

# **2018 FIM WORLD SUPERBIKE PROVISIONAL TECHNICAL RULES**

## **2. TECHNICAL REGULATIONS**

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 and level of technical freedom.

### **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.

- a. Titanium test to be performed on the track: Magnetic test (titanium is not 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/dm<sup>3</sup> vs. over 7.48 kg/dm<sup>3</sup> 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 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 steering 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 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 (see diagrams A, B, C ).

Repair by welding of light alloy handlebars is prohibited.

Composite handlebars are not allowed in any class.

### **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.

In the Supersport and Superstock classes a thumb operated rear brake solution will be considered for the mobility challenged only subject to a report by the Medical Director and the Technical Directors decision is final.

#### **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 races, front and rear tyres may be required to be marked with tyre stickers (see 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 Engine Sealing**

- a. The total number of engines that a rider may use during the entire championship is limited the "allocated number". When a permanent rider changes teams during the championship their engine limit should not change, but in extra-ordinary circumstances will be reviewed by the Race Direction.
- b. The total number of engines that a team may use during the entire Championship is limited to the "allocated number" per permanent entry". When a permanent rider is replaced or substituted during the Championship, the total engine allocation for the teams' entry will not change. Should a new team enter the championship part way through the season the number of engines allowed will be proportional to the season remaining.
- c. Wild card riders (and one event riders) will be allowed to use two (2) sealed engines during the event in which they take part. Should the same rider choose to enter a second meeting as a wildcard, one (1) extra engine will be added. For any further entries/events the rider and/or team will be considered a permanent entry.
- d. Should the number of race meetings change during the season then the Superbike Commission will convene to consider updating the number of allocated engines.
- e. A team or rider that uses more than the allocated number of engines during the Championship will receive a penalty (according to Art. 1.21.21).
- f. The FIM technical Director or his appointed staff must be notified of all engine changes and therefore know at all times which engine is in current use.
- g. The number of engines that may be used during each event is only limited by the remaining allocation.
- h. Each engine will be sealed by the FIM Superbike Technical Director or by his appointed staff before it can be used during any event.
- i. An engine is considered in use or active from the moment it crosses the finish line at the end of its first (out) lap, until that point it may be unsealed with no penalty, only one 'out' lap is allowed, any further incomplete laps will register the engine as 'active'.
- j. Engines can only be sealed when not installed in the chassis.
- k. Seals will bear a serial number, which will be recorded.
- l. A broken or damaged seal will be considered as if the engine has been used and will be counted as part of the rider's allocation for the season.
- m. A team must request sealing of an engine/engines before its/their use.
- n. A previously sealed engine may be resealed following repair or refreshment; this will be considered a new engine and count towards the total number of engines allowed.
- o. Any attempt made to remove the seal will damage it irreparably. All seals including the seals on an engine that has completed its life cycle or is in need of repair can only be broken **by** the Technical Director or his appointed staff. At the time of the breaking of the seals the Technical

- Director may ask for this engine to be disassembled to check for compliance **with** the technical rules for the relevant class.
- p. The crankcases will be sealed in such a way not to allow the disassembly for repair, replacement or adjustment of the crankshaft, connecting rods and/ or associated bearings, pistons, piston pins or piston rings.
  - q. The cylinder, cylinder head(s) and head cover/cam cover will be sealed to prevent repairs, replacement or adjustment on the cylinder head, valve, valve seats or any other repairs or service work on the valve train.
  - r. The cassette gearbox door and/or crankcases will be sealed to control the gearbox use.
  - s. The right and left hand engine side covers will not be sealed as to allow repair or adjustment to the ACG, clutch system, water pump or other accessory systems located behind these covers.
  - t. If an engine is found not to be in compliance with the regulations, any penalties imposed will apply retrospectively to each race this engine was used in.
  - u. Schedule for sealing (and unsealing):
    - i. Thursday from 10:00 until 18:00
    - ii. Friday from 9:00 until 18:00
    - iii. Saturday from 9:00 until 18:00
    - iv. 10 minutes before first warm up till 16:00

### **2.3.10 Engine Inspection**

- a. When any engine is unsealed and stripped for inspection following a protest or at the discretion of the technical director and found to be fully compliant with the rule(s) which is (are) the subject of the protest(s), then the team will be given one additional seal allocation to reseal the rebuilt engine OR a new engine.
- b. The FIM Technical Director, Race Direction or the Permanent Officials (FIM Stewards) reserve the right to suspend any technical engine protest if it is felt to be a violation of the above rule. That engine will then be stripped at 'end of life'.
- c. When an engine has reached an agreed 'end of life' then the Technical Director may at his discretion choose to have that engine stripped to check for compliance.
- d. If any engine is found to have been opened or its seals removed or if any (sealed) engine is inspected by the technical director or his appointed staff and found to be in breach of the technical rules the rider will be disqualified from ALL races when this engine was used. The points earned will be removed in the riders championship and if applicable the manufacturers championship.
- e. At the Technical Directors discretion an engine may be unsealed under the supervision of the Technical Director or his appointed staff for a visual inspection only on grounds of safety. If the engine is discovered to have or

be failing the engine will be removed from the active engines. If found safe the engine will be resealed immediately by the attending official.

### **2.3.11 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.

### **2.3.12 Wildcard technical specification**

Wildcards in the Superbike Class only will be allowed to enter using machines with components not featuring on the approved component lists. The parts must be declared at the time of entry to the Superbike Technical Director and must be or have been generally available parts. They must of a lower or equal performance level than those allowed in the rules. No 'factory' parts will be considered and the technical Directors decision on eligibility will be final.

### **2.3.13 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.

Parts from different homologations may not be used on machines from another homologation including when sharing the model name but excepting when the part is superseded for production reasons and also accepted by the FIM, See Appendix; 'Homologation Rules' for details

### **2.3.14 Wings and Aerodynamic Aids**

**TBD**

### **2.3.15 Reference team**

The reference team is the Superbike team nominated by the motorcycle manufacturer. See electronics 2.4.9.1. (It is allowed that this team is not a team competing in WSBK). See Chassis 2.4.10.1.b

### 2.3.16 Concession parts

The motorcycle manufacturer may nominate themselves, their subsidiary or one company as the supplier of the engine **concession** parts. The nominated party will be known as the **concession** part supplier.

All **concession** parts must be approved by FIM Superbike Technical Director **before** they are allowed to be used.

For the updates of concession parts please see 2.4.3.4

Concession parts remain legal for use until the end of the season following the season in which they are updated / replaced.

Concession Parts			
Part	Price Limit	Lead time	Notes
Valve springs single	€ 60.00	10 weeks	3 sets by January 10th if ordered then 10 weeks.
Valve springs double	€ 75.00	10 weeks	3 sets by January 10th if ordered then 10 weeks.
Collet and Retainer	€ 45.00	10 weeks	3 sets by January 10th if ordered then 10 weeks.
Camshaft	€ 1,000.00	10 weeks	3 sets by January 10th if ordered then 10 weeks.
Camshaft Sprocket	€ 100.00	10 weeks	3 sets by January 10th if ordered then 10 weeks.
Shim bucket	€ 45.00	10 weeks	3 sets by January 10th if ordered then 10 weeks.
2019 Cam chain	TBC	10 weeks	3 sets by January 10th if ordered then 10 weeks.
2019 Flywheel	€ 1,000.00	10 weeks	3 sets by January 10th if ordered then 10 weeks.

The parts must be documented with drawings, dimensions, pricing, photos to enable precise identification of the parts. ALL parts must be permanently marked with a part number, version number (when updated or a new part number) and a unique serial number.

### 2.3.17 Order details

The concession parts must be supplied to the following championships upon request:

- i. World Superbike Championship

The parts must be available within **10** weeks of a confirmed order and deposit. Order and deposit details must be documented by the manufacturer and will be published in the approved parts list on [www.fim-live.com](http://www.fim-live.com)

Manufacturers must make 3 cylinder heads available per rider by **January 10<sup>th</sup>**. Further heads must be supplied at a rate of 6/month. There will be at least one order opportunity per season per evolution.



The cylinder head porting is not a compulsory concession part for the customer teams.

### 2.3.18 Approved parts

The approved parts must be supplied to the following championships upon request:

- i. World Superbike Championship

All approved parts must be approved by FIM Superbike Technical Director **before** they are allowed to be used.

Approved Parts			
Part	Price Limit	Lead time	Notes
Swingarm	€ 10,000.00	10 weeks	At least 1 must be available per rider in WSBK within 2 races of its first use.
Triple Clamps	€ 2,000.00	10 weeks	At least 1 must be available per rider in WSBK within 2 races of its first use.
Linkage	€ 1,500.00	4 weeks	At least 1 must be available per rider in WSBK within 2 races of its first use.
Sump 2018	€ 3,000.00	10 weeks	3 sets by January 10th if ordered then 10 weeks.
Sump 2019	€ 2,000.00	10 weeks	3 sets by January 10th if ordered then 10 weeks.
Superbike Kit System	€ 8,000.00	8 weeks	Only reference team may develop these parts

### 2.3.19 Parts Approval

The parts manufacturer is responsible for the approval of their parts and the team using them should ensure that they have been approved.

The parts must be documented with drawings, dimensions, pricing, contact details for ordering and photos to enable precise identification of the parts. ALL parts must be permanently marked with a part number, version number (when updated or a new part number) and a unique serial number.

Approved parts lists will be published at [www.fim-live.com](http://www.fim-live.com)

End

## **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 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.

Once a motorcycle has obtained the homologation, it may be used for racing in the corresponding class for a maximum period of 8 years (see Homologation art 1.4.4). Or until such time that the homologated motorcycle is disqualified by new rules or changes in the technical specifications of the corresponding class.

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 Engine configurations and displacement capacities**

The following engine configurations comprise the Superbike class.

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

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

### 2.4.3.1 Balancing various motorcycle concepts

~~In order to equalize the performance of motorcycles with different engine configurations, an air restrictor may be applied according to their respective racing performances.~~

~~This handicap is applied only to the '1200cc 2-cylinder' motorcycles.~~

~~A new 2-cylinder entry will not be included in the 'Balancing various motorcycle concepts' rules until the performance is proven during the first two years of use in the FIM Superbike World Championship competition. In the case that a new 2-cylinder entry wins a race in the Dry in the first year, the restrictors will be applied from the start of the second year.~~

~~A new 2 cylinder entry is considered an entry by a new manufacturer to the Championship — not a new model of machine from an existing manufacturer.~~

~~The air restrictor handicap will be applied according to the relevant provisions described in Art 2.4.3.4: 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.~~

~~Each racing season will begin with the same balancing level as the preceding season finished.~~

- a. In order to equalise the performance of different brands of machine rev limits will be individually applied to each brand.**
- b. Each season will begin with the same rev limits as the previous season finished.**
- c. The rev limit will be adjusted according to 2.4.3.2**
- d. Updated machines with the same basic engine design will continue with the manufacturers previous rev limit. Any new machines entering with a redesigned engine will have their rev limit set by calculation.**
- e. The initial rev limit will be the dynamometer measured rev limit of 3<sup>rd</sup> & 4<sup>th</sup> gear averaged, plus 3% or 1100rpm above the dyno measured max horsepower rpm of a production machine. Whichever is lower.**
- f. The limiter in all gears will be analysed to check for anomalies.**
- g. The dyno test will take place during the homologation inspection. (See Part 4.0 Homologation, 1.4.b)**
- h. The Superbike Commission can at any time modify the handicap system to ensure fair competition.**

### 2.4.3.2 Balancing Calculation

- 1) FIM/DWO are developing (with a partner) an algorithm to analyse the performance of the machines relative to one another.
- 2) The algorithm may include but not be limited to the following signals:
  - a. Lap time relative to all other competitors
  - b. Speed traps
  - c. Number of riders per brand
  - d. Anticipated individual rider performance
    - i. Per track
    - ii. Considering preceding rounds
  - e. Race results
  - f. Laps led
  - g. Overall race time
  - h. Change in balance following any rpm limiter changes
  - i. Bias towards recent results reflecting current performance
  - j. Any concession part updates being applied
- 3) The rev limit may be updated (according to 2.4.3.2) at the end of every 3<sup>rd</sup> event provided at least 3 events remain in the season.
- 4) The rev limit may also be updated at the end of the season.
- 5) FIM/DWO reserves the right to update the rpm balance at their discretion in the case of an imbalance.

~~6) 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.~~

~~7) 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.~~

2. 'Wet' races (as declared by the Race Director) are not taken in account for the calculation of an 'event average'.

### 2.4.3.3 ~~Air restrictors for 1200cc 2 cylinders~~ **Rev limit**

~~Application:~~ Only the 1200cc 2-cylinder engines may be fitted with air restrictor. Should a restrictor be required then the first restrictor size to be installed will be equivalent to a Ø52mm circular area. Air restrictor size will be adjusted in steps equivalent to a change of 2mm in diameter, between Ø52mm and to a minimum of Ø46mm (None ↔ Ø52mm ↔ Ø50mm ↔ Ø48mm ↔ Ø46mm), if needed during the Championship, as described below in Art. 2.4.3.4

~~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 (Ø 52, Ø 50, Ø 48, Ø 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.~~

**The manufacturer specific rev limit will be adjusted in 250rpm increments (up or down).**

**The rev limit will be controlled by the manufacturers software and will be monitored by the FIM/DWO approved rev-logger (see 2.4.9.1). Over rev because of downshift will be ignored. ECU Hard limiter must be set to the WSBK specified rev limit.**

**~~The maximum rev limit will 15,000rpm for 4 cylinder machines and 12700 from 2 cylinder machines (for safety reasons), this fixed maximum will be re-evaluated each season. There will be no balancing increases above this rpm.~~**

WSBK Initial rev-limit	
Brand	Proposed
Aprilia	14700

BMW	14700
Ducati	12400
Honda	14300
Kawasaki	14100
MV Agusta	14700
Suzuki	14700
Yamaha	14700

#### **2.4.3.4 — 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. 2.4.3.2 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 air restrictor size of all the 1200cc 2-cylinder motorcycles will be increased by one size or as a last step the air restrictor will be withdrawn.

2. If the resulting gap of the average value of 'event averages', calculated as described in Art. 2.4.3.2, 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 air restrictor size of the 1200cc 2-cylinder manufacturers will be reduced by one size to a minimum of Ø46 mm (or the equivalent area 1661.9 mm<sup>2</sup>).

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 updated every third event. A new average value of the 'event averages' will be calculated over six events, until the points gap of the average value of the 'event averages' from the last 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.~~

#### **2.4.3.4 Concessions**

- a. Concession points are awarded according to the final results of all dry races. Any rider can earn the concession points.
- b. At the start of each season manufacturers will begin with 0 concession points.
- c. The points will be awarded as follows:
  - i. 1<sup>st</sup> place = 3 concession points
  - ii. 2<sup>nd</sup> place = 2 concession points
  - iii. 3<sup>rd</sup> place = 1 concession point
- d. No updates can be made to the concession parts during the first three races.
- e. At the end of the first three races:
  - i. Any manufacturer whom achieves 9 or more points less than the manufacturer with the most concession points may choose at their discretion to make one update to the concession parts during the season.
  - ii. ~~Should no manufacturer achieve 9 concession points in the first three races then no manufacturer may make an update to the concession parts during the season.~~
  - iii. ~~At any point during the season once a manufacturer achieves 9 concession points no concession parts updates will be allowed.~~
- f. Any manufacturer whom achieves 36 or more points less than the manufacturer with the most concession points at the end of season may update the concession parts for the following season.
- g. FIM/DORNA reserve the right to allow, at their discretion, one further concession parts update during the season for new manufacturers entering the series or for new homologations of bikes with a new design of engine.
- h. If a newly homologated machine maintains the same engine design as its predecessor and the manufacturer has not earned a between season concession update then the new machine must begin with the same engine specification as the last season with the approved concession parts. The FIM Superbike technical directors decision on this will be final.
- i. Machines considered as new will have their parts approved by December 31<sup>st</sup> to allow parts to be supplied to supported teams for the first race. A minimum of 3 sets of parts must be supplied to teams before January 10<sup>th</sup>.

#### **2.4.4 Minimum weight**

All machines

168 kg

- a. 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.
- b. There is no tolerance on the minimum weight of the motorcycle.
- c. 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.
- d. 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.
- e. 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.

#### **2.4.5 Numbers and number plates**

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:	70 mm
	Minimum stroke:	20 mm
	Minimum space between numbers	10 mm

The allocated number (& plate) for the rider must be affixed on the motorcycle 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 on the lower rear portion of the lower fairing. The number must be centred on the white background. Any change to this must be pre-approved a minimum of 2 weeks before the first race by the Superbike Technical Director.
- c. The numbers must use the fonts as detailed after Art2. Any numbers not using these fonts must have the design of the numbers and the layout pre-



approved by the Superbike Technical Director a minimum of 2 weeks before the first race. All digits must be of standard form.

- d. Any outlines must be of a contrasting colour and the maximum width of the outline is 3mm. 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 FIM Superbike Technical Director will be final.

#### **2.4.6 Fuel**

See article 2.8 for full Fuel regulations

#### **2.4.7 Tyres**

- a. The maximum number of tyres, of any type, available to each rider during the event will be 24 (11 front tyres– 13 rear tyres).
- b. A maximum of 15 tyres can be mounted per rider at any time.
- c. The maximum number of each type or option of tyre is according to the 'allocation list' at each event. This is event specific and supplied to teams by the official tyre supplier. It is the same for every rider in the class. Tyre types may not be exchanged between riders. The official tyre supplier will ensure that each rider's allocation limits are adhered to.
- d. With the consultancy of the FIM Superbike Technical Director and the official tyre supplier only Race Direction may alter the 'allocation list' during an event.
- e. Every tyre used during the event must be marked with an adhesive sticker with a number allocated by the FIM Superbike Technical Director. The sticker will be a different colour front and rear.
- f. For both Superbike races only, wet and intermediate tyres will not need to be marked with a tyre sticker. They will not be considered in the total number of tyres available for use; however normal allocation limits still apply.
- g. The two riders passing from Superpole 1 to Superpole 2 will be allocated one (1) extra rear tyre (14 rear tyres overall, 25 total).
- h. The tyre stickers will be delivered to the teams in a sealed envelope, on the day before the first practice after which the teams will be responsible for their use.
- i. The stickers must be applied to the left sidewall of the tyre.
- j. The use of motorcycles without the official stickers will be immediately reported to the Race Direction whom will take appropriate action.

- k. After the third free practice session, the tyre supplier will allocate one (1) rear 'qualifying tyre' to all riders.
- l. Qualifying tyres can only be used during Superpole 2.
- m. Riders in Superpole 1 cannot use qualifying tyres. Only riders taking part in Superpole 2 can use the allocated qualifying tyre. The unused qualifying tyre from riders not taking part in Superpole 2 must be returned to the tyre supplier.
- n. If the qualifying tyre is used during Superpole 1, the rider will lose his qualifying time and must start from the back of the grid.
  
- o. Any modification or treatment (cutting, grooving) is forbidden.
- p. 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 to be used at the event.
- q. 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.
- r. 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**

There allocated number of engines is:  
 ((Race events in Season)/2) rounded UP.

See Art: 2.3.9 For Sealing and Usage Details.

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

- a. The homologated engine design model cannot be changed.
- b. Homologated materials and castings for the crankcase, cylinder, cylinder head and gear-box housing must be used.
- c. The method of cam drive must remain as homologated.
- d. The method of valve retention must remain as the homologated model. No pneumatic valve retention devices are allowed unless fitted to the homologated model.
- e. 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.

- f. **The concession parts supplier must provide engine build sheets detailing the engine build clearances/tolerances, details and methods.**

#### **2.4.8.1 Fuel injection system**

'Fuel injection systems' refers to throttle bodies, fuel injectors, variable length intake tract devices, fuel-pump and fuel pressure regulator.

- 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 may be altered or replaced. **The critical dimensions of the air funnels used by the nominated reference team must be supplied to the teams purchasing the approved concession parts.**
- d. Primary throttle valves cannot be changed or modified.
- e. Secondary throttle valves and shafts may be removed or fixed in the open position and the electronics may be disconnected or removed.
- f. Variable intake tract devices cannot be added if they are not present on the homologated motorcycle and they must remain identical and operate in the same way as the homologated system. All the parts of the variable intake tract device must remain exactly as homologated (excepting the air funnels). Variable intake tract devices may be replaced with fixed air funnels.
- g. Air and air/fuel mixture must go to the combustion chamber exclusively through the throttle body valves.
- h. Electronically controlled throttle valves, known as 'ride-by-wire', may be only used if the homologated model is equipped with the same system.
- i. If the variable intake tract actuation mechanism mount or fuel injector mount is an integrated part of the air funnel then those parts alone may be redesigned maintaining the exact geometry of the original parts.
- j. If the mechanism link arm interferes with the air funnels then the link may be redesigned for clearance maintaining the exact linkage geometry of the original parts.

#### **2.4.8.2 Cylinder Head**

The cylinder head must be the originally fitted and homologated part with the following modifications allowed:

- a. The cylinder head must begin as a finished production part using homologated materials and castings. Material may only be added by epoxy or removed by machining. No machining or modification is allowed in the cam box / valve mechanism area.
- b. The induction and exhaust system including the number of valves and or ports (intake and exhaust) must be as homologated.
- c. 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 ported/machined cylinder head must be available from the concession parts supplier. The price limit of the ported finished cylinder heads is the retail price of the cylinder head PLUS €3000 per 4 cy. cylinder head, €1800 per 2cy head (1/2 v4 engine), €1200 per 1cy head (1/2 v2 engine). Art 2.3.16 and 2.3.17 apply.**
- d. The throttle body intake insulators may be modified.
- e. The compression ratio is free.
- f. The combustion chamber may be modified.
- g. Valves must remain as homologated.
- h. Valve seats can be modified or replaced for repair. The material must remain as homologated.
- i. Valve guides must remain as homologated. Modifications in the port area are allowed by machining.
- j. Valves must remain in the homologated location and at the same angle as the homologated valves.
- k. Rocker arms (if any) must remain as homologated.
- l. The exhaust air bleed system must be blocked and the external fittings on the cam cover(s) may be replaced by plates.
- m. The homologated cylinder head / cam cover may be replaced by a cosmetic replica of higher specific weight material (i.e. replace magnesium part with aluminium).

**The following parts must be made available by the concession parts supplier and follow the concession rule (art 2.4.3.5) (for order details see art 2.3.17).**

- n. Valve springs must be the **originally homologated or the approved concession valve spring**. ~~may be altered or replaced~~, Their material must remain as homologated. An additional spring may be added or the spring may be removed.  
**The price limit is €60 for each individual spring when using one spring per valve and €75 per pair of springs when utilising 2 springs per valve.**
- o. **Only the originally homologated or the approved concession** valve spring (or collet) retainers, collets, spring seats may be ~~altered or replaced~~ **used**.  
**The price limit is €45 per spring (or collet) retainer and collet set (for one valve, individual parts price total).**

- p. **Only the originally homologated or the approved concession** The shim buckets / tappets may be **used**. ~~replaced but~~ **The standard parts may have their surface finish altered. The concession parts** must be the same height, diameter, material type, ~~surface finish~~ and shim to top surface dimension as the homologated part. The weight must be equal to or greater than the homologated part. **The price limit is €45 per shim bucket.**

#### 2.4.8.3 Camshaft

- a. Camshafts may be altered or replaced from those fitted to the homologated motorcycle (see also Art. 2.4.8).
- b. **Only the original homologated or the approved concession camshafts may be used.**
- c. Offsetting the camshaft is not allowed. The camshaft must remain in the homologated location.
- d. **The camshafts must be available from the concession parts supplier and follow the concession rule (art 2.4.3.5). The price limit is €1000 per camshaft in an inline 4 engine and €650 per camshaft in a V4 or V2 engine. The concession camshafts must include the parts listed in 2.4.8.4**

#### 2.4.8.4 Cam sprockets or cam gears

- a. Camshaft sprockets, pulleys or gears may be altered or replaced to allow degreasing of the camshafts (see also Art. 2.4.8 and 2.4.8.3). **The camshaft sprockets must be available from the concession parts supplier and follow the concession rule (art 2.4.3.5). The price limit is €100 per sprocket.**
- b. The cam chain or cam belt tensioning device(s) can be modified or changed.
- c. The cam chain may be altered or replaced but must remain the same type.
- d. **For 2019: Only the originally homologated or approved concession cam chain may be used. The price limit tbc.**

#### 2.4.8.5 Cylinders

- a. Must be the originally fitted and homologated part with no modification allowed.
- b. The cylinder base gasket(s) may be changed.
- c. **The top face of the cylinder may be ground to adjust deck height.**

#### 2.4.8.6 Pistons

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

#### **2.4.8.7 Piston rings**

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

#### **2.4.8.8 Piston pins and clips**

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

#### **2.4.8.9 Connecting rods**

##### **For 2018:**

- a. Connecting rod may be altered or replaced from those fitted to the homologated motorcycle. The weight must be the same or greater than the original homologated part. **The weight of the connecting rod assembly is the homologated weight (normally the weight of the middle weight rod) with a tolerance of +/-3%.**
- b. The material must be the same type as the homologated item (i.e. steel, titanium, alloy) or steel.
- c. If the original connecting rod is fitted with a little end insert then the replacement connecting rods may also have an insert of the same material as fitted in the original homologated connecting rod.
- d. If the original homologated connecting rod is not fitted with a little end insert then the replacement connecting rods may be fitted with an insert of any material.
- e. From 2018: If the original homologated connecting rod is not fitted with a little end insert then the replacement connecting rods may be fitted with an insert of the same material as the connecting rod or steel.
- f. The centre to centre (little end to big end) length of the rod must be the same as the original homologated item.
- g. Connecting rod bolts are free **but must be of the same weight or heavier, and of the same material as the original bolt or of higher specific weight material.**

##### **From 2019 for any newly homologated machines:**

- h. The connecting rod must be the originally fitted and homologated part with no modification allowed.**
- i. Connecting rod big end bolts may be changed but must be of the same weight or heavier, same material or of higher specific weight material.**

- j. The weight of the connecting rod assembly is the homologated weight (normally the weight of the middle weight rod) with a tolerance of +/-3%.

#### 2.4.8.10 Crankshaft

Only the following modifications are allowed to the homologated crankshaft:

- a. Bearing surfaces may be polished.
- b. Surface treatments may be applied to the crankshaft.
- c. Balancing is allowed but only by the same method as the homologated crankshaft. For example heavy metal, i.e.: Mallory metal inserts, are not permitted unless they are originally specified in the homologated crankshaft.
- d. **For 2018:** The addition or reduction in weight of the crankshaft in order to reach a racing balance can be no higher than 5% of the homologated weight without the tolerance as shown in the homologation documents of the crankshaft.
- e. **From 2019:** The addition or reduction in weight of the crankshaft in order to reach a racing balance can be no higher than 3% of the homologated weight without the tolerance as shown in the homologation documents of the crankshaft.
- f. The balancing must be performed by the original method i.e. drilling or machining and in the same position (i.e. edge of flywheels).
- g. Polishing of the crankshaft is not allowed.
- h. Balance shaft must remain as homologated. No modifications are allowed.

#### 2.4.8.11 Crankcase / Gearbox housing

- a. Crankcases must be the originally fitted and homologated part with only the following modifications allowed. If the crankcases have an integral cylinder then the top face of the cylinder may be ground to adjust deck height. Oil Spray nozzles may be modified. No other 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. If a vacuum pump is installed on the homologated motorcycle then it may be used only as homologated.  
**Only the original or an approved sump** Oil-pan (sump) and oil pick up **can be used** ~~may be altered or replaced and oil pick up may be altered or replaced.~~ **The price limit is €3000 for one complete set of the required parts. Note that the gasket is free and may form part of the mechanism for controlling oil flow in the sump area. Art 2.3.18 and 2.3.19 apply.**  
**For 2019 onwards the price limit will be €2000**

- c. One thread may be altered for direct oil pressure/temperature sensor fitting in the crankcases or engine covers.
- d. See 2.4.10.1.g.
- e. Oil breather cover must remain as homologated but the internal breather/damper plate can be modified or replaced.

#### **2.4.8.11.1 Lateral covers and protection**

- a. Lateral (side) covers may be altered, modified or replaced (excluding pump covers). 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.
- b. Titanium bolts may be used to fasten lateral covers.
- c. 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, composite covers are not permitted.
- d. 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.
- e. 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.
- f. FIM approved covers will be permitted without regard of the material or dimensions.
- g. 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.
- h. Oil containing engine covers cannot be secured with aluminium bolts.
- i. The Technical Director has the right to refuse any cover not satisfying this safety purpose.

#### **2.4.8.12 Transmission / Gearbox**

- a. Only one (1) set of gearbox ratios will be allowed for the whole season. The ratios can be freely chosen.
- b. The ratios chosen by the team for the season (individually and separately for each and every entry) must be declared before the start of the first event (includes wildcard and one-event entries).
- c. External Quick-shift systems are permitted (including wire and potentiometer).
- d. Only the homologated primary gear ratio may be used (see art. 2.4.8.13)
- e. The layout of the transmission shafts must be the same as on the homologated motorcycle.
- f. The gear design and material is free.
- g. The selector drum and complete gear index mechanism are free.



- h. 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.
- i. Countershaft sprocket, rear wheel sprocket, chain pitch and size may be changed.
- j. The sprocket cover may be modified or eliminated.
- k. It will not be allowed to change the gearboxes at the track - a broken Gearbox will equal a broken engine.

#### **2.4.8.13 Clutch**

- a. Aftermarket or modified clutches are permitted (including plates/springs etc).
- b. Back torque limiter is permitted.
- c. **No** power source (i.e. hydraulic or electric) can be used for clutch operation, if not installed in the homologated model for road use. Human power is excluded from the ban.
- d. Clutch system (wet or dry type), type (multiplate) and method of operation (cable/hydraulic) must remain as homologated.
- e. Clutch basket may be changed. If the clutch basket has the primary gear integrated then the primary gear must retain the original number of teeth and tooth form.

#### **2.4.8.14 Oil pumps and oil lines**

- a. **For 2018:** The originally fitted and homologated oil pump may be modified, only the original pump parts may be modified, and or shims/spacers added. Modifications include:
  - i. Blueprinting
  - ii. Changing the oil pressure relief spring.
  - iii. Reducing gear and/or housing thickness.**From 2019:** The originally fitted and homologated oil pump must be used. The oil pressure relief spring is free.
- b. 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**

- a. The only liquid engine coolants permitted is water.
- b. The original radiator or oil cooler may be altered or replaced from those fitted to the homologated motorcycle.
- c. Additional radiators or oil coolers may be added.
- d. The original oil/water heat exchanger may be modified, replaced or removed.
- e. The cooling system hoses and catch tanks may be changed.

- f. Radiator fan and wiring may be changed, modified or removed.
- g. The oil cooler must not be mounted on or above the rear mudguard.
- h. 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**

- a. The air box must be the originally fitted and homologated part with the following modifications allowed:
- b. If the homologated air box is used to mount top type fuel injectors, then the air box and the attached systems must remain as homologated.
- c. If the homologated air box is used to mount variable intake tract devices, then the air box and the attached systems must remain as homologated and function in the same way (excepting the air funnels – see article 2.4.8.1)
- d. If used, variable intake tract devices must function in the same way as on the homologated system (see article 2.4.8.1)
- e. Air filters, internal flap type valve, sensors and vacuum fittings may be removed, modified or replaced with aftermarket parts. Should any modification be required for the fitment of these parts it will be at the discretion of the Technical Director.
- f. Any holes in the air box to the outside atmosphere resulting from the removal of components must be completely sealed from incoming air.
- g. The air box drains must be sealed.
- h. 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.
- i. All motorcycles must have a closed breather system. All the oil breather lines must be connected, may pass through an oil catch tank and exclusively discharge in the air box.
- j. If the top of the airbox is formed by the bottom of the tank then that part of the tank will be considered as the airbox and must conform to its homologated shape excepting 2mm variance in corner radii and must be the same volume. A dry break / quick release connector may be fitted. See art 2.4.8.17.
- k. Additional heat shielding is allowed to be applied to lower face/side of the airbox (ie foil tape).

#### **2.4.8.17 Fuel supply**

- a. Fuel pump and fuel pressure regulator must be the originally fitted and homologated part with no modification allowed.
- b. 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, or teams must provide a temporary adaptor to allow checks.

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

#### **2.4.8.18 Exhaust system**

- a. Exhaust pipes, catalytic converters and silencers may be altered or replaced from those fitted to the homologated motorcycle. Catalytic converters may be removed.
- b. 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.
- c. For safety reasons, the exposed edge(s) of the exhaust pipe(s) outlet(s) 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. The noise limit for Superbikes will be 115 dB/A (with a 3 dB/A tolerance after the race only).
- f. **The critical dimensions of the exhaust system used by the nominated reference team must be supplied to the teams purchasing the approved concession parts.**

#### **2.4.9 Electronic Control System**

- a. The engine control system (including ECU) must be either:
  - i. A DWO/FIM approved 'Superbike Kit System' See art 2.4.9.1
  - ii. **Deletion considered for 2019** A DWO/FIM approved 'Superstock 1000' kit model plus DWO/FIM approved data logger. See art 2.4.9.2
- b. No other external ignition/injection controllers, traction control modules or other active expansion modules or calculation units may be fitted.
- c. Central unit (ECU) may be relocated.
- d. Telemetry (remote signals to or from the bike) is not allowed.
- e. No remote or wireless connection to the bike for any data exchange or setting is allowed whilst the engine is running or the bike is moving.
- f. Spark plugs, spark plug caps and HT leads (if applicable) are free.
- g. Battery type is free. The maximum capacity for a lithium type battery is 100Wh.
- h. The Wiring Harness is free.
- i. Each team must provide a download connection lead to the FIM Technical Director.

- j. **The FIM/DWO specified rev-logger must be fitted as detailed (separately) at all times. The rev-logger will be connected directly to the crankshaft sensor, power supply and to a CAN bus directly from the ECU.**

**2.4.9.1 The DWO/FIM approved ‘Superbike Kit System’ must meet the following:**

- a. The system must be a complete package including all electrical / electronic parts not supplied on the homologated motorcycle required for full operation of all strategies – excepting the wiring harness.
- b. Only the machine manufacturer or one approved partner can submit a single system for approval.
- c. The total price of the complete system including ECU, dashboard/display, all additional sensors essential for full operation of all strategies, IMU, software, enable codes, datalogging, analysis software, ECU ‘tuning’ or ‘setting’ software, datalogger, download/connection cable, example harness design, manual for use, (not a complete list), is €8000 Euro (excluding taxes). Data Logging only sensors are excluded from the price cap.
- d. There must be at least 50 Superbike Kit Systems (currently approved system) available worldwide per season, if ordered, through authorised distributors or dealers. The Superbike Kit System must be marked and considered as for race use only.
- e. Lead time less than 8 weeks.
- f. The ECU must be from the FIM/DWO Approved Superbike ECU List.
- g. The following sensors may be used:
  - 1. Throttle position (multiple)
  - 2. Map sensor, Map Sync (pressure sensor on the intake port used to synchronize the engine during the start)
  - 3. Airbox Pressure
  - 4. Engine pick-ups (Cam, crank) (Crank trigger may be replaced)
  - 5. Lambda
  - 6. Exhaust Valve/Motor position/feedback
  - 7. Twist grip position
  - 8. Front speed
  - 9. Rear Speed
  - 10. Gearbox output shaft speed
  - 11. Gear position
  - 12. Gear shift load cell
  - 13. Front brake pressure
  - 14. Rear brake pressure
  - 15. Oil pressure
  - 16. Air pressure
  - 17. Water temperature
  - 18. Air temperature
  - 19. IMU (various signals)

20. Transponder / Lap time signal
  21. Knock Sensor
  22. Fuel pressure
  23. Oil temperature
  24. Fork position
  25. Shock position
  26. Tilt / Tip-Over Switch
  27. GPS Unit
  28. Rear tyre temperature (External) (Multiple)
  29. Rear TPMS Monitor (Temperature and Pressure)
- h. Sensors on the above list that are originally fitted to the standard machine may be replaced with alternative sensors, however they must be included in the Superbike Kit System and inside the total price (art 2.4.9.1.c).
  - i. 2 further additional sensor channels (that are not included in the above list) may be added to the machine.
  - j. Redundant/doubled sensors are allowed but must be included in the Superbike Kit System if they are required for safe operation.
  - k. Analogue/Logic to CAN sensors are allowed.
  - l. The sensors originally fitted to the homologated machine and used as homologated, will not be included in the price limit.
  - m. When the following sensors are damaged through crashes they may be replaced by parts of the same function but do not have to be the same specific part from the Superbike Kit System:
    - i. Fork and Shock Potentiometers
    - ii. Brake pressure sensors
    - iii. Gear shift sensor (but must remain the same type included with the kit – i.e. Load cell, switch etc.)
  - n. Before the final pre-season test, before the mid-season test(s) or at the season midpoint and within three hours of the last race of the season any firmware / software updates being used by the ~~factory~~ **reference** teams must be made available to all same manufacturer customer WSBK teams (more frequent updates are allowed).
  - o. The manufacturer must provide current strategies but may remove the ability to change or see these settings, base mapping must be provided.
  - p. Only firmware and software from the FIM/DWO approved software and firmware list may be used.
  - q. ~~Factory~~ **Reference** Teams may use any development firmware and software which will be made available to teams according to the update schedule.
  - r. Any essential hardware updates required must be made available to customer teams from the same race as the ~~factory~~ **reference** team and available free of charge to update those Superbike Kit Systems purchased in the current season.
  - s. Transponder is NOT included in the “Superbike Kit System”
  - t. The selection of logged channels is free.

- u. Coils and coil drivers are free and must be included in the Superbike Kit System if altered.
- v. No other external ignition/injection controllers, traction control modules or other active expansion modules or calculation units may be fitted unless included in the Superbike System.
- w. The factory **reference** team must use the current seasons "Superbike Kit System". No backdated parts may be used.
- x. Superbike kit systems remain approved for 3 seasons (first season inclusive).

*Manufacturer nominated Superbike Kit System suppliers please also see "Superbike Kit System Approval Requirements" documentation.*

### **To be discussed during 2018 to be applied 2019/2020**

#### **2.4.9.1 DWO/FIM approved Electronics and software**

#### **2.4.9.2 DWO/FIM approved 'Superstock 1000' kit model.**

- a. As Superstock 1000 (See article 2.6.9.1)

#### **2.4.9.3 Generator, alternator, electric starter**

- a. The stator/coil must be the originally fitted and homologated parts with no modification allowed.
- b. The flywheel may be modified or replaced  
**2019: The flywheel must be available from the concession parts supplier and follow the concession rule (art 2.4.3.5). The price limit is €1000.**
- c. The ACG must generate sufficiently to maintain battery charge.
- d. The use of a 'booster' battery is permitted except during parc fermé.
- e. The electric starter must operate normally and always attempt to start the engine during the event.
- f. During parc fermé the starter must crank the engine at a suitable speed for starting for a minimum of 2 seconds without the use a boost battery. No boost battery may be connected to the machine after the end of the session.
- g. The starter motor gear system must be the originally fitted and homologated parts. Surface and hardening treatments are allowed.
- h. Motorcycles should self-start on the starting grid in neutral. Push-starting on the starting grid is not allowed, however start line Officials may push start the motorcycle if necessary (in gear).

#### **2.4.10 Main frame and spare motorcycle**

- a. During the entire duration of the event, each rider may 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 must request the use of a spare frame to the FIM Superbike Technical Director.

- b. One (1) Spare complete motorcycle is allowed per rider.
- c. A team may opt to have one (1) spare machine shared by two or more riders. The fitted engine must be sealed but not allocated to a rider in this case.

#### **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 with 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, on the steering-head.
- If the primary or active motorcycle is damaged in a crash or in any other incident and is declared unrepairable or inoperable (safely and in the available time) by the Technical Director or his appointed staff then 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 spare machine may then be presented for scrutineering before the next session.
- The spare bike will not be allowed in the front of the pit box until the rider or the team has received authorization from 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 front of the pit box as soon as possible and put in storage at the back of the pit box out of view of pit lane.
- Once a rider exits the pitlane for any session including the race the spare machine can no longer be used.
- Any actions contrary to these procedures will result in a penalty as described in the Sporting Regulations.
- The damaged frame may be impounded by the Technical Director for later examination.

#### **2.4.10.1 Frame body and rear sub-frame**

- a. The main frame must be the originally **manufactured**, fitted and homologated part with only the following modifications allowed:
- b. **In all the following cases the** main frame may only be altered by the addition of gussets, ~~or~~ tubes **or plates unless stated otherwise. The additions may be welded or bonded.** No gussets or tubes may be removed, other **allowed** modifications are ~~allowed~~ **detailed** within the following section of these rules. **These additions must be documented by the reference team.**
- c. Holes may be drilled on the frame only to fix approved components (i.e. fairing brackets, steering damper mount).
- d. **The homologated position (of engine, steering stem or pivots) is considered as the position in which the production motorcycle is supplied.**
- e. **If the original chassis includes adjustable inserts for the engine mounting position then the inserts are free BUT the chassis cannot be modified further (except as mentioned in b). There is no limit to the range of adjustment.**
- f. **If the original chassis has fixed engine mounts then** the engine must be mounted in the homologated position.
- g. Suspension linkage mounting points on the frame must remain as homologated
- h. **If the original chassis includes adjustable inserts for the steering stem position then the inserts are free BUT the chassis cannot be modified further (except as mentioned in b). There is no limit to the range of adjustment.**
- i. **If the original chassis has a fixed steering stem position:**
  - a. **For 2018:** The steering stem axis/position may be adjusted by moving the steering head bearings. The fore and aft position of each bearing can be a maximum +/-9 mm in respect to the original bearing location (excluding tolerances). Fore and aft is considered at the intersection of the pivot axis and the original bottom plane of the bearing cup/insert, if no insert is fitted in the homologated machine then it is considered along the bottom plane of the original bearing seat.
  - b. **Any machine that is homologated with a new chassis once the 2018 season starts may only adjust the steering stem position by fitting inserts into bearing seats of the of the original steering head. The fore and aft position of each bearing can be a maximum +/-9 mm in respect to the original bearing location (excluding tolerances) considered on the bottom plane of the original bearing seat.**
- j. ~~If the homologated machine has exchangeable bearing inserts/bushes: The bushings/inserts are free to make the above adjustment and the homologated position is considered as the position in which the production motorcycle is supplied.~~



- k. ~~If the homologated motorcycle has fixed bearing positions for the steering stem: Steering angle changes are permitted by fitting inserts onto the bearing seats of the original steering head. The original bearing seats may be modified (ovaled) or increased in diameter to insert special bushings. No part of these special bushings may protrude axially more than 3 mm from the original steering head pipe location nor may the bearing be inset. 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.~~
- l. **If the original chassis includes adjustable inserts for the swinging arm pivot position then the inserts are free BUT the chassis cannot be modified further (except as mentioned in b). There is no limit to the range of adjustment.**
- m. **If the original chassis has a fixed swingarm mounting pivot axis:**
  - a. **For 2018:** The swing arm pivot axis may be moved a maximum of 5 mm radially (excluding tolerances) measured from the homologated axis. Modifications may be made to the frame at the swing arm pivot area to allow this. Welding and machining is allowed for the purpose of making this modification, regardless of the technology used and the dimensions of the component or section of the frame (i.e.: cast, fabricated, etc.). The method of adjustment is free - e.g. bushings, inserts, offset axles. For machines fitted with exchangeable inserts as standard then the homologated position is considered as the position in which the production motorcycle is supplied. Should this pivot / axles pass through the crankcases then the relevant crankcase mounting hole may be machined larger, no welding or other modifications will be permitted. Crankcases may be machined for swingarm clearance only.
  - b. **Any machine that is homologated with a new chassis once the 2018 season starts may only adjust the swingarm position by using inserts in the original unmodified frame mounting positions. The swingarm axle diameter may be reduced. The swing arm pivot axis may be moved a maximum of 5 mm radially (excluding tolerances) measured from the homologated axis.**
- n. The original lock stops may be removed from the frame body by grinding or machining. However another form of lockstop must be fitted.
- o. All motorcycles must display a vehicle identification number punched on the frame body (a proper 'legal VIN' or a unique designation by the team to which the technical director may choose to append). No detachable plates are permitted.
- p. No polishing or surface refinishing is allowed but the paint scheme is not restricted.
- q. Front and rear sub frame may be changed altered or removed.

#### 2.4.10.2 Suspension - General

- a. Participants in the Superbike class must only use the approved and listed suspension units for that season.
- b. The approved products from the manufacturers must be available to all participants at least one month before the first round of the World Superbike season, and remain available all season. The products must be available within 6 weeks of a confirmed order.
- c. Setting parts and tuning parts must be provided by the suspension manufacturers to all customers/ teams/ participants using the manufacturer's products. These parts can be used by all participants during the season. These parts shall be available for immediate delivery to all teams/customers.
- d. Teams may not modify any part of the forks or shock absorber, all setting parts must be supplied by the Suspension manufacturer and available to all teams/riders.
- e. The suspension manufacturers are allowed to offer service contracts when the team is using the approved and listed suspension products. The suspension manufacturers cannot demand a service contract for a customer or participant in order to obtain a suspension product.
- f. **Electronic suspension cannot be used:**
  - ~~i. No aftermarket or prototype electronically controlled suspensions may be used. Electronically controlled suspension may only be used if already present on the production model of the homologated motorcycle.~~
  - ~~ii. The electronically controlled valves must remain as homologated. The shims, spacers and fork/shock springs not connected with these valves can be changed.~~
  - ~~iii. The ECU for the electronic suspension must remain as homologated and cannot receive any motorcycle track position or sector information; the suspension cannot be adjusted relative to track position.~~
  - ~~iv. 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.~~
  - ~~v. The original suspension system must work safely in the event of an electronic failure.~~
  - ~~vi. Electro-magnetic fluid systems which change the viscosity of the suspension fluid(s) during operation are not permitted.~~
- g. Electronic controlled steering damper can only be used if installed on 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 Front Suspension

- a. The front fork in whole or part may be changed but must be the same type homologated (leading link, telescopic, etc.).
- b. The upper and lower fork clamps (triple clamp, fork bridges) and stem may be changed or modified. **The parts used by the manufacturer nominated reference team must be made available according to 2.3.18. and 2.3.19 with a price limit of €2000.**
- c. A steering damper may be added or replaced with an 'after-market' damper.
- d. The steering damper cannot act as a steering lock limiting device.

#### **2.4.10.4 ~~Rear fork (Swing-arm)~~ Swinging arm (Rear Fork)**

- ~~a. 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.~~
- b. Only approved swinging arms may be used. However the type single or double sided must remain as homologated.**
- c. The price limit for approval is €10,000 for the bare swingarm. The limit for all the remaining parts to complete the assembly including but not limited to bearings/spacers/inserts/chain-adjusters/chain sliders/hugger/chain-guard/sharkfin is €2000. Any supplier may (must?) submit their parts for approval. The parts must be available to any team who wishes to purchase them following art 2.3.18 and 2.3.19. Only one update / evolution may be approved per season.**
- d. The use of carbon fibre or Kevlar® materials is not allowed if not homologated on the original motorcycle.
- e. A chain guard must be fitted in such a way as to reduce the possibility that any part of the riders' body may become trapped between the lower chain run and the rear wheel sprocket.
- f. Rear wheel stand brackets may be added to the rear fork by welding or by bolts.
- g. Brackets must have rounded edges (with a large radius). Fastening screws must be recessed.
- h. Swingarm spindle (pivot) may be modified or replaced.

#### **2.4.10.5 Rear suspension unit**

- a. Rear suspension unit may be changed but a similar system must be used (i.e. dual or mono).
- b. ~~The rear suspension linkage may be modified or replaced.~~ Only approved rear suspension linkages may be used. The price limit for approval is €1500 and must be the complete assembly including rocker/link arms/push pull rods/all bearings/seals/spacers. Any supplier may submit their parts for approval. Updates / evolution is**



Superbike season, and remain available all season. The products must be available within 4 weeks of a confirmed order.

- c. No parts can be added to the approved list during the current season. Performance related updates are not allowed. Any product changes due to manufacturing or material supply issues must be approved in advance.
- d. Front brake master cylinder may be altered or replaced from those fitted to the homologated motorcycle.
- e. Front brake calipers may be altered or replaced from those fitted to the homologated motorcycle.
- f. Rear brake master cylinder may be altered or replaced from those fitted to the homologated motorcycle.
- g. Rear brake calipers may be altered or replaced from those fitted to the homologated motorcycle.
- h. Brake pads or shoes may be altered or replaced from those fitted to the homologated motorcycle.
- i. 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 calipers must be made above the lower fork bridge (lower triple clamp).
- j. Brake discs may be altered or replaced from those fitted to the homologated motorcycle. Only Steel (max. carbon content 2.1 wt%) is allowed for brake discs. Alloys containing beryllium are not allowed to be used for brake calipers.
- k. **The ABS System must be removed.** ~~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.~~
- l. ~~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.~~
- m. 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 to the material. The Technical Director has the right to refuse any guard not satisfying this safety purpose.

#### **2.4.10.8 Handlebars and hand controls**

- a. Handlebars, hand controls (Subject to Art 2.4.8.1) and cables may be altered or replaced from those fitted to the homologated motorcycle.
- b. Cable operated throttles (grip assembly) must be equipped with both an opening and a closing cable including when actuating a remote drive by wire grip/demand sensor.
- c. Motorcycles must be equipped with a functional ignition kill switch or button mounted on the 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.

#### **2.4.10.9 Foot rest and 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 8mm solid spherical radius. (See diagram A & C).
- e. 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.

#### **2.4.10.10 Fuel tank**

- a. The fuel tank must conform in principle to the homologated appearance and location of the original tank; however its actual shape can be slightly changed to suit the rider's preference and increased fuel volume. The tank may also be modified below the upper frame line and under the seat. The tank may be replaced by a fuel cell and a structural cover.
- b. The material of construction of the fuel tank may
- c. be altered from the one of the tank fitted to the homologated motorcycle.
- d. All fuel tanks must be filled with fire retardant material (i.e. fuel cell foam, Explosafe), or be fitted with a fuel cell bladder.
- e. 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.
- f. 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.
- g. Such labels must include the fuel tank manufacturer's name, date of tank manufacture, and name of testing laboratory.
- h. 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).

- i. Fuel cell bladders must conform to or exceed the specification FIM/FCB-2005. Full details of this standard are available from the FIM.
- j. 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.
- k. The original tank may be modified to achieve the maximum capacity of 24 litres, provided the original profile is as homologated.
- l. A cross over line between each side of the tank is allowed (maximum inside diameter 10 mm).
- m. 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.
- n. 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.
- o. The same size fuel tank used in practice must be used during the entire event.

### **Fuel tank homologation**

- a. 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.
- b. 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.
- c. 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.
- d. 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.
- e. 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.
- f. 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.
- g. Only fuel tanks that have passed the FIM test procedure will be accepted.

#### 2.4.10.11 Fairing / Bodywork

- a. The fairing, mudguards and body work must conform in principle to the homologated shape as originally produced by the manufacturer. Headlights must be included even when considered external.
- b. The fairing has a tolerance of +/-15mm from the original homologated road fairing, respecting the design and features of the homologated fairing, with the exception of the oil containing portion of the lower fairing, seat area and the area supporting the screen. The overall width of the frontal area may be +30mm maximum. The decision of the Technical Director will be final.
- c. The windscreen may be replaced.
- d. The ram-air intake must maintain the originally homologated shape and dimensions.
- e. The original air ducts running between the fairing to the airbox may be altered or replaced from those fitted to the homologated motorcycle. Particle grilles or “wire-meshes” originally installed in the openings for the air ducts may be removed.
- f. 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 70 mm above the bottom of the fairing.
- g. There cannot be exit air vents in the front half of the lower fairing below a line 40mm below the centreline of the wheel axles of the machine. The Superbike Technical Director may give permission for the lower fairing to have additional vents added if vents have been filled to meet these and the oil containment requirements.  
Any added vents will not allow the exit of air in the front half of the fairing lower if they are behind a water or oil radiator.
- h. Exceptions may be made to 2.4.10.11.g with the sole agreement of the FIM Superbike Technical Director if a manufacturer produced and FIM approved close fitting, oil containing engine shroud is fitted in addition to the bellypan. In this case OEM shaped air vents will be allowed in the front lower half of the fairing.
- i. Any vents in the fairing lower must have their inner surface finish in-line with their outer surface or overlap to reduce the risk of liquid spraying from the machine.
- j. 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 opened only in wet race conditions, as declared by the Race Director.



- a. 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.
- b. 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.
- c. 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%.
- d. If the upper fairing has a rear edge/section that returns to the frame, reducing airflow between the fairing and frame (or sealing the fairing to the frame) then slots/notches may be removed from that area only. No material can be removed from the lateral (side) surfaces of the fairing. A maximum of 50% of the rear face may be removed.
- e. A Gurney flap (lip/deflector) may be fitted at the edge of the lateral air vents or the rear edge of the fairing to increase vent effectiveness. The gurney flap may project a maximum of 4mm from the lateral surface of the fairing and must have a rounded end. It should be formed from the same material and be a moulded part of the fairing. The Technical Directors decision on suitability is final.
- f. The front mudguard must conform in principle to the homologated shape originally produced by the manufacturer.
- g. 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.
- h. A rear mudguard may be added or removed.
- i. Material of construction of the front mudguard, rear mudguard and fairing is free.
- j. 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.

#### **2.4.10.12 Seat**

- a. Seat may be altered or replaced from those fitted to the homologated motorcycle. The appearance from front, rear and profile must conform in principle to the homologated shape.
- b. The top portion of the rear body work around the seat may be modified to a solo seat.
- c. 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.

- d. Material of construction of the seat is free.
- e. All exposed edges must be rounded.

#### **2.4.10.13 Rear Safety Light**

All motorcycles must have a functioning red light mounted at the rear of the machine. This light must be switched on any time the motorcycle is on the track or being ridden in the pitlane and the session is declared WET. 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 – 1.8 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.

#### **2.4.11 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 material.
- c. Bearings (ball, roller, taper, plain, etc.) of any type or brand may be used.
- d. Fasteners (nuts, bolts, screws, etc.), but internal engine bolts must remain of standard homologated materials or materials of higher specific weight.
- e. Thread repair using inserts of different material such as helicoils and timeserts.
- f. External surface finishes and decals.

#### **2.4.12 The following items MAY BE removed**

- a. Instrument and instrument bracket and associated cables.
- b. Tachometer.
- c. Speedometer and associated wheel spacers.
- d. Chain guard.

#### **2.4.13 The Following Items MUST BE Removed**

- a. Headlamp, rear lamp and turn signal indicators (when not incorporated in the fairing). Openings must be covered by suitable materials.
- b. Rear-view mirrors.
- c. Horn.
- d. License plate bracket.
- e. Tool box.
- f. Helmet hooks and luggage carrier hooks
- g. Passenger foot rests.
- h. Passenger grab rails.
- i. Safety bars, centre and side stand brackets welded to the main frame may be removed.
- j. Catalytic convertors

**2.4.14            The following items MUST BE altered**

- a. 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).
- b. 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.
- c. Motorcycles must be equipped with a red light on the instrument panel that will illuminate in the event of oil pressure drop.

## APPENDIX

### HOMOLOGATION REGULATIONS

#### 1. FIM HOMOLOGATION PROCEDURE FOR SUPERBIKE, SUPERSTOCK AND SUPERSPORT MOTORCYCLES

Homologation is the official assessment made by the FIM for a particular model of motorcycle for which a sufficient number of series production motorcycles have been built and put on sale to the public to justify classification in the relevant Sport Production class.

#### REQUIREMENTS FOR AN FIM HOMOLOGATION

##### Application

Any manufacturer of mass production motorcycles may apply for an FIM homologation of one or more of his models in order to qualify for competing in the Road Racing Superbike & Supersport World Championship and the Superstock Cup as long as the model belongs to one of these classes.

##### Eligibility requirements

Motorcycles must have a valid international homologation for road use or a national homologation for road use in one of these countries or regions: USA,EU or Japan. The motorcycles must represent machines of mass production.

- a. The motorcycles must be of current production.
- b. The motorcycles are to be sold for every day public use.
- c. At the time of the FIM inspection for homologation, the motorcycles must be completely equipped with all road-using equipment (e.g. full lighting equipment).
- d. Only the original manufacturer may present the motorcycle for homologation.
- e. The manufacturer must be a holder of an FIM licence for manufacturers.
- f. If the motorcycle is presented with an engine from a motorcycle manufacturer different from the manufacturer requesting the homologation, a permission or commercial agreement must be presented at the time of the homologation request.
- g. The motorcycle must have a manufacturer's certificate of origin.

## 1.2 MINIMUM PRODUCTION QUANTITIES AND MARKET AVAILABILITY

Evidence of production quantities must be provided to the FIM, certified by the manufacturer's auditing firm and/or any other institution which may provide reliable documentation. This certificate must be written in English or French and the model/type must be specified.

Market availability and sale to the public may be demonstrated by waybills, bills of lading and/or any other import, export or customs documents duly certified by the relevant authority.

Proof must be provided to the FIM by means of a business/manufacturing plan for the model in question that the requirements listed below will be met.

### 1.2.1 Homologations for Superbike, Supersport and Superstock.

- a. The maximum retail price for the **homologated model** ~~Homologation~~:
  - i. The maximum retail price for a Superbike 1000 class **motorcycle** ~~Homologation~~ is 40.000 Euro
  - ii. The maximum retail price for Superstock 1000 class **motorcycle** ~~Homologation~~ machine is 33.000 Euro
  - iii. The maximum retail price for Supersport & Superstock 600 class **motorcycle** ~~machine~~ is 20.000 Euro
- b. The minimum number of motorcycles to be produced are:
  - i. 125 units of the motorcycle model intended to be raced at the time of homologation inspection visit.
  - ii. and 250 units on the 31st December of the homologation visit/year, and 500 units on the 31st December of the following year.

1.2.2 Manufacturers may compete with their Machine in the World Superbike Championship without earning points until 125 units have been produced. Should the minimum required number (125 units) of the motorcycle-to-be-homologated not have been produced within FOUR (4) months of its first outing in a Superbike/Supersport/Superstock event OR the minimum production number not be produced then the SBK Commission reserves the right to refrain the team/manufacturer from participation for a period of time to be determined.

1.2.3 The homologated machine may be fitted with any components respecting Art.1.2.1.a. However to compete in the World Superbike Championship the machine must comply with the prevailing regulations. ~~for example by utilising 'approved components' where applicable.~~

1.2.4 The SBK Commission reserves the right to include the note \*STH (Subject to homologation) on the official entry lists of the championship until the

minimum required number (125 units) are produced.

### 1.3 HOMOLOGATION PROCEDURE, CALENDAR FOR APPLICATIONS, SUBMISSIONS & PUBLICATIONS

A homologation inspection is a complete verification and check of all drawings of the corresponding parts, as well as the documentation for the necessary minimum quantities. These checks will be carried out by the FIM.

- a. The deadline for receiving requests for homologation at the FIM CCR/CTI Secretariat is 30 days before the homologation inspection is to take place.
- b. At the latest four (4) weeks before the inspection for homologation by the FIM, manufacturers are required to send by e-mail the completed and signed homologation forms A, B and C together with all relating documentation and drawings (see Art. 1.6) to the FIM CCR/CTI Secretariat (with the exception of workshop manuals, that can be delivered when they are released to the importers). Missing or incomplete documents and/or drawings will postpone the homologation inspection until a full corrected set is available. The documents and drawings have to be sent in paper and in electronic form (\*.pdf and form C as .pdf and .xlsx to [ccr@fim.ch](mailto:ccr@fim.ch) and [cti@fim.ch](mailto:cti@fim.ch)).
- c. At the latest 3 days before the date of the inspection by the FIM, manufacturers are required to send to the FIM by e-mail, proof of production quantities of the first lot of motorcycles, according to Art. 1.2.1.
- d. If the inspection fails, the homologation is postponed until the established shortcomings have been resolved and at least for one (1) month.
- e. In case of failing the inspection, the original manufacturer may apply for a new homologation, a maximum of 2 more times in the same year, in each racing class.
- f. The homologation forms will be studied by the technical members and the CTI Secretariat, to confirm that they are complete and correct prior to granting the homologation.
- g. The manufacturer shall at all times be responsible for completing the homologation documents with the correct information. All dimensions must be given according to the metric system, excluding wheel dimensions, and with the actual manufacturing tolerances.
  - i. Chassis (frame) ISO2768-c (coarse)
  - ii. Engine Parts ISO2768-m (medium)
- h. All currently accepted drawings may be requested to be re-submitted with updated tolerances and missing dimensions. Any drawings not re submitted will be assumed to comply with the tolerances in Art.1.3.g.
- i. The homologation drawings must fully dimension ALL centres and dimensions to surfaces (including machined faces on frame) allowing a fully resolved 3 dimensional model to be created. The drawings must follow the FIM templates for each sheet.
- j. Manufacturers must supply 3 dimensional models of the noted homologated parts (frame, swingarm, fairing, seat, fenders, tank, piston, cylinder head, combustion chamber). These do not have to include material details. The files must be supplied as .igs AND .stp. The origin

must be aligned centrally on the swingarm pivot axis and aligned with the steering head. The steering head must be presented normal to the z-plane (parallel to the Z-axis). X-axis positive forward, z-axis positive upwards, y-axis positive right to left (left hand rule). These files are required retrospectively.

- k. The manufactures must supply both the camshaft and cam lift profile with a resolution of at least .5degrees, 0.05mm lift. (.xlsx)
- l. The manufacturer is entitled to request a notice in order to know whether the documents and drawings submitted by him are formally correct two (2) weeks before the homologation inspection date.
- m. At the latest within fifteen (15) days after having successfully passed the homologation inspection, an updated list of the valid homologations is published including the new homologation.
- n. Within 21 days of the homologation inspection, copies of the 1, 2 & 3 homologation forms and drawings will be available on the FIM website.
- o. These motorcycles must be available for sale to the public in the shops and dealerships representing the manufacturer in at least one of the following countries or regions: USA, EU or Japan, to be allowed to be used in the remaining Championship events.
  - i. For those manufacturers who commence competition in the Championship during or before March: The end of April of the current year
  - ii. For those manufacturers who commence competition in the Championship during or after April: The end of the month following the first date of competition.
- p. Any machine that is intended to be raced before 125 units are produced under the exemption in 1.2.2 must have all the relevant documentation submitted in accordance with article 1.3 and the parts requested in article 1.4 in order for permission to race to be granted.
- q. One complete example of the production machine must be supplied *in road specification*.
- r. The FIM may request, at its discretion, to make a homologation inspection before the 125 machines are built.
- s. A machine that is given permission to race before 125 units are produced will be considered 'Subject to homologation'.



## 1.4 HOMOLOGATION, INSPECTION, CONTROL & PERIOD

- a. The inspection of the motorcycle and the parts consigned by the manufacturer for homologation will be carried out according to the information requested on the forms produced by the FIM (homologation forms A, B and C).
- b. **At the time of inspection, the random sample machine must be dynamometer tested in its standard specification in the presence of the FIM inspectors. This must take place before the machine is stripped for inspection and the drawings are confirmed.**
- c. The manufacturer must consign to the FIM the following parts (to be received by the FIM at least 2 weeks before the first race in which the machine will be used):

### 1.4.1. Engine parts: (Drawing number/Part)

E1/1	Throttle bodies and variable intake tract devices if used
E1/2	Injector(s); sample of all different injectors,
E1/3	Airbox ( <b>complete</b> ) including injectors inc E1/2, E1/4, E1/5
E2/1	Fuel pump and fuel pressure regulator
E3/1	Crankcases – upper (Left)
E3/2	Crankcases – center (Right)
E3/3	Crankcases – lower
E4/1	Cylinderhead ( <b>including inlet manifold</b> )
E4/3	Cylinder if separate
E4/4	Cylinder liner if removable
E5/1	Intake camshaft (including gear)
E6/1	Exhaust camshaft (including gear)
E7/1	Intake valve
E7/2	Intake valve spring inner
E7/3	Intake valve spring outer
E7/4	Intake valve spring collet and retainer
E7/5	Intake valve spring seat
E7/6	Intake tappet/bucket/follower
E8/1	Exhaust valve
E8/2	Exhaust valve spring inner
E8/3	Exhaust valve spring outer
E8/4	Exhaust valve spring collet and retainer
E8/5	Exhaust valve spring seat
E8/6	Exhaust tappet/bucket/follower
E9/1	Piston
E9/2	Piston Ring Assembly
E9/3	Piston Pin
E10/1	Con-rod
E10/2	Shell Bearing Assembly (crankshaft and big-end)
E11/1	Crankshaft
E13/1	Primary Gear if separate

E13/2	Gearbox (complete view)
E14/1	Clutch Assembly including Basket
E15/1	ACG Assembly, stator and flywheel
E15/2	Coil
E16/1	Oil Pump and drive system
E17/1	Water pump and drive
E18/1	Right side cover
E18/2	Left side cover
E18/3	Head or Valve or Cam cover

#### 1.4.2 Frame parts: (Drawing number/Part)

F1/1	Main frame
F1/6	Steering head cup inserts
F1/7	Swingarm pivot inserts
F2/1	Sub frame (if separate)
F9/1	Fork bridge* (top)
F9/2	Fork bridge* (bottom) including stem
F10/1	Front fork assembly
F11/1	Swing Arm
F13/1	Rear suspension linkage assembly complete
F14/1	Rear Axle
F14/2	Front Axle
F15/1	Front brake discs
F23/1	ECU
F23/3	Quickshift Sensor

#### 1.4.3 Control

- a. These parts will be stored by the FIM in sealed boxes and moved by the Promoter to the SBK Championship events at the discretion of the Superbike Technical Director.
- b. The FIM may at its discretion obtain further parts as samples.
- c. The inspector/s must satisfy him/them that the statements made on the production certificate (Form 2) are correct.
- d. At the end of the parts and documents inspection, the inspector/s will sign the completed certificate of homologation. These signed homologation forms indicate that the manufacturer complies with the specifications documented on the homologation forms.
- e. The drawings and the consigned 'homologation sample' parts will be regarded equally in ascertaining the legality of any inspected race machines.
- f. The FIM may check motorcycles of the homologated model chosen at the manufacturer, or from dealerships' or importers' showrooms. The motorcycles must be in conformity with the homologated model. The expenses for the disassembling of a maximum of two (2) units will be borne by the manufacturer.

- g. In case of not achieving minimum production numbers after the first or second years, all the points counting towards the Manufacturers' Championship in the current year will be withdrawn and further penalties may also be imposed.

#### **1.4.4 Period**

- a. Once a motorcycle has obtained the homologation, it may be used for racing in the corresponding class for a maximum period of:
  - i. Superbike and Superstock 1000: 8 years,
  - ii. Supersport 600: 8 yearsor until such time that the homologated motorcycle no longer complies with the technical rules.
- b. A homologation will be granted only if the fee has been paid.
- c. The Manufacturer of the homologated model can request an extension of a homologation before the end of the 8 year homologation period. The FIM may grant a 2 year extension of the homologation period. All Homologation documents must be updated to the latest standard but no fee will be charged for a homologation extension.

## **1.5 NEW HOMOLOGATION, PARTS AND PRODUCT UPDATE**

Any change or update in the specifications of the following parts of a FIM homologated motorcycle will require a new homologation of the model:

- a. New range of engine prefix numbers
- b. New range of frame prefix numbers
- c. Crankcase(s)
- d. Throttle body assembly
- e. Air box (complete, with injectors if change of injector model)
- f. Frame: main dimensions [in relation to wheelbase, caster, steering head angle, relative location of the swing-arm, relative location of rear shock absorber(s) and linkages] weight, construction method and technology
- g. ECU or electronic system is changed
- h. Crankshaft
- i. Con-rod
- j. Piston
- k. Camshaft
- l. Valve
- m. Suspension - manufacturer or design
- n. Fairing shape – when considered ‘facelift’

FIM can consider granting a part and product update differing from above rule, purely for the scope of production cost saving provided that at least the following provisions are kept:

- Crankcase is not lighter\* than the original homologated unit. The positions of crankshaft, gearbox, frame attachments, main shafts and position of cylinders remain unchanged (\*apart casting method for mass production)

### **1.5.1 Differentiation of Homologated Machines**

Parts that differ between different homologation dates of the ‘same’ model may not be used on machines from another homologation date including when sharing the model name, but excepting when the part is superseded for production reasons and also accepted by the FIM.

## 1.5.2 Homologation of Parts and Production Update

- a. Product updates on any homologated parts (those included in x-,e-,f-drawings, form C and any sample parts) require a homologation update.
- b. It is the manufacturer's responsibility to notify the FIM and Superbike Technical Director of any parts updates and or changes to part number of the listed homologated parts.
- c. The FIM will consider if the part requested for update can be homologated.
- d. Application:
  - i. The manufacturer must send a notice to the FIM CCR/CTI Secretariat requesting a homologation update not later than 30 days before the first race in which the model containing new parts will compete.
  - ii. The application for homologation of these parts will require a copy of the accompanying 'Technical Bulletin/Part Update' issued by the Manufacturer to their official dealership network in every country or region where the homologated model is available to the public.
  - iii. With the formal notice, the manufacturer is required to send the 1, 2 and 3 homologation forms, together with all relating documentation about the parts and product update (the drawings of the old and new products/parts, etc.) including a statement with the VIN-Number pertinent to the updated parts and product, to the FIM CCR/CTI Secretariat, both in paper and electronic form.
- e. If an inspection is necessitated then at the latest within one (1) week before the homologation inspection by the FIM, manufacturers must ensure themselves that the parts requested by the FIM are received at the indicated place which will be in a European state.

All updated parts (assemblies) shall be accepted to be fitted on all further units produced of the homologated model, without any dimensional modifications or changes to other standard fitted parts of the homologated model and not linked with other updated parts. Should multiple parts be required to be changed then it shall be considered a new homologation. The updated part may retrofitted, as long as it is a 'superceeded' part and the preceding part is no longer produced and can be used without any dimensional changes or modifications when assembled to other part(s) of the homologated model preceding the model 'update'..

Should an updated part not be retrofittable to machines from earlier production the Manufacturer MUST provide the FIM with the VIN number at which this update should be applied, If a manufacturer adopts a numbering system out of sequence, they MUST supply the FIM with the list of the motorcycles produced after the product / part update. The FIM will at their discretion decide if this update shall require a new homologation or can be regarded as a homologation update.
- f. Parts from multiple suppliers will only be accepted if the design, specification, materials and production methods are the same from all suppliers.
- g. If parts from multiple suppliers differ in design then the updated or newer parts will only be accepted if the alternative manufacturer part(s) are

originally fitted during production to a minimum of half the number of units required for homologation. Should the updated part no longer be available or the production machines revert to the original homologated part then the FIM reserves the right to withdraw the approval of alternative manufacturer part at any time.

*Or*

If parts from multiple suppliers differ in design then only the original part as fitted during the homologation inspection will be accepted as homologated.

- h. FIM may at its discretion decide that product updates result in a new homologation. If more than 3 items need to be updated during the machine's life, a new homologation will be necessary.
- i. Homologation of factory build option parts: Any part that is considered an option but is fitted on the normal production line AND supplied for road use can have an application made for homologation but must be fitted to a minimum of 250 units of the homologated bike.
- j. The FIM will withdraw the homologation if these rules are not respected.

## 1.6 List of Required Drawings

Assemblies may be individually represented on one page. Extra drawings should be supplied if required by the machines specifics. Any drawings that don't apply should be ignored: \* means .igs and .stp are additionally required.

### 1.6.1 Engine drawings: (Drawing number/Part)

E1/1	Throttle bodies and variable intake tract devices if used
E1/2	Injector(s); sample of all different injectors, if used
E1/3	Airbox
E1/4	Air funnels
E1/5	Air funnel activation mechanism
E1/6	Airbox complete assembly (incl. air funnel, mechanism, injectors)
E1/7	Ride by Wire Motor Assembly and full specification
E2	Fuel pump and fuel pressure regulator
E3/1	Crankcases – upper (Left)
E3/2	Crankcases – center (Right)
E3/3	Crankcases – lower
E3/4	Crankcases Assembly
E4/1	Cylinderhead
E4/2	Cylinderhead, Cross section, incl. valve guide position
E4/3*	Combustion chamber detail
E4/4	Cylinder if separate
E4/5	Cylinder liner if removable
E5/1	Intake camshaft (including gear)
E6/1	Exhaust camshaft (including gear)
E7/1	Intake valve
E7/2	Intake valve spring inner
E7/3	intake valve spring outer
E7/4	Intake valve spring collet and retainer
E7/5	Intake valve spring seat
E7/6	Intake tappet/bucket/follower
E8/1	Exhaust valve
E8/2	Exhaust valve spring inner
E8/3	Exhaust valve spring outer
E8/4	Exhaust valve spring collet and retainer
E8/5	Exhaust valve spring seat
E8/6	Exhaust tappet/bucket/follower
E9/1*	Piston
E9/2	Piston Ring Assembly
E9/3	Piston Pin
E10/1	Con-rod
E10/2	Shell Bearings (crankshaft and big-end)
E11/1	Crankshaft
E11/2	Crankshaft machined area detail

E11/3	Balance Shaft
E12/1	Method camdrive
E13/1	Primary Gear
E13/2	Gearbox
E14/1	Clutch Assembly including Basket
E14/2	Clutch Basket - Views
E15/1	ACG Assembly including stator and flywheel
E15/2	ACG flywheel
E15/3	Flywheel if separate from E15/1
E16/1	Oil pump and drive system
E17/1	Water pump and drive
E18/1	Right side cover
E18/2	Left side cover
E18/3	Head or valve or Cam cover

### 1.6.2 Frame Drawings: (Drawing number/Part)

F1/1*	Main frame Side
F1/2*	Main frame Top View
F1/3*	Main frame Bottom View
F1/4*	Headstock detail
F1/5*	Main frame assembly, detailing engine, countershaft sprocket and pivot positions
F1/6*	Steering head cup inserts
F1/7*	Swingarm pivot inserts
F1/8	Extra frame information if required – i.e. construction detail
F2	Rear Sub frame (if separate)
F3*	Fuel tank
F4*	RAM Air Tubes
F5/1*	Fairing Left
F5/2*	Fairing Right
F5/3*	Fairing Front
F6*	RAM opening (scale and dimensioned drawing)
F7	Seat
F8/1*	Front fender
F8/2*	Rear fender
F9/1	Fork bridge* (top)
F9/2	Fork bridge* (bottom) including stem
F10	Front fork assembly
F11*	Swing Arm
F12	Rear suspension unit
F13/1	Rear suspension linkage assembly
F13/2	Rear Suspension linkage detail
F13/3	Rear Suspension linkage detail
F13/4	Rear suspension unit top mount
F14/1	Front Axle



F14/2	Rear Axle
F14/3	Swingarm Axle/Pivot
F15/1	Front brake discs
F15/2	Rear brake discs
F16/1	Front brake calliper
F16/2	Rear brake calliper
F17	Rear calliper hanger
F18/1	Front master cylinder
F18/2	Rear master cylinder
F19/1	Front wheel (type)
F19/2	Rear wheel (type)
F19/3	Cushion drive
F20	Oil cooler
F21	Radiator
F22	Intercooler
F23/1	Electronics ECU Diagram
F23/2	Wiring Harness Diagram
F23/3	Quickshift Sensor
F23/4	CAN bus detail and description. Not for publication.

### 1.6.3 General View: **(Drawing number/view of the motorcycle)**

X1	Front view (faired)
X3	Rear view (faired)
X5	Left view (faired)
X7	Right view (faired)
X9	Top view (faired)
X10/1	Vin Location Frame
X10/2	Vin Location Engine

## **1.7 List of Required Pictures**

According to the list of drawings.

For certain parts, extra pictures of the part may be required to show special features.

End