

TECHNICAL RULES FOR ENDURANCE - 2008

2. TECHNICAL REGULATIONS

Amendments to the technical regulations may be made at any time in order to ensure fairer competitions.

If a motorcycle is found not to be in conformity with the technical regulations during or after the practices, the Team will be given a 'stop and go' penalty for the race. Further penalties (such as a fine - a suspension and/or a withdrawal of Championship points) may also be imposed.

If a motorcycle is found not to be in conformity with the technical regulations after a race, the **Team** will be disqualified. Further penalties (such as a fine – a suspension and/or a withdrawal of Championship points) may also be imposed.

2.1 INTRODUCTION

2.1.1 Motorcycles for the FIM Endurance Road Racing World Championship are based on recent or current production motorcycles and available to the public through the normal commercial channels of the constructor.

2.2 CLASSES

2.2.1 The Sports Production classes will be designated by engine capacity.

2.3 GENERAL ITEMS

2.3.1 Materials

2.3.3 Handlebars

2.3.4 Control levers

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.

Rest unchanged

2.3.5 Wheel & rims (See Table 1)

3) The maximum wheel rim widths are:

must be installed under the seat, at the rear of the motorcycle, perpendicular in relation to the ground and slightly inclined to the rear (max 30°).

- An additional, non-blinking identification light (max 5 W) may be added to a motorcycle, fixed to the side and not visible from the rear.

2.3.12 Number Plate and Colours

Numbers must be ~~retroreflective~~ **luminous**

The background and figures of the number plates are as follows:

Class	Background	Figures
Superbike	Black (Ral 9005)	white (luminous numbers for races taking place partly at night)
Superproduction	Black (Ral 9005)	white (luminous numbers for races taking place partly at night)
Superstock	Red (Ral 3020)	white (luminous numbers for races taking place partly at night)
Open	Green (Ral 6002)	white (luminous numbers for races taking place partly at night)

The sizes for all the front numbers are: Minimum height :120 mm
 Minimum width : 80 mm
 Minimum stroke : 25 mm

The size for all the side numbers is: Minimum height :120 mm
 Minimum width : 60 mm
 Minimum stroke : 25 mm

Rest unchanged

2.3.13 Reflective area

2.3.14 Handprotectors

2.3.15 Refuelling

2.3.16 Markings

2.3.17 Ballast

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

The 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. **Nevertheless, the verified weight may never fall below the required minimum weight.**

~~2.4 SUPERBIKE TECHNICAL SPECIFICATIONS~~
(To be deleted completely)

2.6 SUPERPRODUCTION TECHNICAL SPECIFICATIONS

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

Rest unchanged

2.6.1 Displacement capacities

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

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

2.6.2 Minimum Weights

The minimum weight of a motorcycle will be

For Three and Four cylinders up to 1000cc:

- 165 kg: for races **not** taking place partly at night;
- 170 kg: for races taking place partly at night.

For Two cylinders up to 1200cc:

- 170kg: for races **not** taking place partly at the night
- 175kg: for races taking place partly at night

2.6.4 Injection Throttle Body Instruments

Carburation instruments must remain as homologated. **No modifications are allowed. See also art 2.6.6.18.**

2.6.5 Fuel

2.6.6 Machine Specifications

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

2.6.6.1 Main Frame Body

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

The main frame may only be altered by the addition of gussets or tubes. No gussets or tubes may be removed.

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

Rest unchanged

2.6.6.2 Front Forks

2.6.6.3 Rear Fork (Swing-arm)

2.6.6.4 Rear Suspension Unit

2.6.6.5 Wheels

2.6.6.6 Brakes

2.6.6.7 Tyres

See Art. 2.3.6.

2.6.6.8 Foot Rest/Foot Controls

Foot rest/foot controls may be relocated, but the original mounting points must be used.

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 8mm 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 equivalent type of material (min. radius of 8mm). The plug surface must be designed to reach the widest possible area of the footrest. The Chief Technical Steward has the right to refuse any plug not satisfying this safety aim.

2.6.6.9 Handle Bars and Hand Controls

2.6.6.10 Fairing/Body Work

h) ~~Front mudguard must conform in principle to the homologated shape originally~~

~~produced by the manufacturer. A front fender (mudguard) must be fitted. on the motorcycle during the event.~~ Material, shape and fixing position may be changed.

- j) Rear fender (mudguard) may be **altered**, added or removed. **Material may be changed.**

2.6.6.11 Fuel Tank

The fuel tank must be fixed to the frame from the front and the rear with a crash-proof assembly system. Bayonet style couplings can not be used, nor any fixing to any parts of the streamlining. The **Endurance Technical Director**/Chief Technical Steward has the right to refuse a motorcycle if he is of the opinion that the fuel tank fixation is not safe.

Carbon fibre, aramid fibre or fibreglass materials are not authorised in the construction of fuel tanks.

2.6.6.12 Seat

2.6.6.13 Radiator, cooling system and Oil Cooler

Radiator tubes ~~to and from the engine~~ may be changed.

2.6.6.14 Wiring Harness

The original wire-loom **may be modified or replaced.**

2.6.6.15 Battery

A battery is compulsory and must be in good working order. The size and type may be changed.

2.6.6.16 Air Box

2.6.6.17 ~~Carburettors~~

This article will be deleted since there are no longer any homologated machines made with carburettors

2.6.6.18 Carburation instruments

No modifications are allowed

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

Bell mouths ~~must be as originally produced by the manufacturer for the homologated machine~~ **(throttle body intake trumpets) may be modified or replaced. Variable length intake tract devices that function while the engine is operating are not**

allowed, unless such a system is part of the original equipment of the homologated machine.

~~The fuel pump must remain as homologated.~~ **Fuel pump and pressure regulator may be modified or changed.**

The fuel injection management computer chip (EPROM) may be changed.

The use of flash memory ('flash RAM) for fuel injection mapping is allowed.

2.6.6.19 Fuel Supply

2.6.6.20 Cylinder Head

The homologated cylinder head can be modified as follows:

Homologated materials and castings for the cylinder heads must be used. Material for these parts may only be removed by machining.

The induction and exhaust system including the number of valves and or ports (intake and exhaust) must be as homologated.

Porting and polishing of the cylinder head normally associated with individual tuning such as gas flowing of the cylinder head, including the combustion chamber is allowed.

The compression ratio is free.

The combustion chamber (**shape**) **must remain as homologated.**

Valves: no modifications are allowed from those fitted to the homologated motorcycle.

Valve guide must remain as homologated. Modifications on the port areas are allowed

Valve springs may be altered or replaced from those fitted to the homologated motorcycle. **The material must remain as homologated.**

Valve seats may be altered or replaced from those fitted to the homologated motorcycle. **The material must remain as homologated.**

Valve retainers may be altered or replaced from those fitted to the homologated motorcycle.

Cotter valves may be altered or replaced from those fitted to the homologated motorcycle.

2.6.6.21 Camshaft

Camshafts may be altered or replaced from those fitted to the homologated motorcycle. **Cam profile dimensions are free.**

Material and method of drive must remain as homologated.

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

2.6.6.22 Cam Sprockets

Cam sprockets or cam gears may be altered or replaced to allow the degreering of the camshafts. **Size and material must remain as homologated.**

2.6.6.23 Crankshaft

No modifications are allowed (including polishing and lightening).

2.6.6.24 Oil Pumps and Oil Lines

2.6.6.25 Connecting Rods

2.6.6.26 Pistons

2.6.6.27 Piston Rings

No modifications are allowed.

2.6.6.28 Piston Pins and Clips

2.6.6.29 Cylinders

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

Oil-pan (sump) may be altered or replaced.

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

Lateral (side) covers may be altered, modified or replaced. 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®.~~

All lateral engine covers containing oil, must be protected by a second cover made from composite materials, type carbon or Kevlar®. Plates and/or bars from aluminium or steel are also permitted. All these devices must be

designed to be resistant against sudden shocks and must be fixed properly and securely.

2.6.6.31 Transmission/Gearbox

~~No modification is allowed.~~

All transmission/gearbox ratios, shafts, shift drum and selector forks may be altered or replaced.

Primary gears (and ratio) must remain as homologated.

A quick-shift system is authorised.

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

2.6.6.32 Clutch

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

Aftermarket or modified clutches are permitted.

Back torque limiter is permitted.

2.6.6.33 Ignition/Engine Control System

The ignition/engine control system (**ECU**) can be modified or changed

The position and the size of the ignition/engine control unit may be **changed (relocated)**.

2.6.6.34 Generator, Alternator, Electric Starter

The generator, starting system, electrical or manual including kick lever, pedal, starter crank gear and starter shaft may be altered or replaced from those fitted to the homologated motorcycle.

The electric starter must operate normally and always be able to start the engine during the event. **The engine must keep running on its own power when the electric starter has stopped its procedure.**

The voltage regulator (rectifier) may be changed

2.6.6.35 Exhaust System

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

A special 'one-way' valve can be fitted to the crankcase oil filler opening (to avoid any oil spillage).

Tachometer

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

Any type of tubing (i.e. air-, fuel-, oil- or water).

Any type of spark plug and plug cap may be used.

Gaskets and gasket material.

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

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

Fasteners (nuts, bolts, screws, etc.).

External surface finishes and decals on fairing and bodywork.

2.6.8 The following items MAY BE removed

The air injection control system (valve, solenoid, tubes) may be removed. The tubes connected to the cylinder head cover may be plugged.

Unused elements of the wiring harness

Instrument, instrument bracket and associated cables.

Speedometer and associated wheel spacers.

Chain guard

Bolt on accessories on a rear sub frame (seat).

2.6.9 The Following Items MUST BE Removed

2.6.10 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.

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

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 into **the airbox**. The original closed system must be retained, no direct atmospheric emission is permitted.

~~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 1000 cc for gear box breather pipes and engine breather pipes.~~

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

2.6.11 Additional Equipment

Additional **electronic hardware** equipment not on the original homologated motorcycle may be added (e.g. data acquisition, computers, recording equipment etc.). **The addition of a device for infra red (IR) transmission of a signal between the racing rider and his team, used exclusively for laptiming, is allowed. The addition of a GPS unit for positioning, laptiming and/or lapscoreing purposes or legible messages on an on-board screen is allowed.**

Telemetry is not allowed.

2.7 SUPERSTOCK 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

Unchanged

2.7.1 Displacement capacities

2.7.2 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.

The minimum weight for motorcycles will be:

- Dry weight minus ~~15~~ **12** kg for races not taking place partly at night;
- Dry weight minus ~~11~~ **9** kg for races taking place partly at night.

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.

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

2.7.4 Carburation Instruments

Carburation instruments must remain as homologated. **No modifications are allowed.**

2.7.5 Fuel

2.7.6 Machine Specifications

2.7.6.1 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.

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

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

Rest unchanged

2.7.6.2 Front Forks

2.7.6.3 Rear Fork (Swing arm)

2.7.6.4 Rear Suspension Unit

2.7.6.5 Wheels

2.7.6.6 Brakes

Brake discs may be altered or replaced from those fitted to the homologated motorcycle. The outside diameter and the ventilation system must remain as originally produced by the manufacturer for the homologated motorcycle. Internally ventilated discs are not allowed. Brake disc carriers may be changed, but must retain the same off-set and same type of mounting to the wheels. Front brake discs can be made floating, using original rotors.

Replacement brake discs must be of ferrous materials.

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

The air bleeder screw on the originally homologated calipers may be replaced.

The front brake master cylinder may be replaced.

The rear brake caliper bracket may be mounted 'fixed' on the swingarm, 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 authorized. The swingarm may be modified for this reason to aid the location of the rear brake caliper bracket, by welding, drilling or by using a helicoil.

2.7.6.7 Tyres

See Art. 2.3.6.

2.7.6.8 Foot Rest/Foot Controls

2.7.6.9 Handle Bars and Hand Controls

2.7.6.10 Fairing/Body Work

- i) Front mudguards may be replaced with a cosmetic duplicate of the original parts and may be spaced upward for increased tyre clearance. This modification must guarantee absolute security (**'Flexible' mounts by "dzeus"** fasteners, clips, tie-raps, clamps, etc. are not permitted).

2.7.6.11 Fuel Tank

2.7.6.12 Seat

2.7.6.13 Wiring Harness and Tachometer

The original wire-loom may be modified or changed.

The original homologated tachometer must be used.

2.7.6.14 Battery

2.7.6.15 Radiator, cooling system and oil coolers

2.7.6.16 Air Box

2.7.6.17 ~~Carburetors~~

This article will be deleted since there are no longer any homologated machines made with carburettors

2.7.6.18 Carburation instruments

2.7.6.19 Fuel Supply

Fuel lines 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.

2.7.6.20 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 retainers must be as originally produced by the manufacturer for the homologated machine.

Valve spring shims are not allowed.

2.7.6.21 Camshaft

No dimensional 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 camshaft 'timing' (degreeing) may be modified.

2.7.6.22 Cam Sprockets

2.7.6.23 Crankshaft

2.7.6.24 Oil Pumps and Oil Lines

2.7.6.25 Connecting Rods

2.7.6.26 Pistons

- 2.7.6.27 Piston Rings**
- 2.7.6.28 Piston Pins and Clips**
- 2.7.6.29 Cylinders**
- 2.7.6.30 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 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 engine 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. **Plates and/or bars from aluminium or steel are also permitted. All these devices must be designed to be resistant against sudden shocks and must be fixed properly and securely.**

- 2.7.6.31 Transmission/Gearbox**
- 2.7.6.32 Clutch**
- 2.7.6.33 Ignition/Engine Control System**

The ignition control box (ECU) may be changed. However the location and the size of the ignition/engine control unit must be identical to the original, homologated unit.

- 2.7.6.34 Generator, alternator, electric starter**
- 2.7.6.35 Exhaust System**
- 2.7.6.36 Fasteners**
- 2.7.7 The following items MAY be altered or replaced from those fitted to the homologated motorcycle.**
- 2.7.8 The Following Items MAY BE Removed**

The air injection control system (valve, solenoid, tubes) may be removed. The tubes connected to the cylinder head cover may be plugged.

Headlamp, rear lamp, only for races not taking place partly at night.

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

Bolt on accessories on a rear sub frame.

2.7.9 The Following Items MUST BE Removed

2.7.10 The Following Items MUST BE Altered

2.7.11 Additional Equipment

Additional **electronic hardware** equipment not on the original homologated motorcycle may be added (e.g. data acquisition, computers, recording equipment etc.). **The addition of a device for infra red (IR) transmission of a signal between the racing rider and his team, used exclusively for laptiming, is allowed. The addition of a GPS unit for positioning, laptiming and/or lapscoreing purposes or legible messages on an on-board screen is allowed.**

~~The only potentiometers and sensors allowed are those fitted as original equipment on the motorcycle as homologated. Lap timers are allowed also if not equipped on the original homologated motorcycle~~

Telemetry is not allowed.

2.9 FIM HOMOLOGATION PROCEDURE FOR SUPERSTOCK and SUPERPRODUCTION

The article will be updated.