2.7 FIM SUPERSPORT 300 WORLD CHAMPIONSHIP TECHNICAL SPECIFICATIONS

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

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

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

WorldSSP 300 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 WorldSSP 300 motorcycles must (except when otherwise stated) conform to the homologated shape (as originally produced by the manufacturer). The appearance of the exhaust system is excluded from this rule.

2.7.1 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.

2.7.2 Eligible Machines

The class will be based around the machines sold in Europe as A2 class machines and excluding the A1 class machines. The Superbike Commission has the right to decide which machines will eligible in the class.

For 2017 the following will be legal (this list can be amended at any time by the Superbike Commission):
Honda CBR500R

Kawasaki Ninja 300 (EX300ADF)
Yamaha YZF-R3
KTM RC390

2.7.3 Balancing various motorcycle concepts

The Superbike Commission reserve the right to applying balancing to the machines in the class as they see fit in order to maintain equality amongst machines. Methods may include but are not limited to the following:
Rev Limit
Weight limit change

The decision to apply the handicap will be taken by the Superbike Commission at any time deemed necessary to ensure fair competition.

2.7.4 Minimum weight

The minimum weight for each model is as follows:

Honda CBR500R	150Kg
Kawasaki Ninja 300 (EX300ADF)	140Kg
Yamaha YZF-R3	140Kg
KTM RC390	136Kg

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

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

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

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

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

2.7.5 Numbers and number plates

The colours are:

Manufacturer:	Number/Figure	Background
Honda	Red	White
Kawasaki	Green	White
Yamaha	Blue	White
KTM	Orange	White

The sizes for all the front numbers are:	Minimum height:	140 mm
	Minimum width:	80 mm
	Minimum stroke:	20 mm
	Minimum space between numbers	10 mm
The size for all the side numbers is:	Minimum height:	120 mm
	Minimum width:	70 mm
	Minimum stroke:	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 red background with no advertising within 25mm in all directions.
b. Once, on each side of the motorcycle. The preferred location for the numbers on each side of the motorcycle is on the lower rear portion of the main fairing near the bottom. The number must be centred on the red 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.

2.7.6 Fuel

See article 2.8 for full Fuel regulations – Only the official WorldSSP 300 fuel may be used.

2.7.7 Tyres

All tyres must be provided by the official tyre supplier.

Dry Tyres:

a. The rider may use a maximum of three (3) front and three (3) rear dry-weather tyres for each event. The dry weather tyres may be kept by the team for up to two further WSBK events for use in other events and tests. The tyres must then be returned to the official tyre supplier.
b. The dry-weather tyres used in the free practices, qualifying practices, warm-up and race must be marked with an adhesive sticker.
c. The sticker will show an identification number for each rider and it will have a different colour depending on whether it is applied to the front or rear tyre. At each race the FIM Superbike Technical Director will assign a number of his choice to the competitor, while the colours will change for each race.
d. The dry tyre stickers will be handed to the teams in a sealed envelope, three (3) for the rear tyres and three (3) for the front tyres, on the day before the first practice session in accordance with a timetable decided by DWO and the FIM Superbike Technical Director. The timetable will be mailed to the teams by the DWO at least a week before the event. In extraordinary situations the FIM Superbike Technical Director can/may alter this program.
e. After delivery of the stickers, the teams will be responsible for their safekeeping and use.

Wet Weather Tyres:

f. One set of wet-weather tyres will be provided at the start of the season. The team will keep the wet weather tyres between races and at every event one (1) further set will be made available IF needed. New wet weather tyres will not be replaced because they are used at other events, At the end of the season all allocated wet weather tyres must be returned.
g. The wet weather tyres will be marked by a representative from DWO with a special ‘wet tyre’ sticker before collection from the official tyre supplier.
h. Wet-weather tyres may only be used after the race or practice has been declared ‘wet’ by the Race Direction.

Tyre Stickers:

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

j. The use of motorcycles with unmarked tyres (e.g. without the official stickers) will be immediately reported to the Race Direction which will take appropriate action.
k. In exceptional cases, should the sticker be damaged or applied in the wrong way, up to 1 extra sticker 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.
l. In case of a red flag, a damaged tyre found on motorcycles checked in pit lane, may be replaced with a new tyre. The damage must be confirmed by the official tyre supplier.

2.7.8 Engine

There is no allocated number of engines.
Machines will be randomly chosen for dyno testing.

2.7.8.1 Fuel injection system

2.7.8.1.1 Fuel injection systems refer 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 must remain as originally produced by the manufacturer for the homologated motorcycle.
d. Butterfly valves cannot be changed or modified.
e. Secondary throttle valves plates may be removed or fixed in the open position and the electronics may be disconnected or removed. The secondary throttle shaft(s) must remain in place.
f. All the parts of the variable intake tract device must remain and operate exactly as homologated. They cannot be added if not fitted to the homologated machine.
g. Air and air/fuel mixture can go to the combustion chamber exclusively through the throttle body butterflies.
h. Electronically controlled throttle valves, known as ‘ride-by-wire’, may only be used if the homologated model is equipped with the same system. Software may not be modified and all the safety systems and procedures designed by the original manufacturer must be maintained.

2.7.8.2 Cylinder Head

a. Must be the originally fitted and homologated part with no modification allowed.
b. The head gasket may be changed.

2.7.8.3 Camshaft

a. Must be the originally fitted and homologated part with no modification allowed.
b. At the technical checks: for direct cam drive systems, the cam lobe lift is measured; for non direct cam drive systems (i.e. with rocker arms), the valve lift is measured.

2.7.8.4 Cam sprockets or gears

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

2.7.8.5 Cylinders

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

2.7.8.6 Pistons

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

2.7.8.7 Piston rings

Must be the originally fitted and homologated part with no modification allowed.
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2.7.8.8 Piston pins and clips

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

2.7.8.9 Connecting rods

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

2.7.8.10 Crankshaft

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

2.7.8.11 Crankcase / Gearbox housing

Must be the originally fitted and homologated parts with no modification allowed.
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2.7.8.11.1 Lateral covers and protection

a. Lateral (side) covers may be altered, modified or replaced. If altered or modified, the cover must have at least the same resistance to impact as the original one. If replaced, the cover must be made in material of same or higher specific weight and the total weight of the cover must not be less than the original one.
b. 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.
c. The secondary cover must cover a minimum of 1/3 of the original cover. It must have no sharp edges to damage the track surface.
d. Plates or crash bars made from aluminium or steel also are permitted in addition to these covers. All of these devices must be designed to be resistant against sudden shocks, abrasions and crash damage.
e. FIM approved covers will be permitted without regard of the material or its dimensions.
f. These covers must be fixed properly and securely with a minimum of three (3) case cover screws that also mount the original covers/engine cases to the crankcases.
g. Oil containing engine covers must be secured with steel bolts.
h. The Technical Director has the right to refuse any cover not satisfying this safety purpose.

2.7.8.12 Transmission / Gearbox

a. Must be the originally fitted and homologated parts with no modification allowed.
b. Quick-shift (upshift) systems are allowed (including wire and potentiometer). **The unit must be the FIM/DWO approved quickshifter/rev limiter.**
c. Downshift blipping is not allowed.
d. Countershaft sprocket, rear wheel sprocket, chain pitch and size may be changed.
e. The sprocket cover may be modified or eliminated.
f. Chain guard as long as it is not incorporated in the rear fender may be removed.

2.7.8.13 Clutch

a. Clutch system (wet or dry type) and the method of operation (by cable or hydraulic) must remain as homologated.
b. Friction and drive discs may be changed.
c. Clutch springs may be changed.

d. The clutch basket (outer) must be the originally fitted and homologated part but may be reinforced.
e. The original clutch inner assembly may be modified or replaced by an aftermarket clutch, also including back torque limiting capabilities (slipper type).

2.7.8.14 Oil pumps and oil lines

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

2.7.8.15 Radiator, cooling system and oil cooler

a. The only liquid engine coolant permitted is water.
b. Protective meshes may be added in front of the oil and/or water radiator(s).
c. The cooling system hoses and catch tanks may be changed.
d. Radiator fan and wiring may be removed. Thermal switches, water temperature sensor and thermostat may be removed inside the cooling system.
e. Radiator cap is free.
f. An additional water radiator may be fitted but the appearance of the front, the rear and the profile of the motorcycle must not be changed. Extra mounting brackets to accommodate the additional radiator are permitted.

2.7.8.16 Air box

a. The air box must be the originally fitted and homologated part with no modification allowed.
b. The air filter element may be modified or replaced but not eliminated and must be mounted in the original position.
c. The air box drains must be sealed.
d. All motorcycles must have a closed breather system. All the oil breather lines must be connected, may pass through an oil catch tank and must exclusively discharge in the airbox.
e. No heat protection may be attached to the airbox.

2.7.8.17 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.
c. Fuel lines from the fuel tank up to the delivery pipe assembly (delivery pipe excluded) may be replaced and must be located in such a way that they are protected from crash damage.
d. Quick connectors or dry break connectors may be used.
e. Fuel vent lines may be replaced.

f. Fuel filters may be added.

2.7.8.18 Exhaust system

a. Exhaust pipes and silencers may be modified or changed. Catalytic converters must 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) of the homologated model.
c. For safety reasons, the exposed edges of the exhausts pipe(s) outlet must be rounded to avoid any sharp edges.
d. Wrapping of exhaust systems is not allowed except in the area of the rider's foot or an area in contact with the fairing for protection from heat.
e. The noise limit for WorldSSP 300 be 107 dB/A (with a 3 dB/A tolerance after the race only).
f. The test RPM will be as follows:

Machine:	Test rpm
Honda CBR500R	5,000rpm
Kawasaki Ninja 300 (EX300ADF)	6,500rpm
Yamaha YZF-R3	7,500rpm
KTM RC390	5,500rpm

2.7.9 Electrics and electronics

2.7.9.1 Ignition / Engine Control System (ECU)

a. The engine control system (ECU) must be either:
    i. The original system as homologated, with no change of software or with a manufacturer approved software.
    ii. The original system (with the production ECU and no change of software or manufacture approved software) (option i) with an FIM/DWO approved external fuel injection module added.
    iii. Under consideration from 2018: An FIM/DWO approved "WorldSSP 300 Kit" model with approved software (produced and/or approved by the motorcycle manufacturer) may be used. Price limit for complete system (Ecu+harness+comms cable) €950
b. Central unit (ECU) may be relocated.
c. Optional equipment sold by the motorcycle Manufacturer for the homologated model is considered not homologated with the bike and must follow the requirements for approved electronics/data loggers.
d. During an event the Technical Director has the right to ask a team to substitute their ECU or external module with the sample received from the Manufacturer. The change has to be done before the warm up session.
e. The allowed OEM ECU sensors / channels are:
    a. Throttle position (multiple allowed)

b. Map sensor, Map Sync (pressure sensor on the intake port used to synchronize the engine during the start)
c. Airbox Pressure
d. Engine pick-ups (Cam, crank)
e. Twist grip position
f. Rear Speed Only (from ABS sensor)(No front speed sensor permitted)
g. Gearbox output shaft speed
h. Gear position
i. Air pressure
j. Water temperature
k. Air temperature
l. Tip-Over Switch (No lean angle)
m. Gear shift load cell / switch

The sensors may not be replaced, modified or substituted.

f. No extra sensors may be added for control strategies except shift rod sensor.
g. External fuel injection modules may not alter any sensor signal relating to the ride by wire system or control/actuate any part of the machine excepting the fuel injectors. No fuel module may add traction control strategies. The modules may only connect to the fuel injectors, power supply and 'piggyback the Throttle Position, Gear and RPM signals'. Closed loop/auto tuning is not permitted.
h. A compulsory FIM/DWO rev limiter / quickshift unit must be fitted, it is the teams discretion whether to use the quickshift function. This must remain fitted at all times. The unit is €500+taxes+delivery.
i. Contact:info@hmquickshifter.com +44 (0) 1795 429168

Machine:	Part Number
Honda CBR500R	HMGP-HO1016
Kawasaki Ninja 300 (EX300ADF)	HMGP-KA1016
Yamaha YZF-R3	HMGP-YA1016
KTM RC390	HMGP-KT1016

Fitting instructions are separately detailed with the units.

j. The following strategies are NOT allowed:
    a. Traction control (including anti-spin / rate of change of rpm)
    b. Launch Control
    c. Anti Wheelie
    d. Closed loop Engine Brake Control
    e. Corner by Corner / Distance based adjustments
    f. Rider adjusted trims
k. Other additional electronic hardware equipment not on the original homologated motorcycle cannot be added with the exceptions noted below.
l. The initial revlimiter setting for each machine is as follows:

Machine:	Max rpm

Honda CBR500R	10,500rpm
Kawasaki Ninja 300 (EX300ADF)	13,000rpm
Yamaha YZF-R3	13,000rpm
KTM RC390	10,500rpm

m. The characteristics of DWO/FIM approved WorldSSP 300 complete data logging systems must be the following:
   i. Must be from the DWO/FIM approved WorldSSP 300 logging Kit list.
   ii. Maximum retail price of the complete kit (hardware, software, sensors and wiring harness) cannot exceed €1500 Euro (VAT excluded). The sum price of the components individually cannot exceed €1650 (VAT excluded)
   iii. If any sensors are supplied as options then the total price including ALL options must respect 2.7.9.1.l.ii
   iv. The Data Logger kit must be available for sale to the public. The datalogging kit supplier must apply to the FIM for approval before January 31st.
   v. The kit may only include following sensors:
      1. Fork position
      2. Shock position
      3. Front brake pressure switch (not pressure sensor)
      4. Transponder / Lap time signal
      5. GPS Unit (Lap timing and track position)
      6. Rear wheel speed (if not fitted to OEM machine)
   ii. The kit may only log the following (by connecting to or 'piggybacking' the original sensor:
      1. Fork position
      2. Shock position
      3. Front brake pressure switch (not pressure sensor)
      4. Lap time
      5. Rear wheel speed
      6. Engine RPM
      7. Throttle Position
      8. Water temperature
      9. Transponder / Lap time signal
      10. GPS Position/time/speed

n. Telemetry is not allowed.
o. 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.

p. Harness:
   i. The key/ignition lock may be relocated, replaced or removed.

ii. Cutting and removal of excess and unused wiring in the original wiring harness is allowed. All connectors must remain as originally fitted. No wires may be added.
iii. DWO/FIM approved manufacturer Kit Harness is allowed.

q. Data logger Harness:
   i. The Data Logger wire harness cannot connect any sensors other than those specified. The harness may connect to or 'piggyback' the OEM sensors that it is allowed to log. The only function of the approved data logging wiring harness is to connect the specified sensors to the Data Logger, to transmit the data and supply the power. It CANNOT be connected to the motorcycles CAN bus.

r. To be approved samples of external modules with their tuning tools must be sent by the Manufacturers to the FIM Technical Director at least 3 weeks before the beginning of the Championship, with technical data and selling price. The manufacturer must provide the FIM with the tools to control the module.

s. Dashboard/display/tachometer is free. However if it incorporates the datalogger or is part of the logging system then the 'WorldSSP 300 datalogging kit' price limit will still be applied to the whole system. No logging option/upgrade in the dash/display/tachometer, the complete unit price will be considered.

t. A lap timer may be fitted from the FIM approved lap timer list.

u. Spark plugs may be replaced.
v. Battery is free.

2.7.9.2 Generator, alternator, electric starter

a. Must be the originally fitted and homologated part with no modification allowed.
b. The stator must be fitted in its original position and without offsetting.
c. The electric starter must operate normally and always be able to start the engine during the event.
d. 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.

2.7.10 Main frame

During the entire duration of the event, each rider can only use one (1) complete motorcycle, as presented for Technical Control, with the frame clearly identified

with a seal. In case the frame will need to be replaced the rider or the team must request the use of a spare frame to the FIM Superbike Technical Director.

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

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

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

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

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

For a full explanation of the procedures please see article 2.5.10

2.7.10.1 Frame body and rear sub frame

a. The frame must be the originally fitted and homologated part with no modification allowed.
b. Holes may be drilled on the frame only to fix approved components (i.e. fairing brackets, steering damper mount, sensors).
c. The sides of the frame-body may be covered by a protective part made of a composite material. These protectors must fit the form of the frame.
d. Nothing else may be added or removed from the frame body.
e. All motorcycles must display a vehicle identification number punched on the frame body (chassis number).
f. Engine mounting brackets or plates must remain as originally produced by the manufacturer for the homologated motorcycle.
g. Front sub frame / fairing mount may be changed or altered.
h. Rear sub frame may be changed or altered, but the type of material must remain as homologated, or material of a higher specific weight.

i. Additional seat brackets may be added, non-stressed protruding brackets may be removed if they do not affect the safety of the construction or assembly. Bolt-on accessories to the rear sub-frame may be removed.
j. The paint scheme is not restricted but polishing the frame body or sub frame is not allowed

2.7.10.2 Suspension - General

a. Participants in the Superstock class must only use the approved and listed suspension units for that season. The price limits are:
    a. Fork: For the fork kit, including all parts such as but not limited to cartridge, springs (1 set), adjusters, fork caps, blanking inserts, seals, bushes but excepting oil and fitting the price limit is **€650** excluding tax.
    b. Shock Absorber/RCU: For the complete shock absorber / RCU including but not limited to spring (1 of), pre-load adjuster and length/ride height adjuster the price limit is **€800** excluding tax.
b. The approved products from the suspension 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. No type of electronic suspension may be used even when fitted to the homologated machine.
g. Electronic controlled steering damper cannot be used if not installed in the homologated model for road use. However, it must be completely standard (any mechanical or electronic part must remain as homologated).

2.7.10.3 Front Forks

a. Forks (stanchions, stem, wheel spindle, upper and lower crown, etc.) Must be the originally fitted and homologated part with the following modifications allowed:

b. The upper and lower fork clamps (triple clamp, fork bridges) must remain as originally produced by the manufacturer on the homologated motorcycle.
c. Steering stem pivot position must remain in the homologated position (as supplied on the production bike). If the standard bike has inserts then the orientation/position of the original insert may be changed but the insert cannot be replaced or modified.
d. A steering damper may be added or replaced with an after-market damper.
e. The steering damper cannot act as a steering lock limiting device.
f. Fork caps on the mechanical forks may only be modified or replaced to allow external adjustment. (This does not include the mechanical fork leg that is part of the homologated electronic fork set)
g. Dust seals may be modified, changed or removed if the fork remains totally oil-sealed
h. Original internal parts of the homologated forks may be modified or changed. After market damper kits or valves may be installed. The original surface finish of the fork tubes (stanchions, fork pipes) may be changed. Additional surface treatments are allowed.
i. Electronic forks must have their complete internal parts (including all electronic control) replaced with a conventional damping system.

2.7.10.4 Rear fork (Swing-arm)

a. The rear fork must be the originally fitted and homologated part with no modification allowed.
b. Rear fork pivot bolt Must be the originally fitted and homologated part with no modification allowed.
c. Rear swingarm pivot position must remain in the homologated position (as supplied on the production bike). If the standard bike has inserts then the orientation/position of the original insert may be changed but the insert cannot be replaced or modified.
d. A chain guard must be fitted in such a way to reduce the possibility that any part of the riders' body may become trapped between the lower chain run and the rear wheel sprocket.
e. Rear wheel stand brackets may be added to the rear fork by welding or by bolts. Brackets must have rounded edges (with a large radius). Fastening screws must be recessed. An anchorage system or point(s) to keep the original rear brake calliper in place may be added to the rear swing-arm.
f. The sides of the swing-arm may be protected by a thin vinyl cover only, no composite or structural covers are allowed.

2.7.10.5 Rear suspension unit

a. Rear suspension unit (shock absorber) may be modified or replaced, but the original attachments to the frame and rear fork (swing arm) (or linkage) must be as homologated.
b. All the rear suspension linkage parts must be the originally fitted and homologated part with no modification allowed.
c. Removable top shock mounts must be the originally fitted and homologated part with no modification allowed. A nut may be made captive on the top shock mount and shim spacers may be fitted behind it to adjust ride height.
d. Rear suspension unit and spring may be changed. An electronic shock absorber can be replaced with a mechanical one.

2.7.10.6 Wheels

a. Wheels must be the originally fitted and homologated part with no modification allowed.
b. A non-slip coating / treatment may be applied to the bead area of the rim.
c. If the original design includes a cushion drive for the rear wheel, it must remain as originally produced for the homologated motorcycle.
d. Wheel axles must remain as homologated, wheel spacers may be modified or replaced.
e. Wheel balance weights may be discarded, changed or added to.
f. Any inflation valves may be used.

2.7.10.7 Brakes

a. Brake discs may be replaced by aftermarket discs which comply with following requirements:
    i. Brake discs and carrier must retain the same material as the homologated disc and carrier.
    ii. The outside and inner diameters of the brake disc must not be larger than the ones on the homologated disc.
    iii. The thickness of the brake disc may be increased but the disc must fit into the homologated brake calliper without any modification. The number of floaters is free.
    iv. The fixing of the carrier on the wheel must remain the same as on the homologated disc.
    v. Only Steel (max. carbon content 2.1 wt%).
b. The front and rear brake calliper (mount, carrier, hanger) must be the originally fitted and homologated part with no modification allowed.
c. In order to reduce the transfer of heat to the hydraulic fluid it is permitted to add metallic shims to the callipers, between the pads and the callipers, and/or to replace light alloy pistons with steel pistons made by the same manufacturer of the calliper.

d. The rear brake calliper bracket may be mounted fixed on the swing-arm, but the bracket must maintain the same mounting (fixing) points for the calliper as used on the homologated motorcycle.
e. The swing-arm may be modified for this reason to aid the location of the rear brake calliper bracket, by welding, drilling or by using a helicoil.
f. The front and rear master cylinder must be the originally fitted and homologated part with no modification allowed.
g. Front and rear brake fluid reservoirs may be changed.
h. Front and rear hydraulic brake lines may be changed.
i. The split of the front brake lines for both front brake callipers must be made above the lower fork bridge (lower triple clamp).
j. "Quick" (or "dry-break") connectors in the brake lines are **not** allowed.
k. Front and rear brake pads may be changed. Brake pad locking pins may be modified for quick change type.
l. Additional air scoops or ducts are not allowed.
m. The Antilock Brake System (ABS) must be removed. The ABS units electronic board may remain fitted to stop ECU errors.
n. Motorcycles must be equipped with brake lever protection, intended to protect the handlebar brake lever from being accidentally activated in case of collision with another motorcycle. Composite guards are not permitted. FIM approved guards will be permitted without regard of the material. The Technical Director has the right to refuse any guard not satisfying this safety purpose.

2.7.10.8 Handlebars and hand controls

a. Handlebars may be replaced (except for the brake master cylinder).
b. Handlebars and hand controls may be relocated.
c. Throttle controls must be self closing when not held by the hand.
d. Throttle assembly and associated cables may be modified or replaced but the connection to the throttle body and to the throttle controls must remain as on the homologated motorcycle. Cable operated throttles (grip assembly) must be equipped with both an opening and a closing cable including when actuating a remote drive by wire grip/demand sensor.
e. Clutch and brake lever may be replaced with an after-market model. An adjuster to the brake lever is allowed.
f. Switches may be changed but the electric starter switch and engine stop switch must be located on the handlebars.
g. 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.

2.7.10.9 Foot rest / Foot controls

a. Foot rests, hangers/brackets and hardware may be replaced and relocated but the hangers/brackets must be mounted to their original frame mounting points.
b. Foot controls; gear shift and rear brake must remain operated manually by foot.
c. Foot rests may be rigidly mounted or a folding type which must incorporate a device to return them to the normal position.
d. The end of the foot rest must have at least an 8 mm solid spherical radius. (See Diagram A & C).
e. Non folding footrests must have an end (plug) which is permanently fixed, made of aluminium, plastic, Teflon® or an equivalent type material (minimum radius 8mm). The plug surface must be designed to reach the widest possible area. The FIM Superbike Technical Director has the right to refuse any plug not satisfying this safety aim.

2.7.10.10 Fuel tank

a. Fuel tank must be the originally fitted and homologated part with no modification allowed.
b. All fuel tanks must be completely filled with fire retardant material (open-celled mesh, i.e. Explosafe®).
c. Fuel tanks with tank breather pipes must be fitted with non-return valves that discharge into a catch tank with a minimum volume of 250cc made of a suitable material.
d. Fuel caps may be changed. Fuel caps when closed must be leak proof. Additionally, they must be securely locked to prevent accidental opening at any time.
e. A rider spacer/pad may be fitted to the rear of the tank with non-permanent adhesive. It may be constructed of foam padding or composite material.
f. The tank may not have a cover fitted over it unless the homologated machine also features a full cover.
g. The sides of the fuel tank may be protected with a cover made of a composite material. These covers must fit the shape of the fuel tank.

2.7.10.11 Fairing / Bodywork

a. Fairing and bodywork may be replaced with exact cosmetic duplicates of the original parts, but must appear to be as originally produced by the manufacturer for the homologated motorcycle, with slight differences due to the racing use (different pieces mix, fixing points, fairing bottom, etc). The material may be changed. The use of carbon fibre or carbon composite materials is not allowed. Specific reinforcements in Kevlar® or carbon are allowed locally around holes and stressed areas. Headlights must be included even when considered external.

b. Overall size and dimensions must be the same as the original part, with a tolerance of +-5mm, respecting the design and features of the homologated fairing as far as possible. The overall width of the frontal area may be +5mm maximum. The decision of the Technical Director is final.
c. Wind screen may be replaced with an aftermarket product. The height of the windscreen is free, within a tolerance of +/- 15 mm referred to the vertical distance from/to the upper fork bridge. The screen must conform to the same profile from the front as the original – no double bubble or wide types. From a top view the length of the windscreen may be shortened by 25mm to allow clearance for the rider. The edge of the screen must have no sharp edges
d. Motorcycles that are not originally equipped with streamlining are not allowed to add streamlining in any form, with the exception of a lower fairing device, as described in point (g). This device cannot exceed above a line drawn horizontally from wheel axle to wheel axle and must follow the specifications described at point (g).
e. The original combination instrument/fairing brackets may be replaced, but the use of titanium and carbon (or similar composite materials) is forbidden. All other fairing brackets may be altered or replaced.
f. The ram-air intake must maintain the originally homologated shape and dimensions.
g. The original air ducts running between the fairing and the air box may be altered or replaced. Carbon fibre composites and other exotic materials are forbidden. Particle grilles or “wire-meshes” originally installed in the openings for the air ducts may be removed.
h. The lower fairing must to be constructed to hold, in case of an engine breakdown minimum 4 litres. The lower edge of all the openings in the fairing must be positioned at least 70 mm above the bottom of the fairing.
i. The upper edge of the rear transverse wall of the lower fairing must be at least 70 mm above the bottom. The angle between this wall and the floor must be ≤ 90°.
j. 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%.
k. Motorcycles may be equipped with a radiator shroud (inner ducts) to improve the air stream towards the radiator but the appearance of the front, the rear and the profile of the motorcycle must not be changed.
l. The lower fairing must incorporate a single opening of Ø 25 mm diameter in the front lower area. This hole must remain sealed in dry conditions and must be opened only in wet race conditions as declared by the Race Director.

m. Front mudguards may be replaced with a cosmetic duplicate of the original parts and may be spaced upward for increased tyre clearance.
n. Rear mudguard fixed on the swing arm may be modified, changed or removed. The chain guard may be removed as long as it is not incorporated in the rear fender.

2.7.10.12 Seat

a. Seat, seat base and associated bodywork may be replaced
b. The appearance from front, rear and profile must conform to the homologated shape
c. The top portion of the rear bodywork around the seat may be modified to a solo seat.
d. The homologated seat locking system (with plates, pins, rubber pads etc.) may be removed.
e. Material as Fairing (article 2.6.10.10.a)
f. All exposed edges must be rounded.

2.7.10.13 Fasteners

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

2.7.10.14 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 pit-lane 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.

2.7.11 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 materials.
c. Instruments, instrument bracket(s) and associated cables.
d. Painted external surface finishes and decals.
e. Material for brackets connecting non original parts (fairing, exhaust, instruments, etc) to the frame (or engine) cannot be made from titanium or fibre reinforced composites excepting the exhaust silencer hanger that may be in carbon.
f. Protective covers for the frame, chain and footrests may be made in other materials like fibre composite material if these parts do not replace original parts mounted on the homologated model.

2.7.12 The following items MAY BE Removed

a. Emission control items (anti-pollution) in or around the air box and engine (O2 sensors, air injection devices).
b. Tachometer.
c. Speedometer.
d. Bolt-on accessories on a rear sub frame.

2.7.13 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. Toolkit.
f. Helmet hooks and luggage carrier hooks
g. Passenger foot rests.
h. Passenger grab rails.

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

2.7.14 The following items MUST BE Altered

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