permit limited changes to the homologated motorcycle in the interests of safety and improved competition.

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

# If a change to a part or system is not specifically allowed in any of the following articles, then it is forbidden

The only model homologated is Honda NSF 250 R (Type MR03). All machines must be normally aspirated. All motorcycles must comply in every respect with all the requirements for road racing as specified in these Technical Regulations, unless they are already equipped as such on the homologated model.

The appearance from both front, rear and the profile of the 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.

#### 5.6.1 Motorcycle specifications

All parts and systems not specifically mentioned in the following articles must remain as originally produced by the manufacturer for the homologated motorcycle

#### 5.6.2 Displacement capacities

The following engine configurations comprise this class:

Honda NSF 250 R 4-stroke 1 cylinder

The displacement capacity, bore and stroke (new), must remain at the homologated size.

#### 5.6.3 Minimum Weights

#### Refer also to Appendix 14

Minimum total weight of Motorcycle + Rider: 145 kg.

A limit to the amount of ballast that may fixed to the machines of the lightest riders will be imposed: the minimum total weight will not be applied if the motorcycle's weight is 96 kg or more.

At any time of the event, the weight of the whole machine (including the tank and its contents) and rider, must not be lower than the minimum weight.

There is no tolerance on this minimum weight.

During the final technical inspection at the end of the race, the selected motorcycles and riders will be weighed in the condition they finished the race, and the established weight limit must be met in this condition. Nothing may be added to the motorcycle. This includes all fluids.

During the practice and qualifying sessions, riders may be asked to submit their motorcycle to a weight control. In all cases the rider must comply with this request.

The use of ballast is allowed to stay over the minimum weight limit and may be required due to the handicap system. The use of ballast and weight handicap must be declared to the Technical Director at the preliminary checks.

#### 5.6.4 Numbers and number plates

The background colours and figures (numbers) for this class are white background with black numbers:

The sizes for all the front numbers are:	Minimum beight:	140 mm
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	Minimum width:	80 mm
	Minimum stroke:	20 mm
	Minimum space between numbers	10 mm
The size for all the side numbers is:	Minimum height:	120 mm
	Minimum width:	70 mm
	Minimum stroke:	25 mm
	Minimum space between numbers	10 mm

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

- a) once on the front, either in the centre of the fairing or slightly off to one side. The number must be centred on the white background with no advertising within 25mm in all directions.
- b) 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. The rear and side numbers are optional. The preferred location for the numbers on each side of the motorcycle is on the lower rear portion of the main fairing near the bottom. The number must be centred on the white background.
- c) The numbers must use sufficiently legible fonts.
- d) The background colour must be clearly visible around all edges of the number (including outline). Reflective or mirror type numbers are not permitted.
- e) Numbers cannot overlap.

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

#### 5.6.5 Fuel

Refer to Appendix 11

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 (refer to FIM World Championship Grand Prix Regulations for full specification).

Only fuel of the current year from the appointed fuel supplier is permitted. This fuel will conform to the FIM Grand Prix specification. Use of this fuel without any addition or alteration is mandatory during all event (free practices, qualifying practices, warm-up and races).

## 5.6.6 Tyres

Only tyres from the official tyre supplier may be used in this class and each team must sign a contract.

The tyre specifications available at each event will be determined by the Championship Promoter. Only homologated tyres in each event are permitted.

The maximum number of rear slick tyres allowed to use during the qualifying practices are TWO (2). Only the rear slick tyres need to be marked with a tyre sticker.

A maximum of ONE (1) rear "dry" tyre per race may be used. Only the race rear "dry" tyres shall be marked with a code differentiable qualifying tyres.

The rain tyres will not need to be marked with a tyre sticker and will not be considered in the total number of tyres available for use.

During the preliminary technical inspection, the adhesive stickers used for marking the tyres will be delivered to the teams. Each team will be responsible of marking their tyres.

The Technical Stewards may perform random controls during the qualifying practices. If the riders are shown a red flag during the practice or the race/s, the Permanent Race Direction is allowed to authorize the use of a supplementary tyre. All checked tyres must be easily identifiable with a colour marking or a numerical system.

In case of a technical problem, the Technical Director will take a decision about the problem.

# 5.6.7 Engine

a. At any time, the Technical Director, under the supervision of Race Direction, may request a team that the engine used during a Qualyfing Practice (QP) to be sealed and checked in a posterior inspection. This request must be submitted at any moment during the event and the team has the right to work in the engine maintenance until two (2) hours after this notification. This maintenance, the engine will be sealed.

# 5.6.7.1 Fuel Injection System

- a. The original homologated fuel injection system must be used without any modification.
- b. The fuel injectors must be stock and unaltered from the original specification and manufacture.
- c. Air Funnels must remain as originally produced by the manufacturer for the homologated motorcycle.
- d. Butterfly valves cannot be changed or modified.
- e. Air and air/fuel mixture can go to the combustion chamber exclusively through the throttle body butterflies.
- f. Electronically controlled throttle valves, known as 'ride-by-wire', cannot be used.

# 5.6.7.2 Cylinder Head

- a. Must be the originally fitted and homologated part with no modification allowed.
- b. The gaskets may be changed.
- c. The valves, valve seats, guides, springs, tappets, oil seals, shims, cotter valve, rocker arms, spring base and spring retainers must be as originally produced and in the original position as supplied by the manufacturer of the homologated motorcycle.
- d. Only normal maintenance interventions as prescribed by the Manufacturer in the service manual of the motorcycle are authorized.
- e. Valve spring shims are not allowed.

## 5.6.7.3 Camshafts

a. Must be the originally fitted and homologated part with no modification allowed.

## 5.6.7.4 Cam sprockets

- a. Must be the originally fitted and homologated part with no modification allowed.
- b. The cam chain and tensioner must remain as homologated.

## 5.6.7.5 Cylinder

Must be the originally fitted and homologated part with no modification except its height. The total height (included the cylinder and gasket) must be at least 0,2 mm. more than the standard motorcycle cylinder height.

## 5.6.7.6 Pistons

Must be the originally fitted and homologated part with no modification allowed.

#### 5.6.7.7 Piston rings

Must be the originally fitted and homologated part with no modification allowed.

# 5.6.7.8 Piston pin and Clips

Must be the originally fitted and homologated part with no modification allowed.

# 5.6.7.9 Connecting rod

Must be the originally fitted and homologated part with no modification allowed.

#### 5.6.7.10 Crankshaft

Must be the originally fitted and homologated part with no modification allowed.

## 5.6.7.11 Crankcase / Gearbox housing

- a. Crankcases must remain as homologated. No modifications are allowed (including painting, polishing and lightening).
- b. It is not allowed to add a pump used to create a vacuum in the crankcase.

# 5.6.7.11.1 Lateral covers and protection

a. Lateral (side) covers may not be altered, modified or replaced.

- b. All lateral covers/engine cases containing oil and which could be in contact with the ground during a crash, could be protected by a second cover made from metal, such as aluminium alloy, stainless steel, steel or titanium, composite covers are not permitted.
- c. The secondary cover must cover a minimum of 1/3 of the original cover. It must have no sharp edges to damage the track surface.
- d. Plates or crash bars made from aluminium or steel also are permitted in addition to these covers. All of these devices must be designed to be resistant against sudden shocks, abrasions and crash damage.
- e. FIM approved covers will be permitted without regard of the material or its dimensions.
- f. These covers must be fixed properly and securely with a minimum of three (3) case cover screws that also mount the original covers/engine cases to the crankcases.
- g. Oil containing engine covers must be secured with steel bolts.
- h. The Technical Director has the right to refuse any cover not satisfying this safety purpose.

# 5.6.7.12 Transmission / Gearbox

- a. Must be the originally fitted and homologated part with no modification allowed.
- b. Quick-shift systems are allowed (including wire and potentiometer).
- c. Countershaft sprocket, rear wheel sprocket, rear sprocket carrier hub, chain pitch and size may be changed.

## 5.6.7.13 Clutch

- a. Must be the originally fitted and homologated part with no modification allowed
- b. Friction and drive discs may be changed, but their number must remain as original.
- c. Helical clutch springs may be changed, but only the non-helical clutch springs can be eliminated.

#### 5.6.7.14 Oil pumps and Oil lines

a. Must be the originally fitted and homologated part with no modification allowed.

#### 5.6.7.15 Radiator and cooling system

- a. The only liquid engine coolants permitted is water.
- b. The water radiator must be the originally fitted and homologated part with no modification allowed.
- c. Protective meshes may be added in front of the water radiator.
- d. The cooling system hoses and catch tanks may be changed.
- e. Radiator cap is free.

#### 5.6.7.16 Air box

- a. The air box (and its included ram-air intake) must remain as originally produced by the manufacturer on the homologated motorcycle.
- b. The air filter element may be modified or replaced but must be mounted in the original position. This element cannot be used to modify the air flow inside/outside the airbox.
- c. The air box drains must be sealed.

- d. All motorcycles must have a closed breather system. All the oil breather lines must be connected, may pass through an oil catch tank and must exclusively discharge in the airbox.
- e. No heat protection may be attached to the airbox.

# 5.6.7.17 Fuel supply

- a. Fuel pump and fuel pressure regulator must remain as homologated.
- b. The fuel pressure must be as homologated.
- c. Fuel lines from the fuel tank to the delivery pipe assembly (excluded) may be replaced and must be located in such a way that they are protected from crash damage.
- d. Quick connectors or dry break connectors may be used.
- e. Fuel vent lines may be replaced.
- f. Fuel filters may be added.

## 5.6.7.18 Exhaust system

- a. Exhaust pipes and silencers may be modified or changed.
- b. The number of the final exhaust silencers must remain as homologated. The exhaust pipe outlet must be on the same side of the homologated model.
- c. For safety reasons, the exposed edges of the exhaust pipe outlet must be rounded to avoid any sharp edges.
- d. Wrapping of exhaust systems is not allowed except in the area of the rider's foot or an area in contact with the fairing for protection from heat.
- e. Coating of exhaust systems is not allowed.
- f. The noise limit will be 115 dB/A (with a 3 dB/A tolerance after the race only)

# 5.6.7.19 Sound level control

#### Note: please also refer to Appendix 14.

# 5.6.7.19.1 Sound limits in force:

Noise will be controlled at: Max. 115 dB/A measured in a static test at 5.500rpm.

#### 5.6.7.19.2 Noise control after the competition

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

#### 5.6.8 Electrics and Electronics

#### 5.6.8.1 Ignition / Engine Control System (ECU)

- a. Central unit (ECU) must be the originally fitted and homologated part with no modification allowed.
- b. It isn't allowed to add injection modules that modify the inputs/outputs of the Central unit (ECU).
- c. The software used to modify the ECU must be the originally produced by the manufacturer for the homologated motorcycle.

- d. The parameters that the software itself provides for adjustment, cannot be extended and/or exceded under any circumstances.
- e. The Technical Director could, at its discretion, download and analyze the files and maps of the Central Unit (ECU).
- f. Central unit (ECU) may be relocated.
- g. During an event the Technical Director has the right to ask a team to substitute their ECU with the sample received from the Manufacturer. The change has to be done before Sunday warm up.
- h. The data logging system is free. The data logger may not act to control any strategy or setting in the ECU. The logger may not automate these setting changes. The maximum number of inputs by external sensors allowed are:
  - 1) Position and speed by GPS
  - 2) Engine temperature (water)
  - 3) Lambda signal
  - 4) TPS signal
  - 5) Engine RPM
  - 6) Rear Wheel speed
  - 7) Front Wheel speed
  - 8) Front brake pressure
  - 9) Rear brake pressure
  - 10) Front fork position
  - 11) Rear damper position
- i. The addition of a device for infrared (IR) transmission of a signal between the racing rider and his team, used exclusively for lap timing, is allowed.
- j. The addition of a GPS unit for lap timing/scoring purposes is allowed.
- k. Telemetry is not allowed.
- I. Harness must be the originally fitted and homologated part with no modification allowed except:

a) Modifications are only allowed for data download proposal (Datalogger).

b) These modifications must be authorized by the Technical Director.

c) Map Selector and Pit-limiter switches are considered homologated parts of the harness.

- m. The original temp meter and tachometer may not be altered, or replaced or eliminated. It can be replaced only by one of the authorized dashboards. (see Appendix 8). It can be added a display/s for lap-timing and gear selection purposes only.
- n. The standard sensors of the ECU, cannot be changed, modified or eliminated.
- o. Spark plug may be replaced.
- p. A battery can be installed and connected.

#### 5.6.8.2 Generator, alternator, electric starter

- a. The generator (ACG) must be the originally fitted and homologated part with no modification allowed.
- b. The stator must be fitted in its original position and without offsetting.

#### 5.6.9 Main frame

#### Note: please also refer to Appendix 14.

During the entire duration of the event, each rider can only use one (1) complete motorcycle, as presented for Technical Control, with the frame clearly identified with a seal. In case the frame will need to be replaced the rider or the team must request the use of a spare frame to the Technical Director.

The pre-assembled spare part frame must be presented to the Technical Director for the permission of rebuilding. The pre-assembly shall be strictly limited to:

- Main frame
- Bearings (steering pipe, swing arm , etc)
- Swing arm
- Rear suspension linkage and shock absorber
- Upper and lower clamps (triple clamp, fork bridges)
- Wiring harness

The spare frame will not be allowed in the pit box before the rider or the team has received authorization from the Technical Director.

The rebuilt motorcycle must be inspected before its use by the technical stewards for safety checks and a new seal will be placed on the motorcycle frame.

No other spare machine may be at the track. If found, penalties will be applied. For the remainder of the event the machine will be impounded and no part of that machine may be used for spare parts.

Once the starting procedure is initiated, it isn't possible to verify a second motorcycle, neither in case of detention by red flag. In case of events with two races, once the first race is finished, the Technical Director may allow the request for verification of a second motorcycle.

## 5.6.9.1 Frame body and Rear sub frame

- a. The frame must remain as originally produced by the manufacturer for the homologated motorcycle.
- b. Holes may be drilled on the frame only to fix approved components (i.e. fairing brackets, steering damper mount, sensors).
- c. 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, but they must leave and empty place to add the technical control sticker close to the right side of the pivot frame.
- d. Crash protectors may be fitted to the frame, using existing points, or pressed into the ends of the wheel axes.
- e. Nothing else may be added or removed from the frame body.
- f. All motorcycles should display a vehicle identification number (chassis number).
- g. Engine mounting brackets or plates must remain as originally produced by the manufacturer for the homologated motorcycle.
- h. Rear sub frame may be changed or altered, to allow different riders, but the type of material must remain as homologated, or material of a higher specific weight.
- i. 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.
- j. The paint scheme is not restricted but polishing the frame body or sub frame is allowed with the sole aim of improving its aesthetics.

# 5.6.9.2 Front Forks

a. Forks (stanchions, stem, wheel spindle, upper and lower crown, etc.) must remain as originally produced by the manufacturer for the homologated motorcycle.

- b. The upper and lower fork clamps (triple clamp, fork bridges) must remain as originally produced by the manufacturer on the homologated motorcycle.
- c. Steering stem pivot position must remain in the homologated position (as supplied on the production bike).
- d. The steering damper may be eliminated or replaced with an after-market damper.
- e. The steering damper cannot act as a steering lock limiting device.
- f. Fork caps on the mechanical forks-cannot be modified or replaced to allow external adjustment.
- g. Dust seals may be modified, changed or removed if the fork remains totally oil-sealed
- h. The springs of the homologated forks may be modified or changed. Any quantity and quality of oil can be used. The original surface finish of the fork tubes (stanchions, fork pipes) cannot be changed. Additional surface treatments are not allowed.
- i. The inner parts of the cartridges can be modified or replaced. The external aspect cannot be modified, except adding holes, or enlarging existing holes. It's allowed to eliminate existing parts of the homologated cartridges, but those eliminated parts cannot be replaced with not original ones. In any case, these modifications must be based on a homologated cartridge.

## 5.6.9.3 Rear fork (Swingarm)

- a. The rear fork must remain as originally produced by the manufacturer for the homologated motorcycle. The paint scheme is not restricted but polishing the swingarm is allowed with the sole aim of improving its aesthetics.
- b. Rear fork pivot bolt must remain as originally produced by the manufacturer for the homologated motorcycle.
- c. Rear swingarm pivot position must remain as originally produced by the manufacturer for the homologated motorcycle.
- d. A solid protective cover (shark fin) shall be fixed to the swing-arm, and must always cover the opening between the lower chain run, swing-arm and the rear wheel sprocket, irrespective of the position of the rear wheel. **The material of this cover is free.**
- e. Rear wheel stand brackets may be added in the original position. Brackets must have rounded edges (with a large radius).
- f. The sides of the swing-arm may be protected by a thin vinyl cover only, no composite or structural covers are allowed.

#### 5.6.9.4 Rear suspension unit

- a. Rear suspension unit (shock absorber) cannot be externally modified or replaced and the original attachments to the frame and rear fork (swing arm) (or linkage) must be as homologated.
- b. All the rear suspension linkage parts must remain as originally produced by the manufacturer for the homologated motorcycle.
- c. Rear suspension spring may be changed. Any quantity and quality of oil can be used.
- d. The inner valves and piston of the hidraulic components can be modified or replaced.
- e. The total length of the shock absorber must remain between the limits recommended by the manufacturer for the homologated motorcycle (Max. length between mounting holes centers is 312mm).

#### 5.6.9.5 Wheels

- a. Wheels can be changed or modified, but the only material allowed is aluminium alloys.
- b. The only permitted wheel rim sizes are:

Front 2.50" x 17"

Rear 3.50" x 17"

- c. A non-slip coating / treatment may be applied to the bead area of the rim.
- d. Wheel axles, bearings and wheel spacers may be modified or replaced.
- e. The use of titanium and light alloys in the construction of the wheel axes is forbidden.
- f. Wheel balance weights may be discarded, changed or added to.
- g. Any inflation valves may be used.
- h. The use of any device on the wheel to adjust the tyre pressure whilst on track is prohibited.

#### 5.6.9.6 Brakes

- a. Brake discs may be replaced by aftermarket discs which comply with following requirements:
  - i. Brake discs must retain the same material as the homologated disc and carrier or Steel (max. carbon content 2.1 wt%).
  - ii. The outside diameter of the front brake disc must be between 290 and 300 mm.
  - iii. The thickness is limited to 5,5 mm.
- b. The front and rear brake calliper (mount, carrier, hanger) can be changed or modified. Monobloc calipers are forbidden.
- c. The pistons of the front brake caliper are limited to 36 mm of diameter. The only material allowed for this part is aluminium.
- d. In order to reduce the transfer of heat to the hydraulic fluid it is permitted to add metallic shims to the callipers, between the pads and the callipers, and/or to replace light alloy pistons with steel pistons made by the same manufacturer of the calliper.
- e. The front and rear master cylinder may be changed with aftermarket products. Front and rear brake fluid reservoirs may be changed with aftermarket products.
- f. Front and rear hydraulic brake lines may be changed.
- g. "Quick" (or "dry-brake") connectors in the brake lines are allowed.
- h. Front and rear brake pads may be changed. Brake pad locking pins may be modified for quick change type.
- i. Additional air scoops or ducts are not allowed.
- j. Motorcycles must be equipped with brake lever protection, intended to protect the handlebar brake lever from being accidentally activated in case of collision with another motorcycle. Composite guards are not permitted. FIM approved guards will be permitted without regard of the material. The Technical Director has the right to refuse any guard not satisfying this safety purpose

## 5.6.9.7 Handlebars and hand controls

- a. Handlebars may be replaced.
- b. Handlebars and hand controls may be relocated.
- c. Throttle controls must be self closing when not held by the hand.
- d. Throttle assembly and associated cables may be modified or replaced but the connection to the throttle body and to the throttle controls must remain as on the homologated motorcycle. Cable operated throttles (grip assembly) must be equipped with both an opening and a closing cable.
- e. Clutch and brake lever may be replaced with an after-market model. An adjuster to the brake lever is allowed.

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

## 5.6.9.8 Foot rest / Foot controls

- a. Foot rests, hangers/brackets and hardware may be replaced and relocated but the hangers/brackets must be mounted to their original frame mounting points.
- b. Foot controls; gear shift and rear brake must remain operated manually by foot.
- c. Foot rests may be rigidly mounted or a folding type which must incorporate a device to return them to the normal position.
- d. The end of the foot rest must have at least an 8 mm solid spherical radius.
- e. 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 Technical Director has the right to refuse any plug not satisfying this safety aim.

#### 5.6.9.9 Fuel tank

- a. Fuel tank must remain as originally produced by the manufacturer for the homologated motorcycle.
- b. All fuel tanks must be completely filled with fire retardant material (open-celled mesh, i.e. Explosafe®).
- c. Fuel tank breather pipes must be fitted with non-return valves that discharge into a catch tank with a minimum volume of 200cc made of a suitable material. The original catch tank can be changed.
- d. Fuel cap must remain as originally produced by the manufacturer for the homologated motorcycle. Fuel cap when closed must be leak proof.
- e. A rider spacer/pad may be fitted to the rear of the tank with nonpermanent adhesive. It may be constructed of foam padding or composite material.
- f. The sides of the fuel tank may be protected with a cover made of a composite material. These covers must fit the shape of the fuel tank.

#### 5.6.9.10 Fairing / Body work

- a. Fairing and bodywork 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 motorcycle, with slight differences due to the different manufacturers (different pieces mix, fixing points, etc). The material may be changed. The use of carbon fiber or carbon composite materials is not allowed. Specific reinforcements in Kevlar® or carbon are allowed locally around holes and stressed areas.
- b. For all bodywork paint and decal design is free.
- c. Overall size and dimensions must be the same as the original part, with a tolerance of +-10mm, respecting the design and features of the homologated fairing as far as possible. The overall width of the frontal area may be +10mm maximum. The decision of the Technical Director is final.
- d. Wind screen may be replaced with an aftermarket product. The height of the windscreen is free, within a tolerance of +/- 15 mm referred to the vertical distance from/to the upper fork bridge. The screen must conform to the same profile from the front as the original. From a top view the length of the windscreen may be shortened by 25mm to allow clearance for the rider. The edge of the screen must have no sharp edges.
- e. Fairing brackets may be altered or replaced.

- f. The lower fairing must to be constructed to hold, in case of an engine breakdown minimum 2,5 litres. The lower edge of all the openings in the fairing must be positioned at least 70 mm above the bottom of the fairing.
- g. The upper edge of the rear transverse wall of the lower fairing must be at least 70 mm above the bottom. The angle between this wall and the floor must be ≤ 90°.
- h. Motorcycles may be equipped with a radiator shroud (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.
- i. The lower fairing must incorporate at least one (1) opening of Ø 25 mm diameter in the front lower area. This hole must remain sealed in dry conditions and must be only opened in wet race conditions.
- j. Front mudguards may be eliminated or replaced with a cosmetic duplicate of the original parts and may be spaced upward for increased tyre clearance.
- k. Rear mudguards are forbidden.

## 5.6.9.11 Seat

- a. Seat, seat base and associated bodywork may be replaced. The appearance from front, rear and profile must conform to the homologated shape. The length of the seat bodywork can be modified to allow taller riders.
- b. No part of the motorcycle may be behind a line drawn vertically at the edge of the rear tyre.
- c. The seat unit shall have a maximum height of the (approximately) vertical section behind the rider's seating position of 150 mm. The measurement will be taken at a 90° angle to the upper surface of the flat base at the rider's seating position, excluding any seat pad or covering.
- d. Same materials as fairings must be used (article 5.6.8.10.a).
- e. All exposed edges must be rounded.

# 5.6.9.12 Fasteners

- a. Standard fasteners may be replaced with fasteners of any material and design but titanium fasteners cannot be used. The strength and design must be equal to or exceed the strength of the standard fastener.
- b. Fasteners may be drilled for safety wire, but intentional weight-reduction modifications are not allowed.
- c. Thread repair using inserts of different material such as helicoils and timeserts is allowed.
- d. Aluminium fasteners may only be used in non-structural locations.

# 5.6.9.13 Rear Safety Light

All motorcycles must have a functioning red light mounted at the rear of the machine, to be used in rain or low visibility conditions. The team must ensure that the light is switched on any time the motorcycle is on the track or being ridden in the pit-line whenever a rain tyre is fitted on the motorcycle. All lights must comply with the following:

- a. Lighting direction must be parallel to the machine centre line (motorcycle running direction), and be clearly visible from the rear at least 15 degrees to both left and right sides of the machine centre line.
- b. The rear light must be mounted near the end of the seat/rear bodywork and approximately on the machine centre line, in a position approved by the Technical

Director. In case of dispute over the mounting position or visibility, the decision of the Technical Director will be final.

- c. Power output/luminosity equivalent to approximately: 10 15 (incandescent), 0.6 5 W (LED).
- d. The output must be continuous no flashing safety light whilst on track, flashing is allowed in the pit lane when pit limiter is active.
- e. Safety light power supply may be separated from the motorcycle.
- f. The Technical Director has the right to refuse any light system not satisfying this safety purpose.

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

- a. Any type of lubrication, brake or suspension fluid may be used.
- b. Gaskets and gasket materials.
- c. Painted external surface finishes and decals.
- d. Material for brackets connecting non original parts (fairing, instruments, etc) to the frame (or engine) cannot be made from titanium or fiber reinforced composites excepting the exhaust silencer that may be in carbon.
- e. Protective covers for the frame, chain, footrests, etc. may be made in other materials like fiber composite material if these parts do not replace original parts mounted on the homologated model.

## 5.6.11 The Following Items MAY BE Removed

- a. Bolt-on accessories on a rear sub frame.
- b. Front mudguard.

#### 5.6.12 General Items

#### 5.6.12.1 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 isn't allowed in this class.

- a. Titanium test to be performed on the track: magnetic test (titanium is nost magnetic).
- b. The 3 % nitric acid test (titanium does not react. If metal is steel, the drop will leave a black spot).
- c. Specific weight of titanium alloys is between 4.5 and 5.0 kg/dm3 vs, over 7.48 kg/dm3 of steel and can be ascertained by weighing the part and measuring its volume in a calibrated glass filled with water (intake valve, rocker, connecting rod, etc.)
- d. In case of doubt, the test must take place at a Material Testing Laboratory.

## 5.6.12.2 Handlebars and Control Levers

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

The minimum angle of rotation of the steering on each side of the centre line or mid position must be of 15°.

Whatever the position of the handlebars, the front whell, tyre and the mudguard must maintain a minimum gap of 10 mm.

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, frame or other bodywork when on full lock to prevent trapping the rider's fingers.

Repair by welding of light alloy handlebars is prohibited.

Composite handlebars are not allowed.

All handlebar levers (clutch, brake, etc.) must be ball ended (diameter of this ball to be at least 16 mm). This ball can also be flattened, but in any case the edges must be rounded (minimum thickness of this flattened part 14 mm). These ends must be permanently fixed and form an integral part of the lever.

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

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

Modified rider controls will be considered for the mobility challenged subject to a report by the Medical director, the Technical Directors decision is final.

#### 5.6.12.3 Compulsory safety Items

- a. All drain plugs must be lock wired (safety wired). External oil filter(s), screws and bolts that enter an oil cavity must be safety wired (i.e. on crankcases). The oil filter may optionally have a secondary retention mechanism.
- 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.

#### 5.6.12.4 Tyres

Tyres may be replaced from those fitted to the homologated motorcycle.

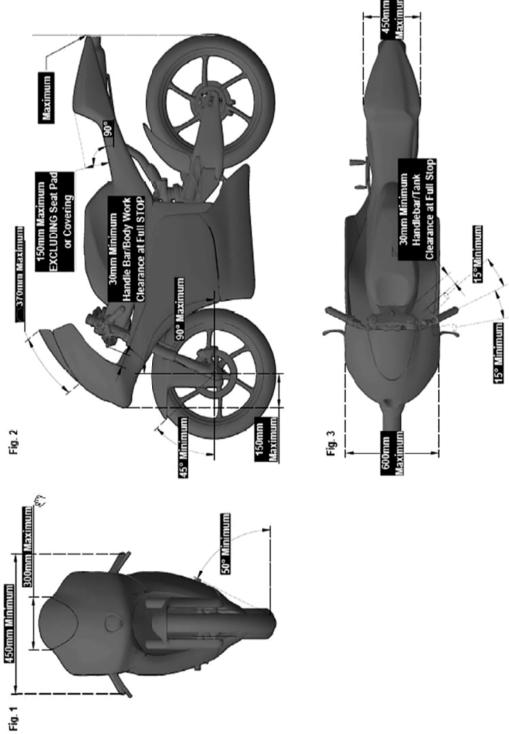
Only tyres distributed by the Official supplier at the event are authorized.

The tread pattern (if present) must be made exclusively by the manufacturer when producing the tyre.

# ETC Appendix 8

Authorised Dashboards:

- 2D MiniDash DI-KIT\_MID12-000
- AiM GS-Dash X55GSDASH0
- AiM MXm X87MXM0000



# General Appendix 10



Installation of the model X2 Pro and X2 Pro Plus



Installation of any other model

### **General Appendix 11**

#### **Fuel Specifications**

- 1. All motorcycles must be fuelled with unleaded petrol, which must comply with the specification **below** for each racing class.
- 2. Unleaded petrol will comply with the specification below if:

Property	Units	Min.	Max.	Test Method
RON		95.0	102.0	ISO 5164
MON		85.0	90.0	ISO 5163
Oxygen	% (m/m)		2.7	ISO 22854
Benzene	% (v/v)		1.0	ISO 22854
Vapour Pressure (DVPE)	kPa		90	EN 13016-1
Lead	mg/L		5.0	EN 237
Density at 15°C	Kg/m <sup>3</sup>	720.0	775.0	ASTM D 4052
Oxidation Stability	minutes	360		ASTM D 525
Existent gum	mg/100 mL		5.0	EN ISO 6246
Sulphur	mg/kg		10	ASTM D 5453
Nitrogen	% (m/m)		0.2	ASTM D 4659
Copper Corrosion	Rating		Class 1	ISO 2160
Distillation:				
At 70°C	% (v/v)	22.0	50.0	ISO 3405
At 100°C	% (v/v)	46.0	71.0	ISO 3405
At 150°C	% (v/v)	75.0		ISO 3405
Final Boiling Point	°C		210.0	ISO 3405
Residue	% (v/v)		2.0	ISO 3405
Olefins (*)	% (v/v)		18.0	ISO 22854
Aromatics (*)	% (v/v)		35.0	ISO 22854
Total di-olefins	% m/m		1.0	GCMS / HPLC
				GCMS / HPLC
Apperance	Apperance clear and bright Visual inspection			

a. It has the following characteristics:

All test methods include a precision statement. In cases of dispute, the procedures for resolving the dispute and interpretation of the results based on test method precision, described in ISO 4259, shall be used.

b. The total of individual hydrocarbon components, containing only hydrogen and carbon, present at concentrations of less than 5% m/m must be at least 30% m/m of the fuel.

Compliance with the compositional regulation is calculated on the following basis:

A = 100 – B –C

where:

A is the total concentration (in % m/m) of individual hydrocarbon components present at concentrations less than 5 % m/m,

B is the total concentration (in % m/m) of oxygenates present in the fuel, and C is the total concentration (in % m/m) of individual hydrocarbon components present at concentrations greater than 5% m/m.

The test method will be gas chromatography.

c. The total concentration of naphthenes, olefins and aromatics in each carbon number group will not exceed the limits 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

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

d. Only the following oxygenates will be permitted:

Methanol, Ethanol, Iso-propyl alcohol, Iso-butyl alcohol, Methyl tertiary butyl ether, Ethyl tertiary butyl ether, Tertiary amyl methyl ether, Diisopropyl ether, n-Propyl alcohol, Tertiary butyl alcohol, n-Butyl alcohol, Secondary butyl alcohol.

- e. Manganese (<1 mg/L), lead (<5 mg/L), iron (<5 mg/L) and nickel (<5 mg/L) additives are not permitted above these limits.
- f. In **all** classes, the fuel specification will be determined by the appointed fuel supplier in consultation with the Organisers and may be changed at any time by mutual agreement.
- 3. All classes fuel :
  - a. Only fuel from the appointed fuel supplier is permitted. This fuel will be available at all official events, and will conform to **this appendix** specification. Use of this fuel without any addition or alteration is mandatory.
- 4. Fuel Sampling and Testing
  - a. The Technical Director will appoint a senior Technical Scrutineer to take responsibility for the administration and supervision of the fuel sampling procedure.
  - b. Motorcycles selected for fuel controls will usually be amongst the first three finishers, and will be directed to the "parc fermé" for technical controls.

- c. Other finishers may be chosen at random for fuel controls. A Technical Scrutineer will be posted at the entrance to the pit box of the selected rider(s) whose machine must immediately accompany the Technical Scrutineer to the technical control area or "parc fermé".
- d. The fuel to be tested will be transferred into two bottles, "A" and "B" identified by reference to the rider, team and machine from which the sample was taken. The bottles will be closed, sealed and labelled by the Technical Director and/or Technical Scrutineer.
- e. Only new bottles will be used for the samples and only new materials will be used to transfer the fuel.
- f. The Fuel Sample Declaration form will be filled out immediately, containing all necessary information, including the riders and machines identity, date and place of fuel sampling. A responsible team member will sign this declaration, after verifying that all the information is correct.
- g. Sample "A" will be sent to the official appointed laboratory, accompanied by a copy of the Fuel Sample Declaration form. The fuel sample will be compared with the approved fuel. If necessary the concentration of other elements, including lead, manganese, iron, nickel, nitrogen and oxygen may be measured at the request of the Technical Director to ensure that octane and power boosters have not been added. If any observed deviations indicate that they are due to mixing with one other fuel, which has been approved by the FIM/Dorna for use by the team, the fuel sample will be deemed to comply, provided the fuel sample still falls within the specification as described in this appendix. Costs for the analyses of sample "A" will be paid by FIM/Dorna.
- h. Sample "B" will be handed over to the FIM designated storage facility for safeguarding in case of protests and/or requirement of a counter analysis by the appointed laboratory. Costs for the analyses of sample "B" will be paid by the team concerned.
- i. Both samples will be transported by an authorised courier.
- j. The laboratory must deliver the results of the fuel sample analyses to the Technical Director, with a copy to the **Race Direction**, as soon as possible after receipt of the samples.
- k. In the case of non-conformity, the Technical Director must notify, as soon as practical after receipt of the results, the **Race Direction**, **the FIM Administration** and the rider/team representative concerned. Within 48 hours of the receipt of the notification of the results of the laboratory test of sample "A", the team must notify the **Race Direction** and the Technical Director if counter-expertise is required (or not required) for sample "B".

The **Race Direction** will take a decision at the event immediately following the notification of the results of the final expertise. Any appeal against the decision of the **Race Direction** will be heard by the FIM

Stewards appointed for the event at which the **Race Direction** decision is taken.

If there is no more **events** following the notification of the results of the final expertise, the **Race Direction** will take a decision as soon as practical. Any appeal against the decision of the FIM Stewards will be heard by the **CDI** appointed by the FIM for this specific task.

- I. The director of fuel analysis at the official laboratory must confirm to the Technical Director that the identification and the seal status of the "B" sample is correct before any B sample analysis is carried out.
- m. Failure of the sample to comply to approved petrol and/or the addition of octane and power boosters, as described **in this Appendix**, will automatically result in the disqualification of the competitor from the entire meeting.

The result of the competitor's fuel sample analysis ("A" or "B" sample) more favourable to the competitor will be taken into account.

5. Fuel Temperature

In the Moto3 class fuel on the motorcycle must not be below the prevailing ambient temperature. Other than a simple removable fuel tank cover, the use of any device on the motorcycle to artificially decrease the fuel temperature below ambient temperature is forbidden.

- 6. Fuel Handling Safety
  - a. The use of anti-static mats and grounding wrist straps is mandatory when filling fuel containers used for transferring fuel to motorcycles.
  - b. The use of approved fuel fillers/fuel dumps is mandatory when adding fuel to motorcycle fuel tanks.

# Gasoline Sample Declaration Form

	FIM WOR	RLD CHAMPIONSHIPS, CUPS AND PRIZE E Gasoline Sample Declaration Form	EVENTS		
Discipline					
IMN(xxx/xx)					
Rider/team's name					
Rider/team's number					
Rider/team's email or	telephone number				
Team					
Vehicle's make					
Gasoline's make and	type				
Gasoline's origin (put supplier)	blic station or race				
Gasoline samples tak and time (hh:mm)	xen on date (dd/mm/yy)				
Gasoline samples tak	en at (right before or afte	r) on:			
QP1 QP2 WARM UP RACE N					
		Container seal n°			
Samp	ole A				
Samp	le B				
specified. Sample A is the first	-	camples taken from the gasoline tank of the data of the samples taken from the gasoline tank of the sample for			

The serial numbers of the vial seals and the accuracy of the listed information have been verified.				
Rider or Team responsible's name				
Rider or Team responsible's signature				
FIM Technical Director/FMNR Chief Technical steward's name				
FIM Technical Director/FMNR Chief Technical Steward's signature				

## General Appendix 12

- 1. It is compulsory that each contracted rider must begin each race event with at least one complete set of undamaged safety equipment. A complete set of safety equipment shall contain:
  - Helmet
  - Leather Suit, 1-piece
  - Gloves
  - Boots
  - Back Protector
  - Chest Protector

The equipment must be worn, correctly fastened, at all times during on-track activity.

# 2. Safety Equipment Control

a) At Technical Control, one complete set of undamaged safety equipment must be presented and checked for the following:

- Helmet: a marking indicating certification to one of the helmet standards listed in **Appendix 13**.
- Leather Suit, Boots, Gloves: undamaged conditions
- Back and Chest Protector: undamaged conditions

b) At any time during the season, the Technical Director may request a piece of rider's equipment in order to check that it meets the requirements listed.

# 3. FIM Rider's Equipment Minimum Requirements (REMR)

a) Standards for Helmet and Visor:

• Helmets must be of the full face type and conform to at least one of the following recognised International Standards, and be labeled: Refer to **Appendix 13**.

EUROPE	ECE 22-05 (only "P" type)	
	JIS T 8133:2007 (valid until 31.12.2019)	
JAPAN	JIS T 8133:2015	
	(only "Type 2 Full face")	
USA	SNELL M 2010 (valid until 31.12.2019)	
USA	SNELL M 2015	
FIM	FRHPhe-01	

- Visors must be made of a shatterproof material.
- Disposable visor 'tear-offs' are permitted.
- A protective lower face cover must be present and must be not detachable, not moveable and made of the same material of the shell.
- Helmets constructed with an outer shell made of more than one piece are not permitted (e.g. they must not contain any seam).
- A retention system with a strap and the double D ring closing system is recommended.

As from 2020, only FIM homologated helmets according to FRHPhe-01 (with a valid FIM Homologation Label) will be allowed.

#### 4. Post-crash Riders Safety Equipment Check

After a crash the Technical Director may at his discretion request that the rider's safety equipment is checked prior to the start of the following practice session, warm up or race.

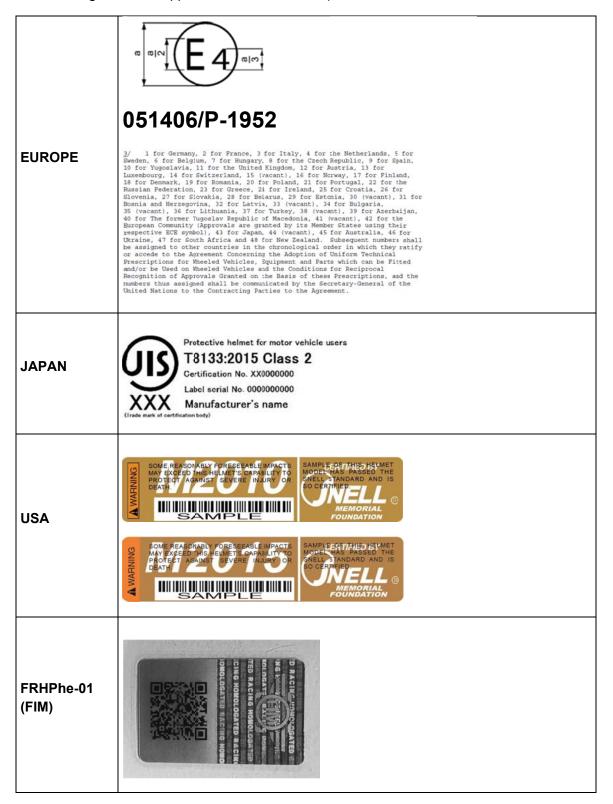
In the event that any item of equipment is considered, by either the Technical Director or the representative of the manufacturer of the item, to be too damaged for use on track, the rider will be required to replace or repair the item before being permitted on track.

Any question concerning the condition and suitability for use of the riders safety equipment shall be decided by the Technical Director, who may consult with the manufacturers of the product before making a final decision.

## **General Appendix 13**

International Helmet Standards

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



# 5.6.12.5 The use of tyre warmers is allowed

## 5.6.12.6 Use of tyres

The competitors shall only use tyres distributed by the Official Supplier during the event.

For each event, all tyres must be made of the same quality and shall be strictly identical.

During qualifying practices and race(s), rear tyres may be required to be marked with tyre stickers (see Art. 5.6.6).

The Technical director may, at this discretion, require the exchange of one (1) or more competitors' tyres for a tyre sample under his control. The tyres exchanged remain under his/her control and he/she can exchange them for the ones of another competitor.

# 5.6.12.7 Ballast

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

The ballast must be made of solid metallic piece/s, firmly and securely connected, either through an adapter or directly to the main frame or engine, with a minimum of two (2) steel bolts (min. 8 mm diameter, 8.8 grade or over). Other equivalent technical solutions must be submitted to the Technical Director for his/her approval.

Fuel in the fuel tank can be used as ballast. Nevertheless, the verified weight may never fall below the required minimum weight.

# 5.6.12.8 Homologated Parts

Homologated parts are the OEM parts supplied fitted to the machine during manufacture and as delivered. Unless stated otherwise these parts may not be remade, refinished, treated, coated or modified in any way.

# 5.6.13 Timekeeping instruments

# Note: please also refer to Appendix 10.

- a. All machines must have a correctly-positioned timekeeping transponder, of the correct type for the class entered. The transponders will not be handed out by the time keeping staff of the circuits any longer. For this reason, the purchase or hiring of the transponders are the solely responsibility of the teams. The models allowed are: Tranx 2, Tranx 260, Tranx Pro DPI DPT, X2 Pro, X2 Pro plus and X2 Club.
- b. The X2 transponder must be mounted on the front of the bike to optimize performance and cooling. Always use the supplied rubbers and top hats or mounting bracket to mount the transponder. The cable which connects to the transponder needs to be placed as close as possible to the transponder, on the same mounting area where the transponder is positioned. Avoid running any other cables and/or electronics in an area of 5cm around the transponder as this will affect the transponder signal. There has to be a Kevlar window in the fairing under the Transponder, as big as possible around the transponder area. The transponders

cannot be mounted on or near the engine and/or the exhaust due to heat and vibrations. The transponder must always receive power supply; even in the case that the rider stops the bike. For optimal mounting conditions check **Appendix 10**. Any other models must be installed according to **Appendix 10**.

c. Transponders must be fully functional on the motorcycle as required by the Organiser, including wiring, power supply, and inputs / outputs for data or signals purposes.

#### 5.6.14 Procedure for Technical Control

#### Refer to Appendix 12 & 14

#### <del>5.6.14.1 \_\_\_\_</del>

The rider is at all times responsible for his/her metorcycle.

#### <del>5.6.14.2</del>

The Chief Technical Steward must be in attendance for an event at least 1 hour before the technical verifications are due to beginning. He must inform the Clerk of the Course, the Race Director and the Technical Director of his arrival.

#### <del>5.6.14.3</del>

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

#### <del>5.6.14.4 \_\_\_\_</del>

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

#### <del>5.6.14.5 \_\_\_\_</del>

The rider, or his mechanic, must be present with the motorcycle for Technical control within the time limits stated in the Time Schedule. 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.

#### 5.6.14.6

The Technical Director/Chief Technical Steward must inform the Race Director of the results of the Technical control. The Technical Director/Chief Technical Steward will then draw up a list of accepted motorcycles and submit this list to the Clerk of the Course.

#### <del>5.6.14.7</del>

The Technical Director/Chief Technical Steward have the right to inspect any part of the motorcycle at any time of the event.

#### <del>5.6.14.8</del>

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

#### <del>5.6.14.9</del>

The Technical Control must be carried out in accordance with the procedure and times fixed in the General Information of the event.

#### 5.6.14.10

The Technical Director/Chief Technical Steward will refuse any motorcycle that does not have a correctly positioned positive transponder attachment. The transponder must be fixed to the motorcycle as described at the 5.6.12.

#### <del>5.6.14.11 \_\_\_\_</del>

The rider or the mechanic shall present a clean motorcycle and in conformity to the FIM Europe rules. He shall also present the helmet, gloves, boots and leather.

#### <del>5.6.14.12</del>

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

#### 5.6.14.13

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

#### <del>5.6.14.14 \_\_\_\_</del>

Before each practice the Chief Technical Steward can confirm that the motorcycle has passed the Technical Control by checking the Technical Control sticker before the motorcycles go on the track.

#### 5.6.14.15

Only accepted motorcycles may be used in practices and races.

#### <del>5.6.14.16</del>

Approximately 30 minutes after the Technical control have been completed, the Technical Director/Chief Technical Steward must submit to the Race Direction a list of accepted motorcycles and riders.

#### <del>5.6.14.17 \_\_\_\_</del>

If a motorcycle is involved in an accident, the Technical Director/Chief Technical Steward must check the motorcycle, together with the helmet and clothing of the rider involved, to ensure that no defect of a serious nature has occurred. If a motorcycle was stopped with a Black Flag with Orange Disc, the Technical Director/Chief Technical Steward must check the motorcycle. In both cases, it is the responsibility of the team to present the motorcycle (together with helmet and clothing of the fallen rider) for his re-examination in case they wish to continue. If the helmet is clearly defective, the Chief Technical Steward must retain this helmet. The Promotor can 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.