

2. TECHNICAL REGULATIONS SBK

Amendments to the technical regulations may be made by the Superbike Commission at any time.

During practices: If a motorcycle is found not to be in conformity with the technical regulations during or after the practices, its rider will be given a penalty for the event such as a ride-through, a drop of any number of grid positions for the next race, suspension and/or withdrawal of Championship or Cup points.

After a Race: If a motorcycle is found not to be in conformity with the technical regulations after a race, its rider will be given a penalty such as a time penalty, or disqualification

2.1 INTRODUCTION

2.1.1 Motorcycles for the Road Racing Superbike & Supersport World Championships must be motorcycles with a valid road homologation in one of the following areas: USA, EU or Japan.

These motorcycles must be available for sale to the public in the shops and the dealerships representing the manufacturer in at least one of the above areas before the third event of the current Championship to be allowed to be used in the remaining Championship events.

2.2 CLASSES

2.2.1 The production based racing classes will be designated by engine capacity.

2.3 GENERAL ITEMS

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.

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

- 2) The 3 % nitric acid test (titanium does not react. If metal is steel, the drop will leave a black spot).
- 3) 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.)
- 4) In case of doubt, the test must take place at a Materials Testing Laboratory.

2.3.2 Handlebars

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

The minimum angle of rotation of the handlebar on each side of the centre line or mid position must be of 15° for all motorcycles.

Whatever the position of the handlebars, the front wheel, tyre and the mudguard must respect a 10 mm gap.

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).

Repair by welding of light alloy handlebars is prohibited.

2.3.3 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.

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

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

2.3.4 Wheel and rims (See Table 1)

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

2) The distance between the rim walls is measured inside the flange walls in accordance with ETRTO.

2.3.5 Tyres

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

Only tyres distributed by the Official Supplier at the event are authorised.

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

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.

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.

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 muster areas of the tyre. The rider shall not enter the track if at least 2 of these indicator hollows are worn on different parts of the periphery.

2.3.6 The use of tyre warmers is allowed.

2.3.7 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.

All tyres to be used must be easily identifiable with a colour marking or a numerical system, to be applied by the Official Supplier at the time of manufacturing.

The Official Supplier shall provide the FIM Superbike Technical Director with a written description of the markings and the general characteristics of the different types of tyres.

The FIM Superbike Technical Director may ask the Official Supplier to deliver tyre samples to him the day prior to the start of the official practice. Any modification of the tread pattern by the Official Supplier is not permitted after the start of the practices.

During free practices, qualifying practices, (Superpole for Superbike), warm up session (and race for Superstock), no motorcycle may enter the track without the front and rear tyres being marked (see also Art. 2.4.7/ 2.5.7/ 2.6.7).

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

An appropriate identification will be applied on the left side of each tyre by the entrant.

No tyres marked for one event may be used during another event.

2.3.8 Ballast

The use of ballast is allowed to stay over the minimum weight limit. The use of ballast must be declared to the FIM Superbike 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 2 steel bolts (min. 8 mm diameter, 8.8 grade or over). Other equivalent technical solutions must be submitted to the FIM Superbike Technical Director for his approval.

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

2.3.9 Timekeeping instruments

All motorcycles must have a correctly positioned timekeeping transponder. The transponder must be approved by the official Timekeeper and fixed to the motorcycle in the longitudinal centre of the motorcycle (typically close the swing-arm pivot), on either the left or right side, as low as possible and avoiding being shielded by carbon bodywork.

Correct attachment of the transponder bracket consists of a minimum of tie-wraps, but preferably by screws or rivets. Any transponder retaining clip must also be secured by a tie-wrap. Velcro or adhesive alone will not be accepted. **The transponder must be working at all times during practices and races, also when the engine is switched off.**

2.4 SUPERBIKE TECHNICAL SPECIFICATIONS

The following rules are intended to give freedom to modify or replace some parts in the interest of safety, research and development and improved competition between various motorcycle concepts.

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.

Superbike motorcycles require an FIM homologation (see Appendix FIM Homologation procedure for Superstock, Supersport and Superbike motorcycles). 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 the front, rear and the profile of Superbike motorcycles must (except when otherwise stated) conform in principle to the homologated shape (as originally produced by the manufacturer). The appearance of the exhaust system is excluded from this rule.

2.4.1 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.

2.4.2 Balancing various motorcycle concepts

In order to equalize the performance of motorcycles with different engine configurations, changes in the minimum weight and air restrictor sizes are applied according to their respective racing performances.

These handicaps are applied only to the '1200cc 2 cylinder' motorcycles.

As a first step, the weight handicap will be applied according to the relevant provisions described in Art. 2.4.4.2. The minimum weight is fixed at 165 kg and may be not reduced. **The minimum weight may be increased twice by 3 kg reaching a weight of 168 kg and 171 kg respectively.**

If this measure proves to be insufficient, then the air restrictor handicap will be applied according to the relevant provisions described in Art 2.4.8.1.3: the size of the intake ports will be changed by means of air restrictors. These changes to the size of the air restrictor diameter will be applied in 2 mm steps.

The Superbike Commission can at any time modify the handicap system to ensure fair competition.

2.4.3 Engine configurations and displacement capacities

The following engine configurations **comprise** the Superbike class.

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

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

2.4.4 Minimum weight

2.4.4.1 The minimum weight will be:

1000cc 3 & 4 cylinders	165 kg
1200cc 2 cylinders	165 kg (**)

(**) See handicap rule for further information.

At any time during the event, the weight of the whole motorcycle (including the tank and its contents) must not be less than the minimum weight.

There is no tolerance on the minimum weight of the motorcycle.

During the final technical inspection at the end of each race, the selected motorcycles 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 FIM Superbike Technical Director at the preliminary checks.

2.4.4.2 Minimum weight adjustments

The minimum weight will be increased or decreased in steps of 3 kg according to the following procedure:

1. After three events, the best manufacturers of the 1000cc 4 cylinders and 1200cc 2 cylinders will be selected according to the sum of the points of the best two riders for each manufacturer.
2. By taking the race points of the riders of the selected 1000cc 4 cylinder manufacturer and of the selected 1200cc 2 cylinder manufacturer in each race, an average will be calculated after every event, the 'event average'.

If in any of the races there is only one finisher from one of the selected manufacturers, the 'event average' will be calculated from the first rider of each selected manufacturer in each race.

No 'event average' points will be calculated if one of the selected manufacturers has no finishers. The 'event average' will then be calculated based on the results of the other race from the same event.

If neither race has any finishers from one of the selected manufacturers, the event will not be considered.

3. 'Wet' races (as declared by the Race Director) are not taken in account for the calculation of an 'event average'.
4. After 3 events, the average value of the 'event averages' of each selected manufacturer will be calculated. The score of the 1000cc 4 cylinder manufacturer and the score of the 1200cc 2 cylinder manufacturer will be compared as follows:

Should the average value of the 'event averages' over 3 events favour the 1200cc 2 cylinder manufacturer by more than 5 points, and if a rider of a motorcycle of this manufacturer is leading the riders' FIM Superbike World Championship standings at that time, then the minimum weight of all 1200cc 2 cylinders will be increased by 3 kg **reaching a weight of 168 kg and 171 kg respectively**. The upper limit is **171 kg**.

Should the average value of 'event averages' over 3 events favour the 1000cc 4 cylinder manufacturer by more than 5 points, and if a rider of a motorcycle of this manufacturer is leading the riders' FIM Superbike World Championship standings at that time, then the minimum weight of all 1200cc 2 cylinders will remain at 165 kg and the air restrictor handicap will be applied according to the relevant provisions described in article 2.4.8.1.3.

If the minimum weight is not updated, then the results of three more events will be considered and the best manufacturers for each engine configuration will be updated considering the sum of points of the best two riders from each selected manufacturer over six events and so on, over multiples of three events.

A new average value of the 'event averages' will be calculated over six events and so on, over multiples of three events, until the points gap of the average value of the 'event averages' from the last minimum weight update is higher than 5.

The FIM Superbike Technical Director will inform all the teams about the possible minimum weight adjustments, within 24 hours from the end of the last event (the last meeting of the International Jury) where the average value of the 'event averages' was calculated. The new minimum weight adjustments must be applied from the first following event.

2.4.5 Number plate colours

The background colours and figures (numbers) for Superbike are white background with black numbers

The size for all the front numbers is:

Minimum height:	140 mm
Minimum width:	80 mm
Minimum stroke:	25 mm
Minimum space between numbers	10 mm

The sizes for all the side numbers are:

Minimum height:	120 mm
Minimum width:	60 mm
Minimum stroke:	25 mm
Minimum space between numbers	10 mm

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

- 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.**
- once, on each side of the motorcycle. 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.**

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

2.4.6 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. 2.7 for full fuel specifications).

2.4.7 Tyres

At each event, during free practices, qualifying practices, Superpole and warm up session, a maximum of thirteen (13) rear and nine (9) front tyres may be used. Only the riders taking part in the Superpole will be allowed to use an additional front tyre. There is no limitation on the number of tyres for the race.

All tyres (slick, intermediate and wet) will be included in the total quantity count.

If the riders are given a red flag during the Superpole session, the FIM Superbike Technical Director may allow an additional set of tyres to be used.

At the beginning of the event, the Official Supplier may be requested by the FIM Superbike Technical Director to deliver to him four (4) samples of each type of tyre which will be used at the event.

The tyres used in the free practices, qualifying practices, Superpole and warm-up must be marked with an adhesive sticker. The sticker will show an identification number for each rider and it will have a different colour depending on whether it is applied to the front or rear tyre. At each race the FIM Superbike Technical Director will assign a number of his choice to the competitor, while the colours will change for each race.

The stickers will be handed to the teams in a sealed envelope, 13 for the rear tyres and 9 for the front tyres, on the day before the first practice session, in accordance with a timetable decided by IMS and the FIM Superbike Technical Director. The timetable will be mailed to the teams by IMS at least a week before the event. In extraordinary situations the FIM Superbike Technical Director can/may alter this program.

After delivery of the stickers, the teams will be responsible for their safekeeping and use.

The stickers must be applied to the left sidewall of the tyre. Personnel nominated by the FIM Superbike Technical Director will check that all the motorcycles in the pit lane are fitted with tyres carrying the sticker.

The use of motorcycles with unmarked tyres (e.g. without the official stickers) will be immediately reported to the Race Direction which will take appropriate action.

After the second qualifying practice session, the FIM Superbike Technical Director and staff will hand one additional sticker for the front tyre and two rear 'Superpole tyres' to the riders taking part in the Superpole.

Each Superpole tyre must be marked with an official personal identification.

The allocation of individual 'tyres will be made on a random basis, with no involvement of any representative from the tyre supplier, teams or riders. Those tyres will be individually identified and may not be exchanged between riders, including between team mates, and may not be exchanged by the tyre supplier after the allocation, except with the permission of the Race Direction.

On the race day, after the warm-up and after the check by the Official Supplier regarding the effective tyre wear, the unused stickers will be returned.

In exceptional cases, should the sticker be damaged or applied in the wrong way, up to 2 extra stickers may be provided at the sole discretion of the FIM Superbike Technical Director. However, the damaged sticker must be returned to the FIM Superbike Technical Director and/or the tyre it was applied to, must be absolutely intact.

2.4.8 Engine

The following engine specifications and components may not be altered from the homologated motorcycle except as noted:

The homologated engine design model cannot be changed.

Homologated materials and castings for the crankcase, cylinder, cylinder head and gear-box housing must be used.

Material for the crankcase, cylinder, cylinder head and gear-box housing may only be added by welding or removed by machining.

The method of cam drive must remain as homologated.

Aftermarket or modified cam drive components are allowed, however the cam drive must be in the homologated location and the system must be as homologated.

The method of valve retention must remain as the homologated model. No pneumatic valve retention devices are allowed unless fitted to the homologated model.

All moving internal engine, gear-box and clutch parts may be altered or replaced including materials from those fitted on the homologated motorcycle (unless not allowed by the individual section covering the parts in question).

Polishing and lightening of engine parts is permitted, except for carburation instruments (unless not allowed by the individual section covering the parts in question).

The sequence in which the cylinders are ignited (i.e. 1-2-4-3), must remain as originally designed on the homologated model. Simultaneous (*) firing of 2 cylinders is also forbidden if not adopted on the homologated motorcycle.

*up to 5 degrees firing difference in 2 cylinders is regarded as 'simultaneous' firing.

2.4.8.1 Fuel injection system

2.4.8.1.1 Fuel injection system refers to throttle bodies and variable length intake tract devices.

- The original homologated throttle body must be used
- The use of an optional homologated throttle body is not allowed.
- Fuel Injectors must be stock and unaltered from the original specification and manufacture.

- Electronically controlled throttle valves, known as 'ride-by-wire', may be added or changed. However the safety systems and procedures must always be present and fully functional
- Variable intake tract devices cannot be added if they are not present on the homologated motorcycle.
- The throttle body intake insulators may be modified.
- Bell mouths (including their fixing points) may be altered or replaced.
- Vacuum slides may be fixed in the open position
- Secondary throttle valves and shafts may be removed or fixed in the open position and the electronics may be disconnected or removed
- Air and air/fuel mixture can go to the combustion chamber exclusively through the throttle body butterflies.

2.4.8.1.2 Air restrictors for 1200cc 2 cylinders

Application: Only the 1200cc 2 cylinders will be fitted with air restrictors. The initial air restrictor size to be installed is equivalent to a \varnothing 50 mm circular area (1963,5 mm²). Air restrictor size will be adjusted (in steps equivalent to a change of 2 mm in diameter or equivalent circular area, upwards to \varnothing 52 mm and then to no restrictor at all, downwards to a minimum of \varnothing 46 mm), if needed during the Championship, as described below in Art. 2.4.8.1.4

Definition: An air restrictor is a metallic device with a tract of constant controlled section and which is placed in the induction tract between the throttle body and the cylinder head. The length of the controlled tract must be at least 3 mm. No air and/or air-fuel mixture to the engine must by-pass the restrictor. No part of the fuel injection system (injector, needle, slide, etc) shall extend through the restrictor.

The Manufacturer must supply the FIM with **10** sets of plug-calibres (-gauges) to check the diameter of the air restrictor when using one of the prescribed sizes (\varnothing 52, \varnothing 50, \varnothing 48, \varnothing 46 mm).

A Manufacturer may have a non-circular air restrictor, provided that the area of this restrictor is equivalent to the area of a nominal circular restrictor. In this case, the Manufacturer must supply the FIM with **10** sets of plug-calibres (-gauges) for measuring the restrictor during the technical verifications.

The FIM may also request the Manufacturer to supply a cut section of the air restrictor(s) in each of the prescribed sizes.

2.4.8.1.3 Air restrictor adjustment

The minimum air restrictor size is increased or decreased in 2 mm steps in diameter of equivalent circular area, according to following procedure:

- 1. If the gap in the average value of 'event averages', calculated as described in Art. 2.4.4.2 is more than 5 points in favour of the 1000cc 4 cylinder manufacturer, and**

If a rider of a 1000cc 4 cylinder motorcycle is leading the riders' FIM Superbike World Championship standings at that time:

Then the initial air restrictor size of all the 1200cc 2 cylinder motorcycles will be increased by one size, to a \varnothing 52 mm (or the equivalent area 2123.7 mm²), or as a last step, the air restrictor will be withdrawn.

- 2. If the minimum weight for 1200cc 2 cylinder manufacturers has reached the upper limit of 171 kg, and**

if the resulting gap of the average value of 'event averages', calculated as described in Art. 2.4.4.2, is more than 5 points in favour of the 1200cc 2 cylinder manufacturer, and

if a rider of a 1200cc 2 cylinder motorcycle is leading the riders' FIM Superbike World Championship standings at that time:

Then, the initial air restrictor size of the 1200cc 2 cylinder manufacturers will be reduced by one size, to a \varnothing 48 mm (or the equivalent area 1809.6 mm²) or, as last step, to a minimum of \varnothing 46 mm (or the equivalent area 1661.9 mm²).

If the air restrictor size is not updated, then the results of three more events will be considered and the best manufacturers for each engine configuration will be updated considering the sum of points of the best two riders from each selected manufacturer over six events and so on, over multiples of three events. A new average value of the 'event averages' will be calculated over six events and so on, over multiples of three events, until the points gap of the average value of the 'event averages' from the last minimum weight update is higher than 5.

The FIM Superbike Technical Director will inform all the teams about the possible air restrictor size adjustments, within 24 hours from the end of the last event (the last meeting of the International Jury), where the average value of the 'event averages' was calculated. The new air restrictor size adjustments must be applied from the first following event.

2.4.8.2 Cylinder head

The homologated cylinder head may be modified as follows:

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

The homologated cylinder head cover may be modified.

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. **Epoxy may be used to shape the ports.**

The compression ratio is free.

The combustion chamber may be modified.

Aftermarket or modified valves, springs, tappets, retainers, valve seats, valve guides, and other valve train components are permitted. The original number of valves must be maintained.

- a. Valve diameters, including stem, must remain as homologated.

- b. Valves must be made of the same basic material as the homologated valves.
- c. Valves must remain in the homologated location and at the same angle as the homologated valves, except for normal valve maintenance.
- d. Rocker arms (if any) must remain as homologated (material, location and dimensions).

2.4.8.3 Camshaft

Camshafts may be altered or replaced from those fitted to the homologated motorcycle (see also Art. 2.4.8).

Offsetting the camshaft is not allowed. The camshaft must remain in the homologated location.

2.4.8.4 Cam sprockets or cam gears

Camshaft sprockets or camshaft gears may be altered or replaced to allow the degreeding of the camshafts (see also Art. 2.4.8).

2.4.8.5 Cylinders

Homologated materials and casting for the cylinder block must be used. The material for the cylinder block may only be added by welding and/or removed by machining. The sleeves or liner material may be changed and the surface finish is free. The original bore size must be retained.

2.4.8.6 Pistons

- **For 1000cc 3 and 4 cylinders**

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

- **For 1200cc 2 cylinders**

Standard piston or the piston kit (*) must be used.

(*) The piston kit must have the same price as the standard one and must be listed in the current racing parts list of the Manufacturer and be on sale for customers. Within 90 days from the order, the customer must receive the piston kit set.

2.4.8.7 Piston rings

Piston rings may be altered or replaced from those fitted to the homologated motorcycle.

2.4.8.8 Piston pins and clips

Piston pins and clips may be altered or replaced from those fitted to the homologated motorcycle.

2.4.8.9 Connecting rods

- **For 1000cc 3 & 4 cylinders**

Connecting rods may be altered or replaced from those fitted to the homologated motorcycle. Carbon composite or carbon fibre materials are not allowed if not used in the homologated motorcycle.

- **For 1200cc 2 cylinders**

Connecting rods must remain as homologated. Polishing and lightening is not allowed.

2.4.8.10 Crankshaft

Only the following modifications are allowed to the homologated crankshaft:

- a. Bearing surfaces may be polished or a surface treatment may be applied.
- b. Balancing is allowed. The addition or reduction in weight of the crankshaft in order to reach a racing balance can be no higher than 15% of the homologated weight without the tolerance as shown on the homologation drawing of the crankshaft.
- c. The weight reduction may be done by drilling or machining of the crankshaft counterweights.
- d. Polishing of the crankshaft is not allowed.
- e. Attachment of aftermarket ignition components or sensors is permitted.
- f. Balance shaft may be altered, removed or modified.

2.4.8.11 Crankcase / Gearbox housing

Homologated materials and castings for crankcase and gearbox housing must be used. Material for crankcase and gearbox housing may only be added by welding or removed by machining.

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

Vacuum pumps are not allowed if not installed on the homologated motorcycle.

2.4.8.11.1 Lateral covers and protection

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 **metal such as aluminium alloy, stainless steel, steel or titanium.**

Plates **or crash** bars 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.**

FIM approved covers will be permitted without regard of the material.

These covers must be fixed properly and securely **with case cover screws that also mount the original covers/engine cases to the crankcases.**

The Technical Director has the right to forbid any cover, if the evidence shows the cover is not effective.

2.4.8.12 Transmission / Gearbox

All transmission/gearbox ratios, shafts, drums, selector forks are free.

Primary gear ratios are free.

The layout of the transmission shafts must be the same as on the homologated motorcycle and only the material and the ratios can be changed.

The layout and function of the shift drum must be the same as on the homologated motorcycle.

The selector forks may be changed; however the forks must engage with the same gears and function in the same way as on the homologated motorcycle.

The number of gears must remain as homologated.

Additions to gearbox or selector mechanism, such as quick shift systems, are allowed.

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

No power source (i.e. hydraulic or electric) can be used for gear selection, if not installed in the homologated model for road use.

Human power and so called quick shift systems are excluded from the ban.

2.4.8.13 Clutch

Aftermarket or modified clutches are permitted.

Back torque limiter is permitted.

Any power source (i.e. hydraulic or electric) cannot be used for clutch operation, if not installed in the homologated model for road use. Human power is excluded from the ban.

Clutch system (wet or dry type) and method of operation (cable/hydraulic) must remain as homologated.

2.4.8.14 Oil pumps and oil lines

Oil pumps may be altered or replaced from those fitted to the homologated motorcycle.

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.

2.4.8.15 Radiator / Oil cooler

The original radiator or oil cooler may be altered or replaced from those fitted to the homologated motorcycle.

Additional radiators or oil coolers may be added.

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

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

The appearance from the front, rear and profile of the motorcycle must in principle conform to the homologated shape after the addition of additional radiators or oil coolers.

2.4.8.16 Air box

The following air box rule only applies to motorcycles homologated before the 31st of December 2009:

- The air box may be altered or replaced from those fitted to the homologated motorcycle (a special design for racing is allowed). If fuel injectors are attached to the cover of the air box, their position with reference to the throttle body must remain as original.
- The air filter element may be removed.
- The air box must be completely closed around the induction bell mouth and all engine breather tubes. The fuel injection system may be entirely within the air box.
- The air box drains must be sealed.
- All motorcycles must have a closed breather system. All the oil breather lines must be connected and discharge in the air box.
- The breather system (air box 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.

For motorcycles homologated after the 1st of January 2010:

- The air box must remain as originally produced by the manufacturer on the homologated motorcycle.
- If the homologated air box is used to mount top type fuel injectors or variable intake tract devices, then the air box and the attached systems must remain as homologated and function in the same way.
- Air filters, internal flap type valve, sensors and vacuum fittings may be removed, modified, or replaced with aftermarket parts.
- Any holes in the air box to the outside atmosphere resulting from the removal of components must be completely sealed from incoming air.

- Ram air tubes or ducts running from the fairing to the air box may be modified, replaced or removed. If tubes/ducts are utilized, they must be attached to the original, unmodified air box inlets.
- All motorcycles must have a closed breather system. All the oil breather lines must be connected and discharge in the air box.

2.4.8.17 Fuel supply

The engine control unit (ECU) may be modified or changed.

Fuel pump and fuel pressure regulator must remain the same as on the homologated model.

The fuel pressure must be as homologated.

The pressure tolerance at the technical control is ± 0.5 bar in respect to the maximum pressure of the homologated motorcycle.

All motorcycles must have a special device on the fuel line in accordance with FIM specifications for fuel pressure checks.

Fuel lines from the fuel tank up to the injectors (fuel hoses, delivery pipe assembly, joints, clamps, fuel canister) may be replaced.

The fuel line(s) going from the fuel tank to the fuel injection system must be located in such a way that they are protected from possible crash damage.

Fuel vent lines may be replaced.

Fuel filters may be added.

Fuel petcock may be altered, replaced or removed from those fitted to the homologated motorcycle.

2.4.8.18 Exhaust system

Exhaust pipes, catalytic converters and silencers may be altered or replaced from those fitted to the homologated motorcycle. Catalytic converters may be removed.

The number of the final exhaust silencer(s) must remain as homologated. The silencer(s) must be on the same side(s) as on 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 Superbikes will be 107 dB/A (with a 3 dB/A tolerance after the race).

2.4.9 Electric and electronic devices

Electric cables, connectors, battery and switches are free.

2.4.9.1 Ignition / Engine Control System

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

Spark plugs, spark plug caps and wires may be replaced.

2.4.9.2 Generator, alternator, electric starter

The generator or alternator may be modified, removed or replaced.

The electric starter may be modified, removed or replaced.

Motorcycles must start on the starting grid in neutral. Push-starting on the starting grid is not allowed, the use of a 'booster' battery is permitted.

2.4.9.3 Additional equipment

Additional electronic hardware equipment not on the original homologated motorcycle may be added (this permission refers to: data acquisition and sensors, 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.

2.4.10 Main frame and pre-assembled spare frame

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 needs to be replaced, the rider or the team **can** request the use of a spare frame to the FIM Superbike Technical Director.

The pre-assembled spare frame must be presented to the FIM Superbike Technical Director to receive permission to rebuild the motorcycle. **The pre-assembly of the frame shall be strictly limited to:**

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

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

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

EXPLANATION OF THE PROCEDURES

Only one (1) complete motorcycle may be presented for the preliminary technical checks and it will be the only motorcycle allowed on the track and in the pit box during the practices, qualifying, **Superpole** and races.

The frame of this motorcycle will be officially sealed by the FIM Superbike Technical Director or by his appointed staff. The seal will bear a serial number, which will be recorded. Any attempt made to remove the seal will damage it irreparably.

At any time during the event the technical stewards, under the direction of the FIM Superbike Technical Director, may check the seal and verify that it conforms to the motorcycle and rider it was assigned to. For cross reference, every frame must have a unique number punched on it, preferably on the steering-head.

If the motorcycle is damaged in a crash or in any other incident, it is allowed to use the spare rolling chassis to rebuild the motorcycle.

The spare rolling chassis may be pre-assembled with the following items: frame assembly, swing-arm, **rear suspension linkage, shock-absorber, steering head bearings**, upper and lower triple clamps and wiring harness.

When a team decides that a crashed or damaged motorcycle requires a change of frame, it must inform the FIM Superbike Technical Director. Only at this point may the pre-assembled spare frame be brought into the pit box.

Once the assembly of the replacement motorcycle is completed, it will then undergo technical and safety checks and it will be officially sealed. The seal on the damaged motorcycle will be destroyed by the technical staff and the chassis of this motorcycle must not be used for the remainder of the event. The new serial number will be recorded by the FIM Superbike Technical Director.

The replacement motorcycle may be used on the track only after the end of the practice and qualifying sessions or race in which the damage occurred. The damaged motorcycle must be removed from the pit box as soon as possible and put in storage outside the pit box.

After the pre-assembled spare part frame has been used, should it become necessary to replace the frame again because of a further crash or damage, the assembly work must be done using a bare frame with no components attached. The FIM Superbike Technical Director must inspect the bare frame and give his approval before work can start.

Any actions contrary to these procedures will result in a penalty as described in the Technical Regulations

Contact information for the FIM Superbike Technical Director and his appointed staff will be given to the Superbike teams at the preliminary technical checks.

2.4.10.1 Frame body and rear sub-frame

The main frame must **be** as originally produced by the manufacturer for use on the homologated motorcycle.

The main frame may only be altered by the addition of gussets or tubes. No gussets or tubes may be removed, **other modifications are allowed within the following section of these rules.**

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

The dimensions and position of:

- **Engine**
- **Swing arm**
- **Rear shock**
- **Suspension linkage mounting points on the frame**

must remain as homologated.

Steering angle changes are permitted by fitting inserts onto the bearing seats of the original steering head. **The original bearing seat diameters on steering head pipe may be increased to insert special bushings. The new fore and aft position of each bearing can be a maximum +/- 6 mm in respect to the original bearing location. No part of these special bushings may protrude axially more than 3 mm from the original steering head pipe location. The steering head pipe can be reinforced in the area of the bearing seats. Welding and machining is allowed for the purpose of making these modifications.**

Modifications to the frame at the swing arm pivot area are allowed to give a maximum of +/-5 mm of adjustment vertically and horizontally. Welding and machining is allowed for the purpose of making this modification of the original swing arm pivot, regardless of the technology used and the dimensions of the component or section of the frame (i.e: cast, fabricated, etc.).

All motorcycles must display a vehicle identification number punched on the frame body.

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

The paint scheme is not restricted.

2.4.10.2 Front forks

The front fork in whole or part may be changed but must be the same type homologated (leading link, telescopic, etc.).

No aftermarket or prototype electronically-controlled suspensions maybe used.

An electronically-controlled suspension may only be used if already present on the production model of the homologated motorcycle.

The electronically-controlled valves must remain as homologated. The shims, spacers and fork springs not connected with these valves can be changed.

The ECU for the electronic suspension must remain as homologated and cannot have GPS capabilities.

The electronic interface between the rider and the suspension must remain as on the homologated motorcycle. It is allowed to remove or disable this rider interface.

The original suspension system must work safely in the event of an electronic failure.

Electro-magnetic fluid systems which change the viscosity of the suspension fluid(s) during operation are not permitted.

The upper and lower fork clamps (triple clamp, fork bridges) may be changed or modified.

A steering damper may be added or replaced with an 'after-market' damper.

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

Electronic controlled steering damper cannot be used if not installed in the homologated model for road use. However, it must be completely standard (any mechanical or electronic part must remain as homologated).

2.4.10.3 Rear fork (Swing-arm)

The rear fork may be altered or replaced from those fitted to the homologated motorcycle. **However the type single or double sided must remain as homologated.** The use of carbon fibre or Kevlar® materials is not allowed if not homologated on the original motorcycle. 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 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.

2.4.10.4 Rear suspension unit

Rear suspension unit may be changed but a similar system must be used (i.e. dual or mono).

No aftermarket or prototype electronically-controlled suspension unit may be used.

An electronically-controlled suspension may only be used if already present on the production model of the homologated motorcycle.

The electronically-controlled valves must remain as homologated. The shims, spacers and shock absorber springs not connected with these valves can be changed.

The ECU for the electronic suspension must remain as homologated and cannot have GPS capabilities.

The electronic interface between the rider and the suspension must remain as on the homologated motorcycle. It is allowed to remove or disable this rider interface.

The original electronic system must work safely in the event of an electronic failure.

Electro magnetic fluid systems which change the viscosity of the suspension fluid(s) during operation are not permitted.

The rear suspension linkage may be modified or replaced.

The original fixing points in the frame (if any) must be used to mount the shock absorber, linkage and rod assembly fulcrum (pivot points).

2.4.10.5 Wheels

Wheels may be replaced (see Art. 2.3.4) and associated parts may be altered or replaced from those fitted to the homologated motorcycle. **Only wheels made from aluminum alloys are allowed. The use of the following alloy materials for the wheels is not allowed: Beryllium ($\geq 5\%$), Scandium ($\geq 2\%$), Lithium ($\geq 1\%$). Each specific racing wheel model must be approved and certified according to JASO (Japanese Automotive Standards Organization) T 203-85 where W (maximum design load) of art. 11.1.3 is 195 kg for front wheel and 195 kg for rear wheel, K = 1.5 for front and rear wheels. Static radius of tyre: front 0.301 m, rear 0.331 m.**

Wheel manufacturers must provide copy of the certificate for their wheel(s) as proof of compliance to the Technical Director when requested.

On motorcycles equipped with a double sided swing arm (rear fork), the rear sprocket must remain on the rear wheel when the wheel is removed.

Bearings, seals, and axles may be altered or replaced from those fitted to the homologated motorcycle. The use of titanium and light alloys is forbidden for wheel spindles (axles).

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

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

Wheels must be made from aluminium alloys.

Wheel rim diameter size (front and rear)	17 inches
Front wheel rim width:	3.50 inches
Rear wheel rim width:	6.00 inches

2.4.10.6 Brakes

Front brake master cylinder may be altered or replaced from those fitted to the homologated motorcycle.

Front brake callipers may be altered or replaced from those fitted to the homologated motorcycle.

Rear brake master cylinder may be altered or replaced from those fitted to the homologated motorcycle.

Rear brake callipers may be altered or replaced from those fitted to the homologated motorcycle.

Brake pads or shoes may be altered or replaced from those fitted to the homologated motorcycle.

Brake hoses and brake couplings may be altered or replaced from those fitted to the homologated motorcycle. The split of the front brake lines for both front brake callipers must be made above the lower fork bridge (lower triple clamp).

Brake discs may be altered or replaced from those fitted to the homologated motorcycle. Only ferrous materials are allowed for brake discs. The use of exotic alloy materials for brake callipers (i.e. aluminium-beryllium, etc.) is not allowed.

The Anti Lock Brake System (ABS) may be used only if installed in the homologated model for road use. However, it must be completely standard (any mechanical or electronic part must remain as homologated, brake discs and master cylinder levers excluded), and only the software of the ABS may be modified.

The Anti Lock Brake System (ABS) can be disconnected and its ECU can be dismantled. The ABS rotor wheel can be deleted, modified or replaced.

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.

2.4.10.7 Handlebars and hand controls

Handlebars, hand controls and cables may be altered or replaced from those fitted to the homologated motorcycle.

Engine stop switch must be located on the handle bars.

2.4.10.8 Foot rest and 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 FIM Superbike Technical Director has the right to refuse any plug not satisfying this safety purpose.

2.4.10.9 Fuel tank

The fuel tank must maintain the homologated appearance and location; however its actual shape can be slightly changed to suit the rider's preference. The tank may be modified below the upper frame line and under the seat.

The material of construction of the fuel tank may be altered from the one of the tank fitted to the homologated motorcycle.

All fuel tanks must be filled with fire retardant material, or be fitted with a fuel cell bladder.

Fuel tanks made of composite materials (carbon fibre, aramid fibre, glass fibre, etc.) must have passed the FIM Standards for fuel tanks or be lined with a fuel cell bladder.

Tanks made of composite material must bear the label certifying conformity with FIM Fuel Tank Test Standards. Fuel tanks without a fuel cell bladder must bear a label certifying conformity with FIM Fuel Tank Test Standards.

Such labels must include the fuel tank manufacturer's name, date of tank manufacture, and name of testing laboratory.

Each manufacturer is requested to inform the FIM/CCR Secretariat of its fuel tank model(s) which have passed the FIM test standards, together with a copy of the fuel tank label. Full details of the FIM Fuel Tank Test Standards and Procedures are available from the FIM (See 'Fuel Tank Test Standards' below).

Fuel cell bladders must conform to or exceed the specification FIM/FCB-2005. Full details of this standard are available from the FIM.

The fuel tank must be fixed to the frame from the front and the rear with a crash-proof assembly system. Bayonet style couplings cannot be used, nor may the tank be fixed to any parts of the streamlining (fairing) or any plastic part. The FIM Superbike Technical Director has the right to refuse a motorcycle if he is of the opinion that the fuel tank fixation is not safe.

The original tank may be modified to achieve the maximum capacity of 24 litres, provided the original profile is as homologated.

A cross over line between each side of the tank is allowed (maximum inside diameter 10 mm).

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

Fuel tank filler caps may be altered or replaced from those fitted to the homologated motorcycle, and when closed, must be leak proof. Additionally, they must be secured to prevent accidental opening at any time.

The same size fuel tank used in practice must be used during the entire event.

Fuel tank homologation

1. Any fuel tanks, made of non ferrous materials (with the exception of aluminium) must be tested according to the test procedure prescribed by the FIM.
2. Each manufacturer is responsible for testing its own fuel tank model(s) and will certify that the fuel tank exceeds the FIM test standard, if it has passed the FIM test procedure for fuel tanks.
3. Each manufacturer must affix a quality and test label on each fuel tank type that is produced for competition use. This quality and test label will be the recognition of a fuel tank model which has passed the FIM test procedure.
4. All fuel tanks that are made to the same design, dimensions, number of fibre layers, grade of fibre, percentage of resin, etc, must be identified with the same quality and test label.
5. The quality and test label will include the following information on each label affixed to each fuel tank: name of the fuel tank manufacturer, date of fabrication, code or part number, name of testing laboratory, fuel capacity.
6. Each manufacturer is requested to inform the FIM/CCR Secretariat of its fuel tank model(s) which have passed the FIM test procedure, with a copy of the quality and test label, according to point 5.
7. Only fuel tanks that have passed the FIM test procedure will be accepted.

2.4.10.10 Fairing / Bodywork

- a) Fairing, mudguards and body work must conform in principle to the homologated shape as originally produced by the manufacturer.
- b) Wind screen may be replaced.
- c) Original air ducts running between the fairing to the airbox may be altered or replaced from those fitted to the homologated motorcycle.
- d) 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 edge of openings in the fairing must be positioned at least 50 mm above the bottom of the fairing.
- e) The lower fairing must incorporate one 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.
- f) Minimal changes are allowed in the fairing to permit the use of an elevator (stand) for wheel changes and to add plastic protective cones to the frame or the engine.
- g) Holes may be drilled or cut in the fairing or bodywork to allow additional increased intake air to the oil cooler. Holes bigger than 10mm must be covered with a particle grill or fine wire mesh. Grill/mesh must be painted to match the surrounding material.
Original openings for cooling in the lateral fairing/bodywork sections may be partially closed only to accommodate sponsors' logos/lettering. Such modification shall be made using wire mesh or perforated plate. The material is free but the distance between all opening centres, circle centres and their diameters must be constant. Holes or perforations must have an open area ratio > 60%.
- h) Front mudguard must conform in principle to the homologated shape originally produced by the manufacturer.
- i) Holes may be drilled in the front mudguard to allow additional cooling. Holes bigger than 10mm must be covered with metal gauze or fine mesh. Mesh must be painted to match the surrounding material.
- j) Rear mudguard may be added or removed.

- k) Material of construction of the front mudguard, rear mudguard and fairing may be altered or replaced from those fitted to the homologated motorcycle.
- l) **The exact appearance, shape, size and location of the front headlights of the homologated motorcycle must be respected, and should be obtained by applying a plastic or metallic film on the front of the motorcycle.**

2.4.10.11 Seat

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

The top portion of the rear body work around the seat may be modified to a solo seat. The solo seat then must incorporate the rear number plates. The appearance from both front, rear and profile must conform in principle to the homologated shape.

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

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.

Material of construction of the seat may be altered or replaced from those fitted to the homologated motorcycle.

2.4.10.12 Rear Safety Light

All motorcycles must have a functioning red light mounted at the rear of the seat, to be used during Wet Races or in low visibility conditions, as declared by the Race Direction.

The rear safety light must comply with the following:

- a) **the lighting direction must be parallel to the centre line of the motorcycle (running direction) and it must be clearly visible from the rear, at least 15 degrees to both the left and right sides of the centre line of the motorcycle.**

- b) it must be safely mounted on the very end of seat/rear bodywork and approximately on the centre line of the motorcycle. In case of dispute over the mounting position or visibility of the Rear Safety Light, the decision of the FIM Superbike Technical Director will be final.
- c) the power output/luminosity must be equivalent to approximately 10-15W (incandescent) or 3-5W (led).
- d) the light must be able to be switched on and off.

2.4.11 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 material.
- Bearings (ball, roller, taper, plain, etc.) of any type or brand may be used.
- Fasteners (nuts, bolts, screws, etc.).
- External surface finishes and decals.
- It is recommended that motorcycles are equipped with a red light on the instrument panel that will flash in the event of oil pressure drop.

2.4.12 The following items MAY BE removed

- Instrument and instrument bracket and associated cables.
- Tachometer.
- Speedometer and associated wheel spacers.
- Chain guard.

2.4.13 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 stand brackets welded to the main frame may be removed.

2.4.14 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.

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).

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.

2.5 SUPERSPORT TECHNICAL SPECIFICATIONS

The following rules are intended to permit changes to the homologated motorcycle in the interest of safety and improved competition between various motorcycle concepts.

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.