ALPE ADRIA MOTORCYCLE UNION
ALPE ADRIA CIRCUIT RACING
TECHNICAL REGULATIONS 2021

Version_Feb-25-2021

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Changes for 2021 are in bold & red.

Version Feb-25-2021: Technical Regulations Class ALPE ADRIA STK 1000 new.

AACR 0 GENERAL

a) The Alpe Adria Road Racing Commission may make amendments to the technical regulations at any time.

b) Each rider can pass the Technical Control with one motorcycle only. The Technical Officers should re-inspect any motorcycle that has been involved in any accident, and if it is necessary to issue a new technical control sticker for a rebuilt motorcycle. If a motorcycle is completely damaged, the Chief Technical Officer can allow the rider to pass the Technical Control with a second motorcycle. But at any time of the event only one motorcycle per rider and class is allowed.

c) 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.

d) 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 time penalty or disqualification.

e) If during the practice sessions or the race itself a Technical Officer states a fault in a motorcycle that could represent a danger for the other riders, he must immediately inform the Clerk of the Course.

f) Random technical controls can be carried out during practices and at the end of practices in the technical control area.

g) The rider is at all times responsible for his motorcycle.

h) Motorcycles must comply with the Technical Regulations at any time of an event.

AACR 0.1 PROTECTIVE CLOTHING AND HELMETS

a) Riders must wear a complete leather suit with additional leather padding or other protection on the principal contact points, knees, elbows, shoulders, hips etc.

b) Linings or undergarments must not be of a synthetic material, which might melt and cause damage to the rider´s skin.

c) Riders must also wear leather gloves and boots, which with the suit provide complete coverage from the neck down.

d) Leather substitute materials may be used, provided the Chief Technical Officer has checked them.

e) Use of a back protector is mandatory.

f) Riders must wear a helmet, which is in good condition, provides a good fit and is properly fastened.

g) Helmets must be of the full-face type and must conform to one of the recognised international standards:

- Europe: ECE 22-05, (only “P” type)
- Japan: JIS T 8133:2007 (valid until 31.12.2019*); JIS T 8133:2015 (only type 2 “Full Face”)
- USA: SNELL M 2010 (valid until 31.12.2019*); SNELL M 2015

*** Valid for 2021 season in Alpe Adria Circuit Racing.**

Helmets with double D-Ring fasteners are mandatory!

New FIM helmet standards FRHPhe-01 is highly recommended.

h) Visors must be made of a shatterproof material.

i) Disposable "tear-offs" are permitted.

j) Any question concerning the suitability or condition of the riders clothing and/or helmet should be decided by the Chief Technical Officer, who can, if he wishes so, consult the manufacturers of the product before making a final decision.

AACR 0.2 ADDITIONAL EQUIPMENT

0.2.1 Brake lever protection:

Motorcycles must be equipped with a brake lever protection (guard), intended to protect the handlebar brake lever from being accidentally activated in case of collision with another motorcycle. FIM approved guards are permitted without regard to the material.

The Chief Technical Officer has the right to refuse any guard not satisfying this safety purpose.

0.2.2 Chain guard:

All motorcycles must be equipped with a chain guard (shark fin) in such a way to reduce the possibility that any part of the rider's body can be trapped between the lower chain run and the final drive sprocket at the rear wheel. The chain guard must be mounted with minimum 2 steel bolts (min. 6 mm diameter). The Chief Technical Officer has the right to refuse any guard not satisfying this safety purpose.

0.2.3 Rear safety light:

All motorcycles must have a functioning red light mounted at the rear of the motorcycle. This light must be switched on any time the motorcycle is on the track or is ridden in the pit lane and the Race Direction declares the session WET.

All lights must comply with the following:

a) The rear light must be mounted on the motorcycle during the whole time of the event.

b) The rear light must be mounted properly with screws. Mounting the rear light with tape is forbidden. Mounting with hook-and-loop fasteners is allowed when the wiring of the light is connected to the motorcycle.

c) The luminous field should be at least $4cm^2$ (e.g. rectangular 4 cm x 1 cm, circular Ø 2.25 cm).

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

e) The rear light must be mounted near the end of the seat/rear bodywork and approximately on the motorcycle centre line, in a position approved by the Chief Technical Officer. In case of dispute over the mounting position or visibility, the decision of the Chief Technical Officer will be final.

f) Power output/luminosity should be equivalent to minimum 10 W (incandescent) or 1 W (LED).

g) The output must be continuous - no flashing safety light whilst the motorcycle is on the track. Flashing is allowed only in the pit lane when the pit limiter is active.

h) The safety light power supply may be separated from the motorcycle.

i) The Chief Technical Officer has the right to refuse any light system not satisfying this safety purpose.

0.2.4 Kill switch:

All motorcycles must be equipped with a functional ignition kill switch or button mounted on the 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.

AACR 0.3 TYRES

a) Maximum number of tyres for each event:

   i. **There is no maximum number of tyres.**

b) Tyres must be a fully moulded type carrying all size and sidewall markings of the tyres for commercial sale to the public.

c) Slick tyres are allowed in all classes.

d) The tyres must have a DOT and/or E-Mark, the DOT and/or E-mark must be on the tyre sidewall.

e) Any modification or treatment of the tyres (cutting, grooving) is forbidden.

f) Wet tyres and intermediate tyres can be used only when the Race Direction has declared the race or practice “WET”.

g) Wet tyres must be a fully moulded tyre.

h) Wet tyres do not need to carry a DOT and/or E-marks; however, these tyres must be marked “not for highway use” or “NHS”.

AACR 0.4 STARTING NUMBERS / BACKGROUND COLOURS

The colours of the starting numbers and backgrounds are defined separately in the regulation of the class concerned. The number must be clearly visible and in a good shape.

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

a) One on the front, either in the centre of the fairing or slightly off to one side. The number must be centred on the background with no advertising within 25 mm in all directions.

b) One, on each side on the lower rear portion of the lower fairing; see Appendix A. The number must be centred on the background.

c) Numbers must be easily legible in a clear simple font and contrast strongly with the background colour.

d) Backgrounds must be of one single colour and must be clearly visible around all edges of the number (including outline). Backgrounds must protrude the numbers within 15 mm in all directions.

e) Any outlines must be of a contrasting colour and the maximum width of the outline is 3 mm.

f) Reflective or mirror type numbers are not permitted.

g) Numbers cannot overlap.

In case of a dispute concerning the legibility of numbers, the decision of the Chief Technical Officer is final.

The sizes for all the front numbers are:	Minimum height Minimum width Minimum stroke Minimum space between numbers	120 mm 60 mm 20 mm 10 mm
The sizes for all the side numbers are:	Minimum height Minimum width Minimum stroke Minimum space between numbers	100 mm 50 mm 15 mm 10 mm

AACR 0.5 FUEL

a) All engines must function on normal unleaded fuel with a maximum lead content of 0.005 g/l (unleaded) and a maximum MON of 90, see FIM Superbike, Supersport & Supersport 300 World Championship Regulations **2020**, Art. 2.8.

b) At the technical control each rider must declare the brand and type of fuel he is using.

c) At least 1/2 litre fuel must remain in the fuel tank of all the motorcycles that finished the race to take samples if needed.

AACR 0.6 HOMOLOGATION

All motorcycles require a FIM homologation (see Appendix "FIM HOMOLOGATION REGULATIONS" in the FIM Superbike, Supersport & Supersport 300 World Championship Regulations **2020**).

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 motorcycle.

Once a motorcycle has obtained a homologation, it may be used for racing in the corresponding class for a maximum period of **16** years **(Model Year 2006 or newer)**, or until such time that the homologated motorcycle is disqualified by new rules or changes in the Technical Regulations for the corresponding class.

AACR 0.7 SOUND LEVEL CONTROL

The noise limits are defined separately in the regulation of the class concerned.

For all AA classes the methods of measurement will be according to the methods described in the FIM Superbike, Supersport & Supersport 300 World Championship Regulations **2020**; Article 2.12 "SOUND LEVEL CONTROL".

AACR 0.8 TIMEKEEPING INSTRUMENTS

All motorcycles must have a correctly positioned timekeeping transponder. The transponder must be supplied or approved by the official Timekeeper and fixed on the side of 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. The position will be appointed and controlled by the Chief Technical Officer.

Correct attachment of the transponder bracket consists of a minimum of two tie-wraps, but preferably by screws or rivets. Any transponder-retaining clip must also be secured by a tie-wrap. Hook and loop fasteners (e.g. 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.

The Chief Technical Officer has the right to refuse any mounting solution not satisfying these requirements.

AACR 0.9 TECHNICAL CONTROL

a) All motorcycles must be presented at the technical control with the lower fairing removed. The oil pan, oil drain plug, oil filler cap, oil filter and - if existing - oil radiator and oil lines must be clearly visible.

b) All riders / teams must be prepared to disassemble their engines completely at the Parc Ferme inspection. Therefore, all necessary tools and spare parts must be available.

c) After a crash, the rebuilt motorcycle must be inspected before its use by the Technical Officers for safety checks and a new seal will be placed on the motorcycles frame.

AACR 0.10 ONBOARD CAMERAS

a) Onboard cameras can only be used with the permission of the Race Direction.

b) When a rider/team has obtained this permission, the motorcycle with the camera installed must be presented to the Technical Control.

c) Cameras must be mounted inside the fairing or on the top / bottom side of the rear seat bodywork.

d) Cameras must be fixed securely to the motorcycle. Adhesives are only accepted when it is originally by the camera manufacturer.

e) Cameras must be secured to the motorcycle with an additional steel cable.

f) The Chief Technical Officer has the right to refuse any solution not satisfying these requirements.

AACR 1 SUPERSPORT 300 (SSP 300)

Look at the code European SSP 300 Cup Technical Regulations **RR 028T 2021** and its annexations.

AACR 2 SUPERSTOCK 600 (STK 600)

AACR 2.0 GENERAL

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 THESE RULES IS STRICTLY FORBIDDEN.

Superstock motorcycles require an FIM homologation (see AACR 0.6).

All motorcycles must be normally aspirated.

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

As the name SUPERSTOCK implies, limited modifications are allowed to the motorcycles. Most modifications are only allowed for safety reasons.

The appearance from both front, rear and the profile of Superstock 600 motorcycles must (except when otherwise stated) remain as originally produced by the manufacturer for the homologated motorcycle.

The appearance of the exhaust system is excluded from this rule.

AACR 2.1 DISCIPLINE SPECIFICATIONS SUPERSTOCK 600

- 4 cylinders over 401 cc up to 600 cc 4-stroke
- 3 cylinders over 401 cc up to 675 cc 4-stroke
- 2 cylinders over 401 cc up to 750 cc 4-stroke

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

AACR 2.2 MINIMUM WEIGHT

a) The minimum weight for each motorcycle in running condition is 162 kg.

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

c) There is no tolerance on the minimum weight.

d) During the final technical inspection at the end of the race, the selected motorcycles and riders will be weighted 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.

e) 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.

f) The use of ballast is allowed to stay over the minimum weight limit.

g) The use of ballast is allowed to stay over the minimum weight limit and must be declared to the Chief Technical Officer at the preliminary checks. Fuel in the fuel tank can be used as ballast.

h) The ballast must be made from solid metal piece(s), firmly and securely connected, either through an adapter or directly to the main frame or engine, with minimum 2 steel bolts

(min. 8 mm diameter, 8.8 grade or higher). Other equivalent technical solutions must be submitted to the Chief Technical Officer for his approval.

AACR 2.3 STARTING NUMBERS & BACKGROUND COLOURS

Red background with yellow numbers (see AACR Technical Regulations Appendix A and AACR 0.4 for sizes and specifications).

AACR 2.4 FUEL

See AACR 0.5.

AACR 2.5 TYRES

See AACR 0.3.

AACR 2.6 ENGINE

The number of engines is free.

AACR 2.6.1 Cylinder Head

a) Must be the original fitted and homologated part with no modification allowed, **except 2.6.1.b)**.

b) The resurfacing of the cylinder heads sealing surface is permitted but only up to minus 0,1 mm below the homologated tolerance.

c) No material may be added or removed from the cylinder head.

d) The gaskets can be changed.

e) The valves, valve seats, guides, springs, tappets, oil seals, shims, cotter valve, spring base and spring retainers must be as originally produced by the manufacturer for the homologated motorcycle.

f) Valve spring shims may be changed.

g) Valve seats:

i. Must be the original part as produced for the homologated motorcycle.

ii. Valve seat angle must remain as homologated.

iii. Valve seat width is free.

iv. Cutting of top and bottom angles is free. Radius cutting is allowed.

v. Machining of ports and combustion chambers is strictly forbidden.

AACR 2.6.2 Camshafts

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

b) At the technical checks for direct valve operation systems the cam lobe lifts are measured; for indirect valve operation systems (i.e. where cam followers are fitted), the valve lift is measured.

c) The timing of the camshafts is free; however, no machining of the camshaft is authorized.

AACR 2.6.3 Camshaft Sprockets or Gears

a) Camshaft sprockets or camshaft gears may be **modified or replaced**.

b) Pressed on cam sprockets may be replaced with an adjustable boss and cam sprocket.

c) The cam drive system **(chain drive or gears) must remain as homologated**.

d) Cam chain and tensioner can be modified or replaced.

AACR 2.6.4 Cylinders

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

AACR 2.6.5 Pistons

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

AACR 2.6.6 Piston Rings

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

AACR 2.6.7 Piston Pins and Clips

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

AACR 2.6.8 Connecting Rods

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

AACR 2.6.9 Crankshaft

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

AACR 2.6.10 Crankcase and all other Engine Cases

a) Crankcases must remain as homologated. No modifications are allowed (including painting, polishing and lightening).

b) Repairing the crankcase by welding or using Epoxy is allowed.

c) It is not allowed to add a pump or any other device to create a vacuum in the crankcase. If a vacuum pump is installed on the homologated motorcycle then it can be used only as homologated.

d) 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 part.

e) 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. Covers made of composite materials are not permitted.

f) The secondary cover should cover a minimum of 1/3 of the original cover. It must have no sharp edges to damage the track surface.

g) Plates or crash bars made from aluminium or steel are also permitted in addition to these covers. All of these devices must be designed to be resistant against sudden shocks, abrasions and crash damage.

h) Plates/crash bars/frame sliders must not protrude outside the fairing for more than 30 mm.

i) FIM approved covers will be permitted without regard of the material or its dimensions.

j) 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.

k) Oil containing engine covers must be secured with steel bolts.

l) The Chief Technical Officer has the right to refuse and forbid any cover not satisfying this safety purpose, if the evidence shows that the cover is not effective.

m) No damaged covers will be permitted unless approved by the Chief Technical Officer.

AACR 2.6.11 Transmission / Gearbox

a) Must be the original fitted and homologated part with no modification allowed except:
   i. The positive neutral selector mechanism may be removed.
   ii. Shift star/indexer spring, roller and detent may be replaced but must function as originally designed on the homologated motorcycle.

b) Quick shifters are free.

c) Other modifications to the gearbox or selector mechanism are not allowed.

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

e) The sprocket cover can be modified or eliminated.

f) The chain tensioner is free.

g) Chain guard can be removed.

h) Transmission gear shifter shaft supporting brackets can be added.

i) Add on quick shift modules / additional modules are allowed to enable upshifts and downshifts. "Downshift blipping" is allowed.

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

AACR 2.6.12 Clutch

a) Clutch system (wet or dry type) must remain as homologated.

b) The method of operation (by cable or hydraulic) may be changed.

c) Friction and drive discs may be changed, **the number of discs is free.**

d) Clutch springs may be changed, **the number of springs is fee.**

e) Clutch outer basket must be the originally fitted and homologated part but may be reinforced.

f) Primary driven gear must remain as originally produced for the homologated motorcycle with no modification allowed.

g) The original clutch inner assembly may be modified or replaced by an aftermarket clutch, also including back torque limiting capabilities (slipper type).

h) Clutch fluid reservoir can be replaced.

i) Clutch lines/cables can be replaced.

j) No power source (i.e. hydraulic or electric) can be used for clutch operation, if not installed in the homologated motorcycle.

AACR 2.6.13 Oil Pumps and Oil Lines

a) Oil pump may be modified or replaced from those fitted to the homologated motorcycle but modifications of the crankcase are not allowed.

b) The oil pump drive may be modified or changed.

c) The oil pressure relief **valve** is free.

d) Oil lines may be modified or replaced. Oil lines containing positive pressure, if replaced, must be of braided reinforced construction with swaged or threaded connectors.

AACR 2.6.14 Engine Cooling System

a) The only permitted liquid engine coolant for the water-cooling system is water **without additives**.

b) The water pump may be modified or changed, but modifications of the crankcase are not allowed.

c) The water pump **drive may be modified or changed.**

d) Protective meshes may be added in front of the oil and water radiator(s).

e) The cooling system hoses/pipes and catch tanks may be modified or changed.

f) Radiator fan and wiring may be changed modified or removed.

g) Radiator cap is free.

h) The original water radiator can be modified or replaced, Extra mounting brackets to accommodate the radiator are permitted.

i) Water and oil thermostat can be modified, replaced or removed.

j) Thermal switches and water temperature sensor can be modified, replaced or removed.

k) The original oil radiator can be modified, replaced **or removed**.

l) Additional water radiators and oil coolers can be added. Extra mounting brackets to accommodate these radiators / coolers are allowed.

m) Oil coolers can be installed even if the homologated motorcycle does not have one.

n) The appearance from the front, the rear and the profile of the motorcycle must conform to the homologated shape after the addition of radiators /oil coolers.

o) All radiators / coolers must be mounted below the lower fork bridge (triple clamp).

AACR 2.6.15 Air Box

a) Must be the original fitted and homologated part with no modification allowed, but the air box drains must be sealed.

b) Air filters, internal flap type valve, sensors and vacuum fittings may be removed, modified, or replaced with aftermarket parts.

c) All motorcycles must have a closed breather system. The oil breather line(s) must be connected, may pass through an oil catch tank and must exclusively discharge in the air box.

d) Ram air tubes or ducts running from the fairing to the air box may be modified, replaced or removed. The material is free. If tubes/ducts are used, they must be attached to the original, unmodified air box inlets.

e) No heat protection can be attached to the air box.

AACR 2.6.16 Fuel Injection System **/ Fuel Supply**

Fuel injection system **/ fuel supply** refer to throttle bodies, fuel injectors, **fuel lines and pipes,** fuel pump, fuel pressure regulator and intake tract devices (static or variable length).

a) The original homologated fuel injector system must be used without any modification.

b) The throttle bodies must be stock and unaltered from the original specification and manufacture and in the same position as on the homologated motorcycle.

c) The fuel injectors must be stock and unaltered from the original specification and manufacture and in the same position as on the homologated motorcycle.

d) Bell mouths must remain as originally produced by the manufacturer for the homologated motorcycle.

e) Butterfly valves must remain as originally produced by the manufacturer for the homologated motorcycle.

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 parts of the variable intake tract device must remain exactly as homologated.

g) Existing variable intake tract devices can be deactivated or removed.

h) Secondary throttle valves and shafts may be removed or fixed in the open position and the electronics may be disconnected or removed.

i) Air and air/fuel mixture can go to the combustion chamber exclusively though the throttle body butterflies.

j) Electronically controlled throttle valves, known as "ride-by-wire", may be only used if the homologated model is equipped with the same system. Software may be modified but all the safety systems and procedures designed by the original manufacturer must be maintained.

k) Fuel pump and fuel pressure regulator must be the original fitted and homologated parts with no modification allowed.

l) The fuel pressure must be as homologated.

m) The pressure tolerance at the technical control is + 0,5 bar in respect to the maximum pressure of the homologated motorcycle.

n) Fuel lines from the fuel tank to the delivery pipe assembly(s) may be replaced and must be located in such a way that they are protected from crash damage.

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

p) Quick connectors or dry break quick connectors may be used.

q) Fuel filters may be added.

AACR 2.6.17 Fuel Tank

a) Fuel tank must remain as originally produced by the manufacturer for the homologated motorcycle 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 tank filler cap may be altered or replaced from those fitted to the homologated motorcycle. Fuel cap when closed must be leak proof. Additionally, they must be securely locked to prevent accidental opening at any time.

e) Fuel petcock (if existing) may be altered, replaced or removed.

f) Fuel vent lines may be replaced.

g) A rider spacer/pad may be fitted to the rear of the tank with **permanent or** non-permanent adhesive. **The material is free**.

h) The tank can have a cover fitted over it. This cover must fit the shape of the fuel tank.

i) The sides of the fuel tank may be protected with a cover made of a composite material. These protectors must fit the shape of the fuel tank.

j) A fuel tank drain valve can be installed and must be located in such a way that it is protected from crash damage.

k) A spacer between fuel tank and fuel pump can be installed.

l) The fuel tank may have a heat protection shield /mat attached to its bottom and engine side.

AACR 2.6.18 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) as on the homologated motorcycle~~.

c) For safety reasons the exposed edge(s) of the exhaust pipe(s) outlet must be rounded to avoid any sharp edges.

d) Wrapping of the exhaust system 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) Titanium and carbon exhausts and silencers are allowed.

f) The basic noise limit is 107 dB/A (with a 3 dB/A tolerance after the race only). Some circuits may have a lower noise limit. This will be published in the Supplementary Regulations of the respective event.

g) The test RPM for noise control will be as follows:

- 2-cylinder engines: 5.500 RPM
- 3-Cylinder engines: 6.500 RPM
- 4-cylinder engines: 7.000 RPM

AACR 2.6.19 Sound level control

See AACR 0.7.

AACR 2.7 Electrics and Electronics

AACR 2.7.1 Engine control system (ECU) / Electronics

a) The engine control system (ECU) must be either:

i. The original system as homologated. **Flashing the original ECU is allowed, hardware modifications of the ECU are not allowed.**

ii. The original system (with the production ECU ~~and no change of software~~) (option i.) may have **commercially available** external ignition and/or injection module/s added. The total combined retail price (software and tuning tools included) on sale to the general public cannot be higher than € **4.000** (tax excluded). A special connector may be used to connect the module/s and the ECU.

iii. An FIM/AA approved ''Superstock Kit'' model ~~with approved software~~ (produced and/or approved by the motorcycle manufacturer) may be used. **Flashing the KIT-ECU is allowed, hardware modifications of the ECU are not allowed. Commercially available external ignition and/or injection module/s may be added.** A special connector/adaptor may be used to connect the ECU(s) and the original wiring harness. The combined retail price of the full system including software, tuning tool, download / connection cable any activations, upgrades and wiring harness(s) must be less than:

1. € **4.000** (tax excluded) if the system excludes data logging.
2. € **5.000** (tax excluded) if the system includes data logging.

The ECU (with software and activations) and harness parts must be individually priced and available separately. The separate ECU and harness total must respect the above limits.

iv. The FIM World Supersport 600 approved ECU Mectronik MKE7 (part number WSS600_A). The sole official supplier of this ECU is Solo Engineering. www.soloengineering.com, sales@soloengineering.com. When using this ECU, Art. 2.5.9.1 in the FIM Superbike, Supersport & Supersport 300 World Championship Regulations 2020 is mandatory.

b) Central unit (ECU) may be relocated.

c) Corner by corner or distance/position-based adjustments are not allowed.

d) Optional equipment sold by the motorcycle Manufacturer for the homologated model is considered not homologated with the motorcycle and must follow the requirements for approved electronics / data loggers.

e) During an event the Chief Technical Officer has the right to ask a rider/team substitute their ECU or external module(s) with the FIM / AA sample received from the Manufacturer. The change has to be done before Sunday warm up.

f) No extra sensors can be added for control strategies except shift rod sensor, wheel speed sensors and lambda sensors. Any of these sensors must be included in the Kit ECU and Harness package if required for strategies (including closed loop lambda).

g) Other additional electronic hardware not present on the original homologated motorcycle cannot be added with the exceptions noted below.

h) Resistors/load may be added to replace the parts of the electrical system that have been removed (including lights and lambda sensors) to prevent ECU errors.

i) An ABS replacement/bypass may be fitted and/or the ABS unit may be dismantled to leave just its ECU.

j) The external fuel injection modules / ignition modules may not alter any sensor signal relating to the ride by wire system / ECU or control / actuate any part of the motorcycle excepting the fuel injectors / ignition coils.

k) Lambda closed loop /auto tuning is permitted.

l) No external modules may add traction control strategies (such as Traction Control, Launch Control, Anti Wheelie Control) unless originally fitted to the homologated motorcycle or included in the Racing Kit (which must be produced and/or approved by the motorcycle manufacturer) for the homologated motorcycle.

m) Control strategies (such as Traction Control, Launch Control, Anti Wheelie Control) is only allowed when it is originally fitted to the homologated motorcycle or included in the Racing Kit (which must be produced and/or approved by the motorcycle manufacturer) for the homologated motorcycle.

n) Data logging systems:

   i. The data logging system is free, but the specifications listed below must be respected.

   ii. The Data Logger unit must be available for sale to the public.

   iii. The sensors must be simple function. No inertial platforms are allowed to be added if an inertial platform is not installed originally on the homologated motorcycle.

   iv. CAN (or other data protocol) communication from the ECU to an approved Data Logger is allowed without any limitation in CAN channel logger number.

   v. The Data Logger may not act to control any strategy or setting in the ECU – except to replicate the original dashboard signals if the original dashboard is replaced. The logger may not automate these setting changes.

o) The maximum total price of other active/control/calculation units such as lambda driver modules, quick shifter and analogue to CAN converters is € **1.000** (tax excluded). These devices must be approved by FIM / Alpe Adria.

p) Telemetry is not allowed.

q) No remote or wireless connection to the motorcycle for any data exchange or setting is allowed whilst the engine is running or the bike is moving.

r) The wiring harness is free.

s) Downshift blipping is allowed. External downshift blip modules are allowed.

t) The addition of an infrared (IR) or GPS based lap timing system is allowed.

u) Dashboard is free. It may incorporate the Data Logger. There must remain a working tachometer display.

v) Spark plugs may be replaced.

w) Spark plug caps /coil on plug, ignition cables and ignition harness are free.

x) The battery is free **and may be relocated**. **The maximum capacity is 10 Ah**.

y) A lap timer can be fitted.

AACR 2.7.2 Generator, Alternator and Electric Starter

a) The generator (ACG) must be the originally fitted and homologated part with no modification allowed.

b) The stator must be fitted in its original position and without offsetting.

c) The electric starter must operate normally and always be able to start the engine during the event.

d) During Parc Ferme, the starter must crank the engine at a suitable speed for starting for a minimum of 2 seconds without the use of a boost battery. No boost battery may be connected to the motorcycle at any time of the event.

e) The generator must always charge the battery **in a sufficient way** when the engine is running. The charging voltage must be corresponding to the charging voltage listed in the service manual **/ kit manual** of the homologated motorcycle.

f) The regulator/rectifier may be modified or replaced.

g) Operating the motorcycle on the battery only (without a functioning generator) is not allowed.

AACR 2.8 MAIN FRAME / CHASSIS

a) The use of titanium and carbon (or similar composite materials) in the construction of the main frame, rear sub frame, swing arm and swing arm pivot bolt, front forks, triple clamps, wheel axles, engine mounting parts and handlebars is forbidden. The use of titanium and aluminium alloys in the construction of swing arm pivot bolts and wheel axles is forbidden.

b) Unless otherwise stated, the use of titanium and aluminium alloys for nuts and screws is allowed.

c) 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 and a valid frame number / chassis number. In case the frame will need to be replaced, the rider or team must request the use of a **2nd motorcycle** to the AA Technical Officer.

d) **After a crash**, the rebuilt motorcycle must be inspected before its use by the Technical Officers for safety checks and a new seal will be placed on the motorcycles frame.

e) No other spare motorcycle may be on the track.

AACR 2.8.1 Frame Body and Rear Sub Frame

a) The frame must remain as originally produced by the manufacturer for the homologated motorcycle.

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

c) The sides of the frame body may be covered by protective parts made of plastic or composite material. These protectors must fit the form of the frame.

d) Crash protectors may be fitted to the frame, using existing points (max. length: 50 mm), or **fitted** into the ends of the wheel axles (max. length: 30 mm).

e) Crash protectors / frame sliders must not protrude outside the fairing for more than 30 mm.

f) Nothing may be added by welding or removed by grinding from the main frame body.

g) All motorcycles must display a valid vehicle identification number (frame number / chassis number) punched on the frame body.

h) Engine mounting brackets or plates **may be modified or replaced, but the use of titanium and carbon (or similar composite materials) is forbidden**.

i) Engine mounting axles, bolts and nuts can be modified or replaced, but must be made of a steel alloy.

j) Suspension linkage mounting points on the frame must remain as originally produced by the manufacturer for the homologated motorcycle with no modification allowed.

k) Front sub frame / fairing mount may be **modified or replaced. The material is free.**

l) Rear sub frame may be **modified or replaced, but the use of titanium and carbon (or similar composite materials) is forbidden.** Repairing and welding of the sub frame is allowed.

m) 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.

n) The side stand bracket may be cut or removed.

o) The paint scheme is not restricted but polishing the frame body or sub-frame is not allowed.

AACR 2.8.2 Suspension - General

a) The price limits are:

i. Fork: For the fork kit, including all parts such as – but not limited to – cartridge, springs (1set), adjusters, fork caps, blanking inserts, seals, bushes but excepting oil and fitting, the price limit is **€ 3.000** excluding tax.

ii. Shock Absorber/RCU: For the complete shock absorber/RCU including – but not limited to – spring (1 piece), pre-load adjuster and length/ride height adjuster, the price limit is € 2.000 excluding tax.

b) Electronic suspension:

i. No aftermarket or prototype electronically-controlled suspensions can be used. Electronically-controlled suspension can 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 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 or 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 electronic suspension system must work safely in the event of an electronic failure.

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

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

AACR 2.8.3 Front Fork and Fork Clamps

a) Forks (stanchions, stems, wheel spindle, upper and lower fork clamps, etc.) must be the originally fitted and homologated parts with the following modifications allowed:

i. The upper and lower fork clamps (triple clamp, fork bridges and stem) must remain as originally produced by the manufacturer on the homologated motorcycle

ii. Steering stem pivot position must remain in the homologated position (as supplied on the production motorcycle). If the standard motorcycle has inserts, then **the inserts can be modified or replaced**.

iii. Steering bearings are free.

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

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

vi. Fork caps can 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.

vii. The original surface finish of the fork tubes (stanchions, fork pipes) may be changed. Additional surface treatments are allowed.

viii. Fork bushings and oil seals are free.

ix. Dust seals may be modified, changed or removed if the fork remains totally oil-sealed.

b) Mechanical Forks: Original internal parts of the homologated forks may be modified or changed. After-market damper kits or valves may be installed.

c) Electronic Suspensions:

i. No aftermarket or prototype electronically controlled suspension may be used, unless such suspension is already present on the production model of the homologated motorcycle, and it must remain completely standard (all mechanical or electronic parts must remain as homologated, with the exception of shims and springs).

ii. The electronic front suspension may be replaced with a mechanical system from a similar homologated model from the same manufacturer.

iii. Electronic forks may have their complete internal parts (including all electronic control) replaced with an approved conventional damping system and it will be considered as a mechanical fork.

d) Any quality and quantity of oil can be used in the front forks.

e) The protrusion (height and position of the front fork in relation to the fork crowns) is free.

f) Fixing and mounting points for front brake callipers must remain as homologated.

AACR 2.8.4 Swing Arm

a) The swing arm must be the originally fitted and homologated part with no modification allowed.

b) The swing arm pivot bolt **and nut may be modified or replaced, but must be made of a steel alloy.**

c) Swing arm pivot position must remain in the homologated position (as supplied on the production motorcycle). If the standard motorcycle has inserts, then **the inserts can be modified or replaced**.

d) Rear axle/chain adjuster can be changed to an aftermarket product.

e) A solid protective cover (shark fin) must be fixed to the swing arm, and must always cover the opening between the lower chain run, swing arm and rear wheel sprocket, irrespective of the rear wheel position.

f) Rear wheel stand brackets may be added to the swing arm by welding or by bolts. Brackets must have rounded edges (with a large radius) viewed from all sides. 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.

g) The sides of the swing arm may be protected by protective parts made of plastic or composite material. These protectors must fit the form of the swing arm.

AACR 2.8.5 Rear Suspension Unit

a) Rear suspension unit (shock absorber and its spring) may be replaced with an approved unit, but the original attachments to the frame and swing arm or linkage must be as homologated.

b) Rear suspension linkage parts can be modified or replaced.

c) Removable top shock mounts can be modified or replaced.

d) Mechanical Suspensions: Rear suspension unit and spring may be changed.

e) Electronic Suspensions: No aftermarket or prototype electronically controlled suspension unit may be used, unless such suspension is already present on the production model of the homologated motorcycle and it must remain completely standard (any mechanical or electronic part must remain as homologated, with the exception of shims and spring). If the standard system has no facility for ride height adjustment the standard shock may be modified to allow shock length change if no hydraulic parts are modified. The original suspension system must work properly safe in the event of an electronic failure. The electronic shock absorber can be replaced with a mechanical one.

AACR 2.8.6 Wheels

a) Wheels must be the originally fitted and homologated parts with no modification allowed.

b) Wheels from different model years (Model Year 2006 or newer) of the homologated motorcycle can also be used.

c) Wheels may be overpainted but the original surface finish cannot be removed.

d) A non-slip coating/treatment may be applied to the bead area of the rim.

e) **The cushion drive for the rear wheel can be modified or replaced.**

f) Wheel bearings **are free**.

g) Wheel axles may be modified or replaced, but must be made of a steel alloy.

h) Axle nuts / bolts can be modified or replaced, but must be made of a **steel alloy**.

i) Wheel Spacers can be modified or replaced. Modifications to keep spacers in place are permitted.

j) Bearing spacers **can be modified or replaced**.

k) Wheel balance weights are free.

l) Aluminium or steel inflation valves are compulsory. Angled valves are recommended.

AACR 2.8.7 Brakes

a) Brake discs may be replaced by aftermarket discs which comply with the following requirements:

   i. Brake discs and carrier must retain the same material as the homologated disc and carrier or steel (max. carbon content 2.1 wt%). All homologated discs are steel.

   ii. Non-floating or single piece discs may be replaced with floating discs. The disc carrier must be the same material as the homologated carrier, steel or aluminium.

   iii. The outside diameter of the brake disc may be increased but the disc must fit into the homologated brake calliper without any modification of the brake calliper.

   iv. The thickness of the brake disc may be increased but the disc must fit into the homologated brake calliper without any modification of the brake calliper. The number of floaters is free.

   v. The fixing of the carrier on the wheel must remain the same as on the homologated disc.

b) Front and rear brake calliper (mount, carrier, hanger) must remain as originally produced by the manufacturer for the homologated motorcycle 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 thread repair insert.

f) Front-brake master cylinder can be replaced.

g) Rear brake master cylinder can be replaced.

h) Front and rear brake fluid reservoir can be replaced.

i) Front and rear hydraulic brake lines can be replaced.

j) The split of the front brake lines for both front brake callipers must be made above the lower fork bridge (lower triple clamp).

k) "Quick" (or "dry-brake") connectors in the brake lines are allowed.

l) Front and rear brake pads may be changed. Brake pad locking pins may be modified for quick change type.

m) Front brake calliper additional air scoops or ducts are allowed.

n) The Antilock 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.

o) The Antilock Brake System (ABS) may be disconnected and its ECU can be dismantled. The ABS rotor wheel can be removed, modified or replaced.

p) Motorcycles must be equipped with a 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 Chief Technical Officer has the right to refuse any guard not satisfying this safety purpose.

AACR 2.8.8 Handle Bars and Hand Controls

a) Handle bars may be replaced.

b) Handle bars and hand controls may be relocated.

c) Throttle grip can be modified or substituted.

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

e) Throttle assembly and associated cables can be modified or replaced but the connection to the throttle body and the throttle controls must remain as homologated. 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.

f) Clutch and brake lever may be exchanged by an after-market model. An adjuster to the brake lever **and to the clutch lever** is allowed.

g) Switches can be changed but electric starter switch and engine stop switch must be located on the handle bars.

h) Welding of handle bars is not allowed.

i) The use of titanium, carbon fibre, Kevlar® or carbon composite materials for handlebars is forbidden.

j) The use of titanium and aluminium alloys for nuts and screws is allowed.

k) Handlebar ends must be plugged with a solid material or rubber covered.

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

m) In any position of the handlebars /steering stem, the front wheel, tyre and mudguard must maintain a minimum gap of 10 mm to the bodywork and radiator(s).

n) 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.

o) All handlebar levers must be ball-ended (diameter of this ball **should be** at least 16 mm). This ball can also be flattened, the minimum thickness of the flattened part **should be** 14 mm and the edges must be rounded. These ends must be permanently fixed and form an integral part of the lever.

p) Each control lever must be mounted on an independent pivot.

AACR 2.8.9 Foot Rests and Foot Controls

a) The use of titanium, carbon fibre, Kevlar or carbon composite materials for foot rests and foot controls is forbidden.

b) The use of titanium and aluminium alloys for nuts and screws is allowed.

c) Foot rests, hangers/brackets and hardware may be replaced and relocated but the hangers / brackets must be mounted to the frame at the original mounting points.

d) Gear shift must remain operated manually by foot.

e) Foot rests may be rigidly mounted or a folding type which must incorporate a device to return them to the normal position.

f) The end of the foot rests must **be rounded**.

g) Non-folding footrests must have an end (plug) which is permanently fixed, made of plastic, Teflon or an equivalent type material (Alloy), **and must be rounded**. The plug surface must be designed to reach the widest possible area in order to decrease the risk of injuries to the rider in the case of an accident. The Chief Technical Officer has the right to refuse any solution not satisfying this safety purpose.

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

i) A thumb operated rear brake solution is allowed, but there must remain a functioning foot operated rear brake lever. In case of a dispute, the decision of the Chief Technical Officer is final.

AACR 2.8.10 Fairing / Body Work

a) Fairing, mudguards and bodywork must confirm in principle to the homologated shape as produced by the manufacturer, irrespective of the model year to encourage the most up to date visual impression.

b) Fairings from a different model year can be used when it is/was homologated and the model year is 2006 or newer. In this case, the upper and lower fairing must be used as a set.

c) The material may be changed. The use of carbon fibre or carbon composite materials is not allowed. Specific reinforcements made of Kevlar® or carbon are allowed locally around holes and stressed areas.

d) Headlight decals should be included.

e) For all bodywork, paint and decal design is free.

f) Overall size and dimensions must be the same as the original parts, with a tolerance of +/- 10 mm, respecting the design and features of the homologated fairing as far as possible. The overall width of the frontal area may be +10 mm maximum. In case of a dispute, the decision of the Chief Technical Officer is final.

g) Windscreen may be replaced with an aftermarket product. The height of the windscreen is free, with a tolerance of +/- 15 mm measured on the vertical distance from / to the upper fork bridge. The screen must not have sharp edges. The material of the windscreen must be transparent.

h) Fairing brackets **and fasteners** may be altered or replaced. **The material is free**.

i) The ram-air intake(s) must maintain the originally homologated shape and dimensions with a +/- 2 mm tolerance.

j) The original air ducts running between the fairing and the air box may be altered or replaced with a +/- 2 mm tolerance to the homologated parts. **The material is free.** Particle grills or "wire - meshes" originally installed in the openings for the air ducts may be removed.

k) The lower fairing must be constructed to hold a minimum of 5 litres in case of an engine breakdown. The lower edges of all the openings in the fairing must be positioned at least **50** mm above the bottom of the fairing.

l) The lowest point of the rear transverse wall of the lower fairing must be at least **50** mm above the bottom. The angle between this wall and the floor must be ≦ 90°.

m) The lower fairing must incorporate at least a single opening of **20** 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.

n) 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.

o) Front mudguard may be **modified or replaced** and may be spaced upward for increased tyre clearance. **The material is free.**

p) Rear mudguard fixed on the swing arm can be modified, **replaced**, **may be spaced upward for increased tyre clearance** or removed. **The material is free.** The chain guard may be removed.

q) All exposed edges must be rounded.

AACR 2.8.11 Seat

a) Seat, seat base and associated bodywork may be replaced. 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) The homologated seat locking system (with plates, pins, rubber pads, etc.) can be removed.

d) The same materials as for fairings must be used. See also Art. 2.7.10 c).

e) All exposed edges must be rounded.

AACR 2.8.12 Fasteners

a) Standard fasteners may be replaced with fasteners of any material and design **with the exceptions listed below.**

b) Titanium fasteners may be used in structural (highly stressed) locations, but the strength and design must be equal to - or exceed - the strength of the standard fastener it is replacing.

c) Internal engine bolts, screws and nuts must remain of standard homologated materials or materials of higher specific weight.

d) The requirements for the materials of axles, bolts and nuts for engine mounting, wheels and swingarm are specified in the relevant sections of this regulations.

e) Fasteners may be drilled only for safety wiring, but intentional weight-reduction modifications are not allowed.

f) Thread repair using inserts of different material such as Helicoil® and Time-Sert® are allowed.

g) Fairing/body-work fasteners may be changed to a quick disconnect type, **the material is free.**

h) Aluminium fasteners may only be used in non-structural **(low stressed)** locations.

i) In case of a dispute, the decision of the Chief Technical Officer is final.

AACR 2.8.13 Rear Safety Light

See AACR 0.2.3.

AACR 2.9 The following items MAY BE altered or replaced

a) Any type of lubrication, brake and suspension fluid may be used.

b) Gaskets and gasket materials.

c) Bearings of any type and brand may be used.

d) Painted external surface finishes and decals.

e) Material for brackets connecting non-original parts (fairing, exhaust, instruments, etc.) to the frame (or engine) **can** be made from titanium or fibre reinforced composites.

f) Protective covers for the frame, chain, footrests can be made in materials like fibre composite material.

AACR 2.10 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) The air injection control system (valve, solenoid, tubes) may be removed. In this case, connections to the cylinder head cover **/ cylinder head** must be plugged.

c) Speedometer **and related wheel spacers.**

d) Bolt on accessories on a rear sub frame.

e) The original left and right handlebar switch, e.g. light switch, horn switch, turn signal switch, etc.

AACR 2.11 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 grabs rails.

i) Safety bars, centre and side stands must be removed (fixed brackets must remain excepting side stand bracket).

j) Catalytic convertors.

AACR 2.12 The following items MUST BE altered

a) Motorcycles must be equipped with a functional ignition kill switch or button mounted on a side of the 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) Throttle controls must be self-closing when not held by the hand.

c) All drain plugs, oil filler caps and oil dip sticks must be safety wired. External oil filter(s) screws and bolts that enter an oil cavity must be safety wired (i.e. on crankcase, **oil radiator**).

d) All motorcycles must have a closed breather system. The oil breather line must be connected and discharge in the air box.

e) 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.

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

AACR 2.13 TIMEKEEPING INSTRUMENTS

See AACR 0.8.

AACR 2.14 ONBOARD CAMERAS

See AACR 0.10.

AACR 3 SUPERSTOCK 1000 (STK 1000)

AACR 3.0 GENERAL

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 THESE RULES IS STRICTLY FORBIDDEN.

Superstock motorcycles require an FIM homologation (see AACR 0.6).

All motorcycles must be normally aspirated.

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

As the name SUPERSTOCK implies, limited modifications are allowed to the motorcycles. Most modifications are only allowed for safety reasons.

The appearance from both front, rear and the profile of Superstock 600 motorcycles must (except when otherwise stated) remain as originally produced by the manufacturer for the homologated motorcycle.

The appearance of the exhaust system is excluded from this rule.

AACR 3.1 DISCIPLINE SPECIFICATIONS SUPERSTOCK 1000

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

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

AACR 3.2 MINIMUM WEIGHT

a) The minimum weight for each motorcycle in running condition is 170 kg.

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

c) There is no tolerance on the minimum weight.

d) During the final technical inspection at the end of the race, the selected motorcycles and riders will be weighted 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.

e) 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.

f) The use of ballast is allowed to stay over the minimum weight limit.

g) The use of ballast is allowed to stay over the minimum weight limit and must be declared to the Chief Technical Officer at the preliminary checks. Fuel in the fuel tank can be used as ballast.

h) The ballast must be made from solid metal piece(s), firmly and securely connected, either through an adapter or directly to the main frame or engine, with minimum 2 steel bolts (min. 8 mm diameter, 8.8 grade or higher). Other equivalent technical solutions must be submitted to the Chief Technical Officer for his approval.

AACR 3.3 STARTING NUMBERS & BACKROUND COLOURS

Red background with white numbers (see AACR Technical Regulations Appendix A and AACR 0.4 for sizes and specifications).

AACR 3.4 FUEL

See AACR 0.5.

AACR 3.5 TYRES

See AACR 0.3.

AACR 3.6 ENGINE

The number of engines is free.

AACR 3.6.1 Cylinder Head

a) Must be the original fitted and homologated part with no modification allowed, **except 3.6.1.b)**.

b) The resurfacing of the cylinder heads sealing surface is permitted but only up to minus 0,1 mm below the homologated tolerance.

c) No material may be added or removed from the cylinder head.

d) The gaskets can be changed.

e) The valves, valve seats, guides, springs, tappets, oil seals, shims, cotter valve, spring base and spring retainers must be as originally produced by the manufacturer for the homologated motorcycle.

f) Valve spring shims may be changed.

g) Valve seats:

i. Must be the original part as produced for the homologated motorcycle.

ii. Valve seat angle must remain as homologated.

iii. Valve seat width is free.

iv. Cutting of top and bottom angles is free. Radius cutting is allowed.

v. Machining of ports and combustion chambers is strictly forbidden.

AACR 3.6.2 Camshafts

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

b) At the technical checks for direct valve operation systems the cam lobe lifts are measured; for indirect valve operation systems (i.e. where cam followers are fitted), the valve lift is measured.

c) The timing of the camshafts is free; however, no machining of the camshaft is authorized.

AACR 3.6.3 Camshaft Sprockets or Gears

a) Camshaft sprockets or camshaft gears may be **modified or replaced**.

b) Pressed on cam sprockets may be replaced with an adjustable boss and cam sprocket.

c) The cam drive system **(chain drive or gears) must remain as homologated**.

d) Cam chain and tensioner can be modified or replaced.

AACR 3.6.4 Cylinders

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

AACR 3.6.5 Pistons

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

AACR 3.6.6 Piston Rings

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

AACR 3.6.7 Piston Pins and Clips

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

AACR 3.6.8 Connecting Rods

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

AACR 3.6.9 Crankshaft

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

AACR 3.6.10 Crankcase and all other Engine Cases

a) Crankcases must remain as homologated. No modifications are allowed (including painting, polishing and lightening).

b) It is not allowed to add a pump or any other device to create a vacuum in the crankcase. If a vacuum pump is installed on the homologated motorcycle then it can be used only as homologated.

c) 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 part.

d) 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. Covers made of composite materials are not permitted.

e) The secondary cover should cover a minimum of 1/3 of the original cover. It must have no sharp edges to damage the track surface.

f) Plates or crash bars made from aluminium or steel are also permitted in addition to these covers. All of these devices must be designed to be resistant against sudden shocks, abrasions and crash damage.

g) Plates/crash bars/frame sliders must not protrude outside the fairing for more than 30 mm.

h) FIM approved covers will be permitted without regard of the material or its dimensions.

i) 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.

j) Oil containing engine covers must be secured with steel bolts.

k) The Chief Technical Officer has the right to refuse and forbid any cover not satisfying this safety purpose, if the evidence shows that the cover is not effective.

l) No damaged covers will be permitted unless approved by the Chief Technical Officer.

AACR 3.6.11 Transmission / Gearbox

a) Must be the original fitted and homologated part with no modification allowed except:

   i. The positive neutral selector mechanism may be removed.

   ii. Shift star/indexer spring, roller and detent may be replaced but must function as originally designed on the homologated motorcycle.

b) Quick shifters are free.

c) Other modifications to the gearbox or selector mechanism are not allowed.

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

e) The sprocket cover can be modified or eliminated.

f) The chain tensioner is free.

g) Chain guard can be removed.

h) Transmission gear shifter shaft supporting brackets can be added.

i) Add on quick shift modules / additional modules are allowed to enable upshifts and downshifts. "Downshift blipping" is allowed.

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

AACR 3.6.12 Clutch

a) Clutch system (wet or dry type) must remain as homologated.

b) The method of operation (by cable or hydraulic) may be changed.

c) Friction and drive discs may be changed, **the number of discs is free.**

d) Clutch springs may be changed, **the number of springs is fee.**

e) Clutch outer basket must be the originally fitted and homologated part but may be reinforced.

f) Primary driven gear must remain as originally produced for the homologated motorcycle with no modification allowed.

g) The original clutch inner assembly may be modified or replaced by an aftermarket clutch, also including back torque limiting capabilities (slipper type).

h) Clutch fluid reservoir can be replaced.

i) Clutch lines/cables can be replaced.

j) No power source (i.e. hydraulic or electric) can be used for clutch operation, if not installed in the homologated motorcycle.

AACR 3.6.13 Oil Pumps and Oil Lines

a) Oil pump may be modified or replaced from those fitted to the homologated motorcycle but modifications of the crankcase are not allowed.

b) The oil pump drive may be modified or changed.

c) The oil pressure relief **valve** is free.

d) Oil lines may be modified or replaced. Oil lines containing positive pressure, if replaced, must be of braided reinforced construction with swaged or threaded connectors.

AACR 3.6.14 Engine Cooling System

a) The only permitted liquid engine coolant for the water-cooling system is water **without additives**.

b) The water pump may be modified or changed, but modifications of the crankcase are not allowed.

c) The water pump **drive may be modified or changed.**

d) Protective meshes may be added in front of the oil and water radiator(s).

e) The cooling system hoses/pipes and catch tanks may be modified or changed.

f) Radiator fan and wiring may be changed modified or removed.

g) Radiator cap is free.

h) The original water radiator can be modified or replaced, Extra mounting brackets to accommodate the radiator are permitted.

i) Water and oil thermostat can be modified, replaced or removed.

j) Thermal switches and water temperature sensor can be modified, replaced or removed.

k) The original oil radiator can be modified, replaced **or removed**.

l) Additional water radiators and oil coolers can be added. Extra mounting brackets to accommodate these radiators / coolers are allowed.

m) Oil coolers can be installed even if the homologated motorcycle does not have one.

n) The appearance from the front, the rear and the profile of the motorcycle must conform to the homologated shape after the addition of radiators /oil coolers.

o) All radiators / coolers must be mounted below the lower fork bridge (triple clamp).

AACR 3.6.15 Air Box

a) Must be the original fitted and homologated part with no modification allowed, but the air box drains must be sealed.

b) Air filters, internal flap type valve, sensors and vacuum fittings may be removed, modified, or replaced with aftermarket parts.

c) All motorcycles must have a closed breather system. The oil breather line(s) must be connected, may pass through an oil catch tank and must exclusively discharge in the air box.

d) Ram air tubes or ducts running from the fairing to the air box may be modified, replaced or removed. The material is free. If tubes/ducts are used, they must be attached to the original, unmodified air box inlets.

e) No heat protection can be attached to the air box.

AACR 3.6.16 Fuel Injection System **/ Fuel Supply**

Fuel injection system **/ fuel supply** refer to throttle bodies, fuel injectors, **fuel lines and pipes,** fuel pump, fuel pressure regulator and intake tract devices (static or variable length).

a) The original homologated fuel injector system must be used without any modification.

b) The throttle bodies must be stock and unaltered from the original specification and manufacture and in the same position as on the homologated motorcycle.

c) The fuel injectors must be stock and unaltered from the original specification and manufacture and in the same position as on the homologated motorcycle.

d) Bell mouths must remain as originally produced by the manufacturer for the homologated motorcycle.

e) Butterfly valves must remain as originally produced by the manufacturer for the homologated motorcycle.

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 parts of the variable intake tract device must remain exactly as homologated.

g) Existing variable intake tract devices can be deactivated or removed.

h) Secondary throttle valves and shafts may be removed or fixed in the open position and the electronics may be disconnected or removed.

i) Air and air/fuel mixture can go to the combustion chamber exclusively though the throttle body butterflies.

j) Electronically controlled throttle valves, known as "ride-by-wire", may be only used if the homologated model is equipped with the same system. Software may be modified but all the safety systems and procedures designed by the original manufacturer must be maintained.

k) Fuel pump and fuel pressure regulator must be the original fitted and homologated parts with no modification allowed.

l) The fuel pressure must be as homologated.

m) The pressure tolerance at the technical control is + 0,5 bar in respect to the maximum pressure of the homologated motorcycle.

n) Fuel lines from the fuel tank to the delivery pipe assembly(s) may be replaced and must be located in such a way that they are protected from crash damage.

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

p) Quick connectors or dry break quick connectors may be used.

q) Fuel filters may be added.

AACR 3.6.17 Fuel Tank

a) Fuel tank must remain as originally produced by the manufacturer for the homologated motorcycle 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 tank filler cap may be altered or replaced from those fitted to the homologated motorcycle. Fuel cap when closed must be leak proof. Additionally, they must be securely locked to prevent accidental opening at any time.

e) Fuel petcock (if existing) may be altered, replaced or removed.

f) Fuel vent lines may be replaced.

g) A rider spacer/pad may be fitted to the rear of the tank with **permanent or** non-permanent adhesive. **The material is free**.

h) The tank can have a cover fitted over it. This cover must fit the shape of the fuel tank.

i) The sides of the fuel tank may be protected with a cover made of a composite material. These protectors must fit the shape of the fuel tank.

j) A fuel tank drain valve can be installed and must be located in such a way that it is protected from crash damage.

k) A spacer between fuel tank and fuel pump can be installed.

l) The fuel tank may have a heat protection shield /mat attached to its bottom and engine side.

AACR 3.6.18 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) as on the homologated motorcycle~~.

c) For safety reasons the exposed edge(s) of the exhaust pipe(s) outlet must be rounded to avoid any sharp edges.

d) Wrapping of the exhaust system 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) Titanium and carbon exhausts and silencers are allowed.

f) The basic noise limit is 107 dB/A (with a 3 dB/A tolerance after the race only). Some circuits may have a lower noise limit. This will be published in the Supplementary Regulations of the respective event.

g) The test RPM for noise control will be as follows:

- 2-cylinder engines: 5.000 RPM
- 3-Cylinder engines: 5.000 RPM
- 4-cylinder engines: 5.500 RPM

AACR 3.6.19 Sound level control

See AACR 0.7.

AACR 3.7 ELECTRICS and ELECTRONICS

AACR 3.7.1 Engine control system (ECU) / Electronics

a) The engine control system (ECU) must be either:

i. The original system as homologated. Flashing the original ECU is allowed, hardware modifications of the ECU are not allowed.

ii. The original system (with the production ECU, option i.) may have commercially available external ignition and/or injection module/s added. The total combined retail price (software and tuning tools included) on sale to the general public cannot be higher than € 5.000 (tax excluded). A special connector may be used to connect the module/s and the ECU.

iii. An FIM/AA approved ''Superstock Kit'' model (produced and/or approved by the motorcycle manufacturer) may be used. Flashing the KIT-ECU is allowed, hardware modifications of the ECU are not allowed. Commercially available external ignition and/or injection module/s may be added. A special connector/adaptor may be used to connect the ECU(s) and the original wiring harness. The combined retail price of the full system including software, tuning tool, download / connection cable any activations, upgrades and wiring harness(s) must be less than:

1. € **5.000** (tax excluded) if the system excludes data logging.
2. € **6.000** (tax excluded) if the system includes data logging.

The ECU (with software and activations) and harness parts must be individually priced and available separately. The separate ECU and harness total must respect the above limits.

iv. **The MoTec M130 engine control unit (ECU) as specified by the CIV Technical Regulations Superbike, marked with the FMI-logo and distributed by Aviorace Srl.**

b) Central unit (ECU) may be relocated.

c) Corner by corner or distance/position-based adjustments are not allowed.

d) Optional equipment sold by the motorcycle Manufacturer for the homologated model is considered not homologated with the motorcycle and must follow the requirements for approved electronics / data loggers.

e) During an event the Chief Technical Officer has the right to ask a rider/team substitute their ECU or external module(s) with the FIM / AA sample received from the manufacturer. The change has to be done before Sunday warm up.

f) No extra sensors may be added for **engine** control strategies except shift rod sensor, speed sensors and lambda sensors.

g) Other additional electronic hardware not present on the original homologated motorcycle cannot be added with the exceptions noted below.

h) Resistors/load may be added to replace the parts of the electrical system that have been removed (including lights and lambda sensors) to prevent ECU errors.

i) An ABS replacement/bypass may be fitted and/or the ABS unit may be dismantled to leave just its ECU.

j) The external fuel injection modules / ignition modules may not alter any sensor signal relating to the ride by wire system / ECU or control / actuate any part of the motorcycle excepting the fuel injectors / ignition coils.

k) Lambda closed loop /auto tuning is permitted.

l) No external modules may add traction control strategies (such as Traction Control, Launch Control, Anti Wheelie Control) unless originally fitted to the homologated motorcycle or included in the Racing Kit (which must be produced and/or approved by the motorcycle manufacturer) for the homologated motorcycle, or included in the **MoTec M130 ECU as specified in point a) iv.**

m) Control strategies (such as Traction Control, Launch Control, Anti Wheelie Control) is only allowed when it is originally fitted to the homologated motorcycle or included in the Racing Kit (which must be produced and/or approved by the motorcycle manufacturer) for the homologated motorcycle, or included in the **MoTec M130 ECU as specified in point a) iv.**

n) Data logging systems:

i. The data logging system is free, but the specifications listed below must be respected.

ii. The Data Logger unit must be available for sale to the public.

iii. The sensors must be simple function. No inertial platforms are allowed to be added if an inertial platform is not installed originally on the homologated motorcycle.

iv. CAN (or other data protocol) communication from the ECU to an approved Data Logger is allowed without any limitation in CAN channel logger number.

v. The Data Logger may not act to control any strategy or setting in the ECU – except to replicate the original dashboard signals if the original dashboard is replaced. The logger may not automate these setting changes.

o) The maximum total price of other active/control/calculation units such as lambda driver modules, quick shifter and analogue to CAN converters is € 750 (tax excluded).

p) Telemetry is not allowed.

q) No remote or wireless connection to the motorcycle for any data exchange or setting is allowed whilst the engine is running or the bike is moving.

r) The wiring harness is free.

s) Downshift blipping is allowed. External downshift blip modules are allowed.

t) The addition of an infrared (IR) or GPS based lap timing system is allowed.

u) Dashboard is free. However, it may only replace the functions of the standard dashboard (including switch logic and display) and may not perform any other logic function on the motorcycle. It may incorporate the Data Logger. There must remain a working tachometer display.

v) Spark plugs may be replaced.

w) Spark plug caps /coil on plug, ignition cables and ignition harness are free.

x) The battery is free **and may be relocated. The maximum capacity is 10 Ah.**

y) A lap timer can be fitted.

AACR 3.7.2 Generator, Alternator and Electric Starter

a) The generator (ACG) must be the originally fitted and homologated part with no modification allowed.

b) The stator must be fitted in its original position and without offsetting.

c) The electric starter must operate normally and always be able to start the engine during the event.

d) During Parc Ferme, the starter must crank the engine at a suitable speed for starting for a minimum of 2 seconds without the use of a boost battery. No boost battery may be connected to the motorcycle at any time of the event.

e) The generator must always charge the battery **in a sufficient way** when the engine is running. The charging voltage must be corresponding to the charging voltage listed in the service manual **/ kit manual** of the homologated motorcycle.

f) The regulator/rectifier may be modified or replaced.

g) Operating the motorcycle on the battery only (without a functioning generator) is not allowed.

AACR 3.8 MAIN FRAME / CHASSIS

a) The use of titanium and carbon (or similar composite materials) in the construction of the main frame, rear sub frame, swing arm and swing arm pivot bolt, front forks, triple clamps, wheel axles, engine mounting parts and handlebars is forbidden. The

use of titanium and aluminium alloys in the construction of swing arm pivot bolts and wheel axles is forbidden.

b) Unless otherwise stated, the use of titanium and aluminium alloys for nuts and screws is allowed.

c) 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 and a valid frame number / chassis number. In case the frame will need to be replaced, the rider or team must request the use of a **2nd motorcycle** to the Chief Technical Officer.

d) **After a crash**, the rebuilt motorcycle must be inspected before its use by the Technical Officers for safety checks and a new seal will be placed on the motorcycles frame.

e) No other spare motorcycle may be on the track.

AACR 3.8.1 Frame Body and Rear Sub Frame

a) The frame must remain as originally produced by the manufacturer for the homologated motorcycle.

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

c) The sides of the frame body may be covered by protective parts made of plastic or composite material. These protectors must fit the form of the frame.

d) Crash protectors may be fitted to the frame, using existing points (max. length: 50 mm), or **fitted** into the ends of the wheel axles (max. length: 30 mm).

e) Crash protectors / frame sliders must not protrude outside the fairing for more than 30 mm.

f) Nothing may be added by welding or removed by grinding from the main frame body.

g) All motorcycles must display a valid vehicle identification number (frame number / chassis number) punched on the frame body.

h) Engine mounting brackets or plates **may be modified or replaced, but the use of titanium and carbon (or similar composite materials) is forbidden**.

i) Engine mounting axles, bolts and nuts can be modified or replaced, but must be made of a steel alloy.

j) Suspension linkage mounting points on the frame must remain as originally produced by the manufacturer for the homologated motorcycle with no modification allowed.

k) Front sub frame / fairing mount may be **modified or replaced. The material is free.**

l) Rear sub frame may be **modified or replaced, but the use of titanium and carbon (or similar composite materials) is forbidden.** Repairing and welding of the sub frame is allowed.

m) 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.

n) The side stand bracket may be cut or removed.

o) The paint scheme is not restricted but polishing the frame body or sub-frame is not allowed.

AACR 3.8.2 Suspension - General

a) The price limits are:
   i. Fork: For the fork kit, including all parts such as – but not limited to – cartridge, springs (1set), adjusters, fork caps, blanking inserts, seals, bushes but excepting oil and fitting, the price limit is € 3.000 excluding tax.
   ii. Shock Absorber/RCU: For the complete shock absorber/RCU including – but not limited to – spring (1 piece), pre-load adjuster and length/ride height adjuster, the price limit is € 2.000 excluding tax.

b) Electronic suspension:
   i. No aftermarket or prototype electronically-controlled suspensions can be used. Electronically-controlled suspension can 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 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 or 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 electronic suspension system must work safely in the event of an electronic failure.
   vi. Electro-magnetic fluid systems which change the viscosity of the suspension fluids(s) during operation are not permitted.

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

AACR 3.8.3 Front Fork and Fork Clamps

a) Forks (stanchions, stems, wheel spindle, upper and lower fork clamps, etc.) must be the originally fitted and homologated parts with the following modifications allowed:
   i. The upper and lower fork clamps (triple clamp, fork bridges and stem) must remain as originally produced by the manufacturer on the homologated motorcycle
   ii. Steering stem pivot position must remain in the homologated position (as supplied on the production motorcycle). If the standard motorcycle has inserts, then **the inserts can be modified or replaced**.
   iii. Steering bearings are free.
   iv. A steering damper may be added or replaced with an after-market damper.
   v. The steering damper cannot act as a steering lock limiting device.

vi. Fork caps can 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.

vii. The original surface finish of the fork tubes (stanchions, fork pipes) may be changed. Additional surface treatments are allowed.

viii. Fork bushings and oil seals are free.

ix. Dust seals may be modified, changed or removed if the fork remains totally oil-sealed.

b) Mechanical Forks: Original internal parts of the homologated forks may be modified or changed. After-market damper kits or valves may be installed.

c) Electronic Suspensions:

i. No aftermarket or prototype electronically controlled suspension may be used, unless such suspension is already present on the production model of the homologated motorcycle, and it must remain completely standard (all mechanical or electronic parts must remain as homologated, with the exception of shims and springs).

ii. The electronic front suspension may be replaced with a mechanical system from a similar homologated model from the same manufacturer.

iii. Electronic forks may have their complete internal parts (including all electronic control) replaced with an approved conventional damping system and it will be considered as a mechanical fork.

d) Any quality and quantity of oil can be used in the front forks.

e) The protrusion (height and position of the front fork in relation to the fork crowns) is free.

f) Fixing and mounting points for front brake callipers must remain as homologated.

AACR 3.8.4 Swing Arm

a) The swing arm must be the originally fitted and homologated part with no modification allowed.

b) The swing arm pivot bolt **and nut may be modified or replaced, but must be made of a steel alloy.**

c) Swing arm pivot position must remain in the homologated position (as supplied on the production motorcycle). If the standard motorcycle has inserts, then **the inserts can be modified or replaced**.

d) Rear axle/chain adjuster can be changed to an aftermarket product.

e) A solid protective cover (shark fin) must be fixed to the swing arm, and must always cover the opening between the lower chain run, swing arm and rear wheel sprocket, irrespective of the rear wheel position.

f) Rear wheel stand brackets may be added to the swing arm by welding or by bolts. Brackets must have rounded edges (with a large radius) viewed from all sides. 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.

g) The sides of the swing arm may be protected by protective parts made of plastic or composite material. These protectors must fit the form of the swing arm.

AACR 3.8.5 Rear Suspension Unit

a) Rear suspension unit (shock absorber and its spring) may be replaced with an approved unit, but the original attachments to the frame and swing arm or linkage must be as homologated.

b) Rear suspension linkage parts can be modified or replaced.

c) Removable top shock mounts can be modified or replaced.

d) Mechanical Suspensions: Rear suspension unit and spring may be changed.

e) Electronic Suspensions: No aftermarket or prototype electronically-controlled suspension unit may be used, unless such suspension is already present on the production model of the homologated motorcycle and it must remain completely standard (any mechanical or electronic part must remain as homologated, with the exception of shims and spring). If the standard system has no facility for ride height adjustment the standard shock may be modified to allow shock length change if no hydraulic parts are modified. The original suspension system must work properly safe in the event of an electronic failure. The electronic shock absorber can be replaced with a mechanical one.

AACR 3.8.6 Wheels

a) Wheels may be replaced and associated parts that are fitted to the homologated motorcycle may be altered or replaced.

b) Aftermarket wheels must be made from aluminium alloys.

c) The use of the following alloy materials for the wheels is not allowed: Beryllium (>=5%), Scandium (>=2%), Lithium (>=1%).

d) 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 is prohibited, except for modifications on the spokes, valves, safety bolts and tyre retention screws sometimes used to prevent tyre movement relative to the rim. If the rim is thus modified, bolts, screws etc. must be fitted for this purpose.

e) Wheels may be overpainted but the original surface finish cannot be removed.

f) A non-slip coating/treatment may be applied to the bead area of the rim.

g) The cushion drive for the rear wheel can be modified or replaced.

h) Bearings, seals and axles may be modified or replaced by aftermarket products.

i) The use of titanium, light metal alloys and carbon (or similar composite materials) in the construction of the wheel axles is forbidden.

j) Axle nuts/bolt can be modified or replaced, but must be made of a steel alloy.

k) Wheel Spacers can be modified or replaced. Modifications to keep spacers in place are permitted.

l) Bearing spacers can be modified or replaced.

m) Wheel balance weights are free.

n) Aluminium or steel inflation valves are compulsory. Angled valves are recommended.

o) Permitted dimensions:

- **Permitted wheel rim diameter size: 17 inches**
- **Permitted front wheel rim width: 3,50 inches**
- **Permitted rear wheel rim width: 6,00 inches**

AACR 3.8.7 Brakes

a) Brake discs may be replaced by aftermarket discs which comply with the following requirements:
   i. Brake discs and carrier must retain the same material as the homologated disc and carrier or steel (max. carbon content 2.1 wt%). All homologated discs are steel.
   ii. Non-floating or single piece discs may be replaced with floating discs. The disc carrier must be the same material as the homologated carrier, steel or aluminium.
   iii. The outside diameter of the brake disc may be increased but the disc must fit into the homologated brake calliper without any modification of the brake calliper.
   iv. The thickness of the brake disc may be increased but the disc must fit into the homologated brake calliper without any modification of the brake calliper. The number of floaters is free.
   v. The fixing of the carrier on the wheel must remain the same as on the homologated disc.

b) Front and rear brake calliper (mount, carrier, hanger) must remain as originally produced by the manufacturer for the homologated motorcycle 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 thread repair insert.

f) Front-brake master cylinder can be replaced.

g) Rear brake master cylinder can be replaced.

h) Front and rear brake fluid reservoir can be replaced.

i) Front and rear hydraulic brake lines can be replaced.

j) The split of the front brake lines for both front brake callipers must be made above the lower fork bridge (lower triple clamp).

k) “Quick” (or “dry-brake”) connectors in the brake lines are allowed.

l) Front and rear brake pads may be changed. Brake pad locking pins may be modified for quick change type.

m) Front brake calliper additional air scoops or ducts are allowed.

n) The Antilock 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.

o) The Antilock Brake System (ABS) may be disconnected and its ECU can be dismantled. The ABS rotor wheel can be removed, modified or replaced.

p) Hand lever adjusters are permitted.

q) Motorcycles must be equipped with a 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 Chief Technical Officer has the right to refuse any guard not satisfying this safety purpose.

AACR 3.8.8 Handle Bars and Hand Controls

a) Handle bars may be replaced.

b) Handle bars and hand controls may be relocated.

c) Throttle grip can be modified or substituted.

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

e) Throttle assembly and associated cables can be modified or replaced but the connection to the throttle body and the throttle controls must remain as homologated. 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.

f) Clutch and brake lever may be exchanged by an after-market model. An adjuster to the brake lever and to the clutch lever is allowed.

g) Switches can be changed but electric starter switch and engine stop switch must be located on the handle bars.

h) Welding of handle bars is not allowed.

i) The use of titanium, carbon fibre, Kevlar® or carbon composite materials for handlebars is forbidden.

j) The use of titanium and aluminium alloys for nuts and screws is allowed.

k) Handlebar ends must be plugged with a solid material or rubber covered.

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

m) In any position of the handlebars /steering stem, the front wheel, tyre and mudguard must maintain a minimum gap of 10 mm to the bodywork and radiator(s).

n) 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.

o) All handlebar levers must be ball-ended (diameter of this ball should be at least 16 mm). This ball can also be flattened, the minimum thickness of the flattened part should be 14 mm and the edges must be rounded. These ends must be permanently fixed and form an integral part of the lever.

p) Each control lever must be mounted on an independent pivot.

AACR 3.8.9 Foot Rests and Foot Controls

a) The use of titanium, carbon fibre, Kevlar® or carbon composite materials for foot rests and foot controls is forbidden.

b) The use of titanium and aluminium alloys for nuts and screws is allowed.

c) Foot rests, hangers/brackets and **linkage** may be **modified**, replaced and relocated but the hangers/brackets must be mounted to the frame at the original mounting points.

d) Gear shift must remain operated manually by foot.

e) Foot rests may be rigidly mounted or a folding type which must incorporate a device to return them to the normal position.

f) The end of the foot rests must be rounded.

g) Non-folding footrests must have an end (plug) which is permanently fixed, made of plastic, Teflon or an equivalent type material (Alloy) **and must be rounded**. The plug surface must be designed to reach the widest possible area in order to decrease the risk of injuries to the rider in the case of an accident. The Chief Technical Officer has the right to refuse any plug not satisfying this safety aim.

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

i) A thumb operated rear brake solution is allowed, but there must remain a functioning foot operated rear brake lever. In case of a dispute, the decision of the Chief Technical Officer is final.

AACR 3.8.10 Fairing / Body Work

a) Fairing, mudguards and bodywork must confirm in principle to the homologated shape as produced by the manufacturer, irrespective of the model year to encourage the most up to date visual impression.

b) Fairings from a different model year can be used when it is/was homologated and the model year is 2006 or newer. In this case, the upper and lower fairing must be used as a set.

c) The material may be changed. The use of carbon fibre or carbon composite materials is not allowed. Specific reinforcements made of Kevlar or carbon are allowed locally around holes and stressed areas.

d) Headlight decals **should** be included.

e) For all bodywork, paint and decal design is free.

f) Overall size and dimensions must be the same as the original parts, with a tolerance of +/- 10 mm, respecting the design and features of the homologated fairing as far as possible. The overall width of the frontal area may be +10 mm maximum. The decision of the Chief Technical Officer is final.

g) Windscreen may be replaced with an aftermarket product. The height of the windscreen is free, with a tolerance of +/- 15 mm measured on the vertical distance from / to the upper fork bridge. The screen must not have sharp edges. The material of the windscreen must be transparent.

h) Fairing brackets **and fasteners** may be altered or replaced. **The material is free.**

i) The ram-air intake must maintain the originally homologated shape and dimensions with a tolerance of +/- 2 mm.

j) The original air ducts running between the fairing and the air box may be altered or replaced with a tolerance of +/- 2 mm to the homologated parts. **The material is free**. Particle grills or "wire - meshes" originally installed in the openings for the air ducts may be removed.

k) The lower fairing must be constructed to hold a minimum of 5 litres in case of an engine breakdown. The lower edges of all the openings in the fairing must be positioned at least 70 mm above the bottom of the fairing.

l) The lowest point of the rear transverse wall of the lower fairing must be at least **50** mm above the bottom. The angle between this wall and the floor must be ≦ 90°.

m) The lower fairing must incorporate at least a single opening of **20** 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.

n) 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.

o) Front mudguard may be **modified or replaced** and may be spaced upward for increased tyre clearance. **The material is free.**

p) Rear mudguard fixed on the swing arm can be modified, replaced (and may be spaced upward for increased tyre clearance) or removed. The material is free. The chain guard may be removed.

q) All exposed edges must be rounded.

r) Wings and Aerodynamic Aids:

- **i. Wings and other aerodynamic aids can only be used if originally fitted to the homologated motorcycle.**
- **ii. The wings and other aerodynamic aids must follow the dimensions, profiles and positions of the homologated shapes exactly (tolerance +/- 1 mm). For copies of the OEM parts, the leading edges (including end plates) must have a minimum circumference of 4 mm and must have a rounded end (8 mm radius) or be enclosed / integrated into the fairing.**
- **iii. The OEM parts may be used "as is" with the exception that the wing root and 10 mm from the end face may be modified to allow mounting to the fairing. This may not be in the form of an extension and the size of the wing will be measured with reference to the face of the wing root.**
- **iv. The wings must be fitted in the same relative position (accepting the tolerance allowed for the fairing) and the angle of attack must be within +/- 4 degrees of the original angle of attack relative to the chassis.**
- **v. For active or dynamic aerodynamic parts, only the standard homologated mechanism can be used. The range of movement of these parts must be the**

same as that used by the homologated motorcycle in normal use - not the mechanical maximum.

AACR 3.8.11 Seat

a) Seat, seat base and associated bodywork may be replaced. 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) The homologated seat locking system (with plates, pins, rubber pads, etc.) can be removed.

d) The same materials as for fairings must be used.

e) All exposed edges must be rounded.

AACR 3.8.12 Fasteners

a) Standard fasteners may be replaced with fasteners of any material and design with the exceptions listed below.

b) Titanium fasteners may be used in structural (highly stressed) locations, but the strength and design must be equal to - or exceed - the strength of the standard fastener it is replacing.

c) Internal engine bolts, screws and nuts must remain of standard homologated materials or materials of higher specific weight.

d) The requirements for the materials of axles, bolts and nuts for engine mounting, wheels and swingarm are specified in the relevant sections of this regulations.

e) Fasteners may be drilled only for safety wiring, but intentional weight-reduction modifications are not allowed.

f) Thread repair using inserts of different material such as Helicoil® and Time-Sert® are allowed.

g) Fairing/body-work fasteners may be changed to a quick disconnect type, **the material is free.**

h) Aluminium fasteners may only be used in non-structural (low stressed) locations.

i) In case of a dispute, the decision of the Chief Technical Officer is final.

AACR 3.8.13 Rear Safety Light

See AACR 0.2.3.

AACR 3.9 The following items MAY BE altered or replaced

a) Any type of lubrication, brake and suspension fluid may be used.

b) Gaskets and gasket materials.

c) Bearings of any type and brand may be used.

d) Painted external surface finishes and decals.

e) Material for brackets connecting non-original parts (fairing, exhaust, instruments, etc.) to the frame (or engine) **can** be made from titanium or fibre reinforced composites.

f) Protective covers for the frame, chain, footrests can be made in materials like fibre composite material.

AACR 3.10 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) The air injection control system (valve, solenoid, tubes) may be removed. In this case, connections to the cylinder head cover **/ cylinder head** must be plugged.

c) Speedometer **and related wheel spacers.**

d) Bolt on accessories on a rear sub frame.

e) The original left and right handlebar switch, e.g. light switch, horn switch, turn signal switch, etc.

AACR 3.11 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 grabs rails.

i) Safety bars, centre and side stands must be removed (fixed brackets must remain excepting side stand bracket).

j) Catalytic convertors.

AACR 3.12 The Following Items MUST BE altered

a) Motorcycles must be equipped with a functional ignition kill switch or button mounted on a side of the 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) Throttle controls must be self-closing when not held by the hand.

c) All drain plugs, oil filler caps and oil dip sticks must be safety wired. External oil filter(s) screws and bolts that enter an oil cavity must be safety wired (i.e. on crankcase, **oil radiator**).

d) All motorcycles must have a closed breather system. The oil breather line must be connected and discharge in the air box.

e) 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.

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

AACR 3.13 TIMEKEEPING INSTRUMENTS

See AACR 0.8.

ACCR 3.14 ONBOARD CAMERAS

See AACR 0.10.

AACR 4 SUPERBIKE (SBK)

AACR 4.0 GENERAL

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

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

Superbike motorcycles require an FIM homologation (see AACR 0.6).

All motorcycles must be normally aspirated.

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

The appearance from both front, rear and the profile of Superbike motorcycles must (except when otherwise stated) remain as originally produced by the manufacturer for the homologated motorcycle.

The appearance of the exhaust system is excluded from this rule.

AACR 4.1 DISCIPLINE SPECIFICATIONS SUPERBIKE

- 3 & 4 cylinders over 750 cc up to 1000 cc 4-stroke
- 2 cylinders over 850 cc up to 1200 cc 4-stroke

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

AACR 4.2 MINIMUM WEIGHT

a) The minimum weight for each motorcycle in running condition is **168** kg.

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

c) There is no tolerance on the minimum weight.

d) During the final technical inspection at the end of the race, the selected motorcycles and riders will be weighted 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.

e) 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.

f) The use of ballast is allowed to stay over the minimum weight limit.

g) The use of ballast is allowed to stay over the minimum weight limit and must be declared to the Chief Technical Officer at the preliminary checks. Fuel in the fuel tank can be used as ballast.

h) The ballast must be made from solid metal piece(s), firmly and securely connected, either through an adapter or directly to the main frame or engine, with minimum 2 steel bolts

(min. 8 mm diameter, 8.8 grade or higher). Other equivalent technical solutions must be submitted to the Chief Technical Officer for his approval.

AACR 4.3 STARTING NUMBERS & BACKGROUND COLOURS

White background with black numbers. See Appendix A and AACR 0.4 for sizes and specifications.

AACR 4.4 FUEL

See AACR 0.5.

AACR 4.5 TYRES

See AACR 0.3.

AACR 4.6 ENGINE

a) The number of engines is free.

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

i. The homologated engine design model cannot be changed.

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

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

iv. The method of cam drive must remain as homologated.

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

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

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

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

ix. 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).

AACR 4.6.1 Cylinder Head

The homologated cylinder head may be modified as follows:

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

b) The resurfacing of the cylinder heads sealing surface is permitted.

c) The homologated cylinder head cover may be modified.

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

e) 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.

f) The compression ratio is free.

g) The combustion chamber may be modified.

h) Aftermarket or modified valves, springs, tappets, retainers, valve seats, valve guides, and other valve train components are permitted.

i) Valve diameters, including stem diameters, must remain as homologated.

j) Valves must be made of the same basic material as the homologated valves.

k) Valves must remain in the homologated location and at the same angle as the homologated valves.

l) Cam followers can be modified or replaced, but must be in the same position as on the homologated motorcycle.

m) The gaskets can be modified or changed.

AACR 4.6.2 Camshafts

a) Camshafts may be altered or replaced from those fitted to the homologated motorcycle, duration and lift are free.

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

AACR 4.6.3 Camshaft Sprockets or Gears

a) Camshaft sprockets or camshaft gears may be altered or replaced.

b) The cam drive system (chain drive or gears) must remain as homologated.

c) Cam chain and tensioner may be altered or replaced.

AACR 4.6.4 Cylinders

a) Homologated materials and casting for the cylinder block must be used.

b) Material for the cylinder block may only be added by welding or using Epoxy and removed by machining.

c) The sleeves or liner material may be changed and the surface finish is free.

d) The original bore size must be retained.

AACR 4.6.5 Pistons

a) Pistons may be modified or replaced from those fitted to the homologated motorcycle.

AACR 4.6.6 Piston Rings

a) Piston rings may be modified or replaced from those fitted to the homologated motorcycle.

AACR 4.6.7 Piston Pins and Clips

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

AACR 4.6.8 Connecting Rods

a) Connecting rods may be modified or replaced from those fitted to the homologated motorcycle.

b) Carbon composite or carbon fibre materials are not allowed if not used in the homologated motorcycle.

AACR 4.6.9 Crankshaft

Only the following modifications are allowed to the homologated crankshaft:

a) Bearing surfaces may be polished or a surface treatment may be applied.

b) Balancing is allowed. The addition or reduction in weight of the crankshaft in order to reach a racing balance can be not be higher than 15% of the homologated weight without the tolerance as shown on the homologation drawing of the crankshaft.

c) The weight reduction may be done by drilling or machining of the crankshaft counterweights.

d) Polishing of the crankshaft is not allowed.

e) Attachment of aftermarket ignition components or sensors is permitted.

f) Balance shaft(s) may be modified, altered or removed.

AACR 4.6.10 Crankcase and all other Engine Cases

a) Homologated materials and castings for crankcase and gearbox housing must be used.

b) Repairing the crankcase by welding or using Epoxy is allowed.

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

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

e) 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 part.

f) 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. Covers made of composite materials are not permitted.

g) The secondary covers should cover a minimum of 1/3 of the original cover. It must have no sharp edges to damage the track surface.

h) Plates or crash bars made from aluminium or steel are also permitted in addition to these covers. All of these devices must be designed to be resistant against sudden shocks, abrasions and crash damage.

i) Plates / crash bars / frame sliders must not protrude outside the fairing for more than 30 mm.

j) FIM approved covers will be permitted without regard of the material or its dimensions.

k) 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.

l) Oil containing engine covers must be secured with steel bolts.

m) The Chief Technical Officer has the right to refuse and forbid any cover not satisfying this safety purpose, if the evidence shows that the cover is not effective.

n) No damaged covers will be permitted unless approved by the Chief Technical Officer.

AACR 4.6.11 Transmission / Gearbox

a) All transmission / gearbox ratios, shafts, drums, selector forks are free. The design concept must remain the same as homologated.

b) Primary gear ratio must remain as homologated.

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

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

e) 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.

f) The number of gears must remain as homologated.

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

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

i) The chain tensioner is free.

j) Chain guard can be removed.

k) Transmission gear shifter shaft supporting brackets can be added.

l) Add on quick shift modules / additional modules are allowed to enable upshifts and downshifts. “Downshift blipping” is allowed.

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

AACR 4.6.12 Clutch

a) Clutch system (wet or dry type) must remain as homologated.

b) The method of operation (by cable or hydraulic) is free.

c) Friction and drive discs may be changed, the number of discs is free.

d) Clutch springs may be changed, the number of springs is free.

e) Aftermarket or modified clutches are permitted.

f) Back torque limiter is permitted.

g) Clutch fluid reservoir can be replaced.

h) Clutch lines/cables can be replaced.

i) No power source (i.e. hydraulic or electric) can be used for clutch operation, if not installed in the homologated motorcycle.

AACR 4.6.13 Oil Pumps and Oil Lines

a) Oil pump may be modified or replaced from those fitted to the homologated motorcycle but modifications of the crankcase are not allowed.

b) The oil pump drive may be modified or changed.

c) The oil pressure relief **valve** is free.

d) 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

AACR 4.6.14 Engine Cooling System

a) The only permitted liquid engine coolant for the water-cooling system is water **without additives**.

b) The water pump may be modified or changed, but modifications of the crankcase are not allowed.

c) The water pump **drive may be modified or changed.**

d) Protective meshes may be added in front of the oil and water radiator(s).

e) The cooling system hoses / pipes and catch tanks may be modified or changed.

f) Radiator fan and wiring may be changed modified or removed.

g) Radiator cap is free.

h) The original water radiator can be modified or replaced, extra mounting brackets to accommodate the radiator are permitted.

i) Water and oil thermostat can be modified, replaced or removed.

j) Thermal switches and water temperature sensor can be modified, replaced or removed.

k) The original oil radiator can be modified or replaced, extra mounting brackets to accommodate the radiator are permitted.

l) Additional water radiators and oil coolers can be added. Extra mounting brackets to accommodate these radiators / coolers are allowed.

m) Oil coolers can be installed even if the homologated motorcycle does not have one.

n) The appearance from the front, the rear and the profile of the motorcycle must conform to the homologated shape after the addition of radiators /oil coolers.

o) All radiators / coolers must be mounted below the lower fork bridge (triple clamp).

AACR 4.6.15 Air Box

a) Must be the original fitted and homologated part with no modification allowed, but the air box drains must be sealed.

b) Air filters, internal flap type valve, sensors and vacuum fittings may be removed, modified, or replaced with aftermarket parts.

c) Any holes in the air box to the outside atmosphere resulting from the removal of components must be completely sealed from incoming air

d) All motorcycles must have a closed breather system. The oil breather line(s) must be connected, may pass through an oil catch tank and must exclusively discharge in the air box.

e) **Ram air tubes or ducts running from the fairing to the air box may be modified, replaced or removed. The material is free. If tubes/ducts are used, they must be attached to the original, unmodified air box inlets.**

f) Heat protection can be attached to the air box.

AACR 4.6.16 Fuel Injection System / Fuel Supply

The fuel injection system **/ fuel supply** refers to throttle bodies, fuel injectors, **fuel lines and pipes,** fuel pump, fuel pressure regulator and intake tract devices (static or variable length).

a) The original homologated fuel injector system must be used without any modification.

b) The throttle bodies must be stock and unaltered from the original specification and manufacture and in the same position as on the homologated motorcycle.

c) The use of an optional homologated throttle body is allowed.

d) The fuel injectors must be stock and unaltered from the original specification and manufacture and in the same position as on the homologated motorcycle.

e) The throttle body intake insulators may be modified.

f) Bell mouths (including their fixing points) may be altered or replaced.

g) Butterfly valves must remain as originally produced by the manufacturer for the homologated motorcycle.

h) Variable intake tract devices cannot be added if they are not present on the homologated motorcycle.

i) Existing variable intake tract devices can be modified, deactivated or removed.

j) Secondary throttle valves and shafts may be removed or fixed in the open position and the electronics may be disconnected or removed.

k) Vacuum slides may be fixed in the open position.

l) Air and air/fuel mixture can go to the combustion chamber exclusively though the throttle body butterflies.

m) Electronically controlled throttle valves, known as 'ride-by-wire', may be added or changed. However, the safety systems and procedures must always be present and fully functional. Software may be modified but all the safety systems and procedures designed by the original manufacturer must be maintained.

n) Fuel pump and fuel pressure regulator must be the original fitted and homologated parts with no modification allowed.

o) The fuel pressure must be as homologated.

p) The pressure tolerance at the technical control is + 0,5 bar in respect to the maximum pressure of the homologated motorcycle.

q) Fuel lines from the fuel tank to the delivery pipe assembly(s) may be replaced and must be located in such a way that they are protected from crash damage.

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

s) Quick connectors or dry break quick connectors may be used.

t) Fuel filters may be added.

AACR 4.6.17 Fuel Tank

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

b) The material of construction of the fuel tank may be altered from the material used on the homologated motorcycle.

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

d) 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.

e) 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.

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

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

h) 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 Chief Technical Officer has the right to refuse any mounting not satisfying this safety purpose.

i) The original tank may be modified to achieve the maximum capacity of 24 litres.

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

k) 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.

l) 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.

m) Fuel petcock (if existing) may be altered, replaced or removed.

n) Fuel vent lines may be replaced.

o) A rider spacer/pad may be fitted to the rear of the tank with non-permanent adhesive. **The material is free.**

p) The tank can have a cover fitted over it. This cover must fit the shape of the fuel tank.

q) The sides of the fuel tank may be protected with a cover made of a composite material. These protectors must fit the shape of the fuel tank.

r) A fuel tank drain valve can be installed and must be located in such a way that it is protected from crash damage.

s) A spacer between fuel tank and fuel pump can be installed.

t) The fuel tank may have a heat protection shield /mat attached to its bottom and engine side.

AACR 4.6.18 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) as on the homologated motorcycle.~~

c) For safety reasons the exposed edge(s) of the exhaust pipe(s) outlet must be rounded to avoid any sharp edges.

d) Wrapping of the exhaust system 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) Titanium and carbon exhausts and silencers are allowed.

f) The basic noise limit is 107 dB/A (with a 3 dB/A tolerance after the race only). Some circuits may have a lower noise limit. This will be published in the Supplementary Regulations of the respective event.

g) The test RPM for noise control will be as follows:

- 2-cylinder engines: 5.000 RPM
- 3-Cylinder engines: 5.000 RPM
- 4-cylinder engines: 5.500 RPM

h) Titanium and carbon exhausts and silencers are allowed.

AACR 4.6.19 Sound level control

See AACR 0.7.

AACR 4.7 ELECTRICS and ELECTRONICS

AACR 4.7.1 Engine control system (ECU) / Electronics

a) The engine control system (ECU) must be either:

i. The original system as homologated. Flashing the original ECU is allowed, hardware modifications of the ECU are not allowed.

ii. The original system (with the production ECU, option i.) may have commercially available external ignition and/or injection module/s added. The total combined retail price (software and tuning tools included) on sale to the general public cannot be higher than € 5.000 (tax excluded). A special connector may be used to connect the module/s and the ECU.

iii. An FIM/AA approved ''Superstock Kit'' model (produced and/or approved by the motorcycle manufacturer) may be used. Flashing the KIT-ECU is allowed, hardware modifications of the ECU are not allowed. Commercially available external ignition and/or injection module/s may be added. A special connector/adaptor may be used to connect the ECU(s) and the original wiring harness. The combined retail price of the full system including software, tuning tool, download / connection cable any activations, upgrades and wiring harness(s) must be less than:

1. **€ 5.000 (tax excluded) if the system excludes data logging.**
2. **€ 6.000 (tax excluded) if the system includes data logging.**

The ECU (with software and activations) and harness parts must be individually priced and available separately. The separate ECU and harness total must respect the above limits.

iv. **The MoTec M130 engine control unit (ECU). *The specifications are still to be determined*.**

b) Central unit (ECU) may be relocated.

c) Corner by corner or distance/position-based adjustments are not allowed.

d) Optional equipment sold by the motorcycle Manufacturer for the homologated model is considered not homologated with the motorcycle and must follow the requirements for approved electronics / data loggers.

e) During an event the Chief Technical Officer has the right to ask a rider/team substitute their ECU or external module(s) with the FIM / AA sample received from the Manufacturer. The change has to be done before Sunday warm up.

f) No extra sensors can be added for control strategies except shift rod sensor, wheel speed sensors and lambda sensors. Any of these sensors must be included in the Kit ECU and Harness package if required for strategies (including closed loop lambda).

g) Other additional electronic hardware not present on the original homologated motorcycle cannot be added with the exceptions noted below.

h) Resistors/load may be added to replace the parts of the electrical system that have been removed (including lights and lambda sensors) to prevent ECU errors.

i) An ABS replacement/bypass may be fitted and/or the ABS unit may be dismantled to leave just its ECU.

j) The external fuel injection modules / ignition modules may not alter any sensor signal relating to the ride by wire system / ECU or control / actuate any part of the motorcycle excepting the fuel injectors / ignition coils.

k) Lambda closed loop /auto tuning is permitted.

l) No external modules may add traction control strategies (such as Traction Control, Launch Control, Anti Wheelie Control) unless originally fitted to the homologated motorcycle or included in the Racing Kit (which must be produced and/or approved by the motorcycle manufacturer) for the homologated motorcycle.

m) Control strategies (such as Traction Control, Launch Control, Anti Wheelie Control) is only allowed when it is originally fitted to the homologated motorcycle or included in the Racing Kit (which must be produced and/or approved by the motorcycle manufacturer) for the homologated motorcycle.

n) Data logging systems:

   i. The data logging system is free, but the specifications listed below must be respected.

   ii. The Data Logger unit must be available for sale to the public.

   iii. The sensors must be simple function. No inertial platforms are allowed to be added if an inertial platform is not installed originally on the homologated motorcycle.

   iv. CAN (or other data protocol) communication from the ECU to an approved Data Logger is allowed without any limitation in CAN channel logger number.

v. The Data Logger may not act to control any strategy or setting in the ECU – except to replicate the original dashboard signals if the original dashboard is replaced. The logger may not automate these setting changes.

o) The maximum total price of other active/control/calculation units such as lambda driver modules, quick shifter modules and analogue to CAN converters is **€ 1.000** (tax excluded).

p) Telemetry is not allowed.

q) No remote or wireless connection to the motorcycle for any data exchange or setting is allowed whilst the engine is running or the bike is moving.

r) The wiring harness is free.

s) Downshift blipping is allowed. External downshift blip modules are allowed.

t) The addition of an infrared (IR) or GPS based lap timing system is allowed.

u) Dashboard is free. It may incorporate the Data Logger. There must remain a working tachometer display.

v) Spark plugs may be replaced.

w) Spark plug caps /coil on plug, ignition cables and ignition harness are free.

x) The battery is free **and may be relocated**. **The maximum capacity is 10 Ah**.

y) A lap timer can be fitted.

AACR 4.7.2 Generator Alternator and Electric Starter

a) The generator (ACG) may be modified or replaced.

b) The regulator/rectifier may be modified or replaced.

c) The electric starter must operate normally and always be able to start the engine during the event.

d) During Parc Ferme, the starter must crank the engine at a suitable speed for starting for a minimum of 2 seconds without the use of a boost battery.

e) The generator must always charge the battery **in a sufficient way** when the engine is running. The charging voltage must be corresponding to the charging voltage listed in the service manual / kit-manual of the homologated motorcycle.

f) Operating the motorcycle on the battery only (without a functioning generator) is not allowed.

AACR 4.8 MAIN FRAME / CHASSIS

a) The use of titanium and carbon (or similar composite materials) in the construction of the main frame, rear sub frame, swing arm and swing arm pivot bolt, front forks, triple clamps, wheel axles, engine mounting parts and handlebars is forbidden. The use of titanium and aluminium alloys in the construction of swing arm pivot bolts and wheel axles is forbidden.

b) Unless otherwise stated, the use of titanium and aluminium alloys for nuts and screws is allowed.

c) 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 and a valid frame number / chassis number. In case the frame will need to be

replaced, the rider or team must request the use of a **2nd motorcycle** to the AA Technical Officer.

d) **After a crash**, the rebuilt motorcycle must be inspected before its use by the Technical Officers for safety checks and a new seal will be placed on the motorcycles frame.

e) No other spare motorcycle may be on the track.

AACR 4.8.1 Frame Body and Rear Sub Frame

a) The frame must remain as originally produced by the manufacturer for the homologated motorcycle.

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

c) The sides of the frame body may be covered by protective parts made of plastic or composite material. These protectors must fit the form of the frame.

d) Crash protectors may be fitted to the frame, using existing points (max. length: 50 mm), or fitted into the ends of the wheel axles (max. length: 30 mm).

e) Crash protectors / frame sliders must not protrude outside the fairing for more than 30 mm.

f) Nothing may be added by welding or removed by grinding from the main frame body.

g) All motorcycles must display a valid vehicle identification number (frame number / chassis number) punched on the frame body.

h) Engine mounting brackets or plates **may be modified or replaced, but the use of titanium and carbon (or similar composite materials) is forbidden**.

i) Engine mounting axles, bolts and nuts can be modified or replaced, but must be made of a steel alloy.

j) Suspension linkage mounting points on the frame must remain as originally produced by the manufacturer for the homologated motorcycle with no modification allowed.

k) Front sub frame / fairing mount may be **modified or replaced. The material is free.**

l) Rear sub frame may be **modified or replaced, but the use of titanium and carbon (or similar composite materials) is forbidden.** Repairing and welding of the sub frame is allowed.

m) 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.

n) The side stand bracket may be cut or removed.

o) The paint scheme is not restricted but polishing the frame body or sub-frame is not allowed.

AACR 4.8.2 Suspension - General

a) The use of titanium and carbon (or similar composite materials) in the construction of the fork and fork clamps is forbidden.

b) Mechanical forks:

i. Original internal parts of the homologated forks may be modified or changed. Aftermarket damper kits or valves may be installed

ii. The original surface finish of the fork tubes (stanchions, fork pipes) may be changed. Additional surface treatments are allowed.

iii. The original fork may be replaced by an aftermarket fork.

c) Electronic forks:

i. No aftermarket or prototype electronically-controlled suspensions can be used. Electronically-controlled suspension can 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 springs not connected with these valves can be changed.

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

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

v. The electronic front suspension may be replaced by a mechanical system.

vi. Electronic forks may have their complete internal parts (including all electronic control) replaced with a conventional damping system and it will then be considered as a mechanical fork.

vii. The original electronic fork may be replaced by an aftermarket mechanical fork.

AACR 4.8.3 Front Fork and Fork Clamps

a) The upper and lower fork clamps (triple clamp, fork bridges) may be modified or replaced by aftermarket products.

b) Steering bearings and inserts are free.

c) Electronic controlled steering dampers cannot be used if not installed in the homologated motorcycle. However, it must be completely standard (any mechanical or electronic part must remain as homologated).

AACR 4.8.4 Swing Arm

a) The swing arm may be altered or replaced from those fitted to the homologated motorcycle. However, the type (single or double sided) must remain as homologated.

b) The use of titanium and carbon (or similar composite materials) in the construction of the swing arm is forbidden if not homologated on the original motorcycle.

c) Swing arm pivot bolt and nut can be modified or replaced, but must be made of steel.

d) Swing arm pivot position must remain in the homologated position (as supplied on the production motorcycle). If the standard motorcycle has inserts then the orientation/position of the original inserts may be changed. **The inserts can be modified or replaced.**

e) Rear axle/chain adjuster can be modified or replaced.

f) A solid protective cover (shark fin) must be fixed to the swing arm, and must always cover the opening between the lower chain run, swing arm and rear wheel sprocket, irrespective of the rear wheel position. This 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.

g) Rear wheel stand brackets may be added to the swing arm by welding or by bolts. Brackets must have rounded edges (with a large radius) viewed from all sides. 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 swing arm.

h) The sides of the swing arm may be protected by protective parts made of plastic or composite material. These protectors must fit the form of the swing arm.

AACR 4.8.5 Rear Suspension Unit

a) Mechanical Suspensions:
   i. Rear suspension unit (shock absorber and its spring) may be replaced with aftermarket parts.

b) Electronic Suspensions:
   i. No aftermarket or prototype electronically controlled suspension unit may be used, unless such suspension is already present on the homologated motorcycle.
   ii. The electronically-controlled valves must remain as homologated.
   iii. The shims, spacers and shock absorber springs not connected with these valves can be changed.
   iv. The ECU for the electronic suspension must remain as homologated and cannot have GPS capabilities.
   v. 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.
   vi. If the standard system has no facility for ride height adjustment the standard shock may be modified to allow shock length change if no hydraulic parts are modified.
   vii. The original suspension system must work properly safe in the event of an electronic failure.
   viii. The electronic shock absorber can be replaced by a mechanical one.

c) The original attachments to the frame must be as homologated.

d) Removable top shock mounts can be modified or replaced. A nut may be made captive on the top shock mount and shim spacers may be fitted behind it to adjust the ride height.

e) The rear suspension linkage may be modified or replaced.

AACR 4.8.6 Wheels

a) Wheels may be replaced and associated parts that are fitted to the homologated motorcycle may be altered or replaced.

b) Aftermarket wheels must be made from aluminium alloys.

c) The use of the following alloy materials for the wheels is not allowed: Beryllium (>=5%), Scandium (>=2%), Lithium (>=1%).

d) 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 is prohibited, except for modifications on the spokes, valves, safety bolts and tyre retention screws sometimes used to prevent tyre movement relative to the rim. If the rim is thus modified, bolts, screws etc. must be fitted for this purpose.

e) Wheels may be overpainted but the original surface finish cannot be removed.

f) A non-slip coating/treatment may be applied to the bead area of the rim.

g) The cushion drive for the rear wheel can be modified or replaced.

h) Bearings, seals and axles may be modified or replaced by aftermarket products.

i) The use of titanium, light metal alloys and carbon (or similar composite materials) in the construction of the wheel axles is forbidden.

j) Axle nuts/bolts can be modified or replaced, but must be made of steel.

k) Wheel Spacers can be modified or replaced. Modifications to keep spacers in place are permitted.

l) Bearing spacers can be modified or replaced.

m) Wheel balance weights are free.

n) Aluminium or steel inflation valves are compulsory. Angled valves are recommended.

o) Permitted dimensions:

- Permitted wheel rim diameter size: 17 inches
- Permitted front wheel rim width: 3,50 inches
- Permitted rear wheel rim width: 6,00 inches

AACR 4.8.7 Brakes

a) Brake discs may be replaced by aftermarket discs which comply with the following requirements:

i. Brake discs and carrier must retain the same material as the homologated disc and carrier or steel (max. carbon content 2.1 wt%). All homologated discs are steel.

ii. Non-floating or single piece discs may be replaced with floating discs.

iii. The outside diameter of the brake disc may be increased but the disc must fit into the homologated brake calliper without any modification of the brake calliper.

iv. The thickness of the brake disc may be increased but the disc must fit into the homologated brake calliper without any modification of the brake calliper. The number of floaters is free.

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

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

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

e) Front and rear brake fluid reservoir may be altered or replaced from those fitted to the homologated motorcycle.

f) Front and rear hydraulic brake lines may be altered or replaced from those fitted to the homologated motorcycle.

g) 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.

h) 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.

i) 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 thread repair insert.

j) The split of the front brake lines for both front brake callipers must be made above the lower fork bridge (lower triple clamp).

k) "Quick" (or "dry-brake") connectors in the brake lines are allowed.

l) Front and rear brake pads may be changed. Brake pad locking pins may be modified for quick change type.

m) Front brake calliper additional air scoops or ducts are allowed.

n) Antilock Brake Systems (ABS) are not permitted.

o) Motorcycles must be equipped with a brake lever protection, intended to protect the handlebar brake lever from being accidentally activated in case of collision with another motorcycle. FIM approved guards will be permitted without regard of the material. The Chief Technical Officer has the right to refuse any guard not satisfying this safety purpose.

AACR 4.8.8 Handle Bars and Hand Controls

a) Handle bars may be replaced.

b) Handle bars and hand controls may be relocated.

c) Throttle grip can be modified or substituted.

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

e) Throttle assembly and associated cables can be modified or replaced but the connection to the throttle body and the throttle controls must remain as homologated. 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.

f) Clutch and brake lever may be exchanged by an after-market model. An adjuster to the brake lever **and to the clutch lever** is allowed.

g) Switches can be changed but electric starter switch and engine stop switch must be located on the handle bars.

h) Welding of handle bars is not allowed.

i) The use of titanium, carbon fibre, Kevlar® or carbon composite materials for handlebars is forbidden.

j) The use of titanium and aluminium alloys for nuts and screws is allowed.

k) Handlebar ends must be plugged with a solid material or rubber covered.

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

m) In any position of the handlebars /steering stem, the front wheel, tyre and mudguard must maintain a minimum gap of 10 mm to the bodywork and radiator(s).

n) 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.

o) All handlebar levers must be ball-ended (diameter of this ball **should be** at least 16 mm). This ball can also be flattened, the minimum thickness of the flattened part **should be** 14 mm and the edges must be rounded. These ends must be permanently fixed and form an integral part of the lever.

AACR 4.8.9 Foot Rests and Foot Controls

a) The use of titanium, carbon fibre, Kevlar® or carbon composite materials for foot rests and foot controls is forbidden.

b) The use of titanium and aluminium alloys for nuts and screws is allowed.

c) Foot rests, hangers/brackets and hardware may be replaced and relocated but the hangers / brackets must be mounted to the frame at the original mounting points.

d) Gear shift must remain operated manually by foot.

e) Foot rests may be rigidly mounted or a folding type which must incorporate a device to return them to the normal position.

f) The end of the foot rests must be rounded.

g) Non-folding footrests must have an end (plug) which is permanently fixed, made of plastic, Teflon or an equivalent type material (Alloy), and must be rounded. The plug surface must be designed to reach the widest possible area in order to decrease the risk of injuries to the rider in the case of an accident. The Chief Technical Officer has the right to refuse any solution not satisfying this safety purpose.

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

i) A thumb operated rear brake solution is allowed, but there must remain a functioning foot operated rear brake lever. In case of a dispute, the decision of the Chief Technical Officer is final.

AACR 4.8.10 Fairing / Body Work

a) Fairing, mudguards and bodywork must confirm in principle to the homologated shape as produced by the manufacturer, irrespective of the model year to encourage the most up to date visual impression.

b) Fairings from a different model year can be used when it is/was homologated and the model year is 2006 or newer. In this case, the complete fairing (upper fairing, lower fairing) must be used as a set.

c) The material **for fairings is free**.

d) Headlight decals should be included.

e) For all bodywork, paint and decal design is free.

f) Overall size and dimensions must be the same as the original parts, with a tolerance of +/- 10 mm, respecting the design and features of the homologated fairing as far as possible. The overall width of the frontal area may be +10 mm maximum. The decision of the Chief Technical Officer is final.

g) Windscreen may be replaced with an aftermarket product. The height of the windscreen is free, with a tolerance of +/- 15 mm measured on the vertical distance from / to the upper fork bridge. The screen must not have sharp edges. The material of the windscreen must be transparent.

h) Fairing brackets **and fasteners** may be altered or replaced. **The material is free**.

i) The ram-air intake must maintain the originally homologated shape and dimensions with a +/- 2 mm tolerance.

j) The original air ducts running between the fairing and the air box may be altered or replaced with a +/- 2 mm tolerance to the homologated parts. **The material is free**. Particle grills or "wire - meshes" originally installed in the openings for the air ducts may be removed.

k) The lower fairing must be constructed to hold a minimum of 5 litres in case of an engine breakdown. The lower edges of all the openings in the fairing must be positioned at least **50** mm above the bottom of the fairing.

l) The lowest point of the rear transverse wall of the lower fairing must be at least 50 mm above the bottom. The angle between this wall and the floor must be ≦ 90°.

m) The lower fairing must incorporate at least a single opening of **20** 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.

n) 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.

o) Front mudguard may be **modified or replaced** and may be spaced upward for increased tyre clearance. **The material is free.**

p) Rear mudguard fixed on the swing arm can be modified, **replaced**, **may be spaced upward for increased tyre clearance** or removed. **The material is free.** The chain guard may be removed.

q) All exposed edges must be rounded.

r) Wings and Aerodynamic Aids:

i. Wings and other aerodynamic aids can only be used if originally fitted to the homologated motorcycle.

ii. The wings and other aerodynamic aids must follow the dimensions, profiles and positions of the homologated shapes exactly (tolerance +/- 1 mm). For copies of the OEM parts, the leading edges (including end plates) must have a minimum circumference of 4 mm and must have a rounded end (8 mm radius) or be enclosed / integrated into the fairing.

iii. The OEM parts may be used "as is" with the exception that the wing root and 10 mm from the end face may be modified to allow mounting to the fairing.

This may not be in the form of an extension and the size of the wing will be measured with reference to the face of the wing root.

iv. **The wings must be fitted in the same relative position (accepting the tolerance allowed for the fairing) and the angle of attack must be within +/- 4 degrees of the original angle of attack relative to the chassis.**

v. **For active or dynamic aerodynamic parts, only the standard homologated mechanism can be used. The range of movement of these parts must be the same as that used by the homologated motorcycle in normal use - not the mechanical maximum.**

AACR 4.8.11 Seat

a) Seat, seat base and associated bodywork may be replaced. 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) The material is free.

d) The homologated seat locking system (with plates, pins, rubber pads, etc.) can be removed.

e) All exposed edges must be rounded.

AACR 4.8.12 Fasteners

a) Standard fasteners may be replaced with fasteners of any material and design **with the exceptions listed below.**

b) Titanium fasteners may be used in structural (highly stressed) locations, but the strength and design must be equal to - or exceed - the strength of the standard fastener it is replacing.

c) Internal engine bolts, screws and nuts must remain of standard homologated materials or materials of higher specific weight.

d) The requirements for the materials of axles, bolts and nuts for engine mounting, wheels and swingarm are specified in the relevant sections of this regulations.

e) Fasteners may be drilled only for safety wiring, but intentional weight-reduction modifications are not allowed.

f) Thread repair using inserts of different material such as Helicoil® and Time-Sert® are allowed.

g) Fairing/body-work fasteners may be changed to a quick disconnect type, **the material is free.**

h) Aluminium fasteners may only be used in non-structural **(low stressed)** locations.

i) In case of a dispute, the decision of the Chief Technical Officer is final.

AACR 4.8.13 Rear Safety Light

See AACR 0.2.3.

AACR 4.9 The following items MAY BE altered or replaced

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

b) Gaskets and gasket materials.

c) Bearings of any type and brand may be used.

d) Painted external surface finishes and decals.

e) Material for brackets connecting non-original parts (fairing, exhaust, instruments, etc.) to the frame (or engine) **can** be made from titanium or fibre reinforced composites.

f) Protective covers for the frame, chain, footrests can be made in other material like fibre composite material if these parts do not replace original parts mounted on the homologated motorcycle.

AACR 4.10 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) The air injection control system (valve, solenoid, tubes) may be removed. In this case, connections to the cylinder head cover **/ cylinder head** must be plugged.

c) Speedometer **and related wheel spacers.**

d) Bolt on accessories on a rear sub frame.

e) The original left and right handlebar switch, e.g. light switch, horn switch, turn signal switch, etc.

AACR 4.11 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 grabs rails.

i) Safety bars, centre and side stands must be removed (fixed brackets must remain excepting side stand bracket).

j) Catalytic convertors.

AACR 4.12 The following items MUST BE altered

a) Motorcycles must be equipped with a functional ignition kill switch or button mounted on a side of the 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) Throttle controls must be self-closing when not held by the hand.

c) All drain plugs, oil filler caps and oil dip sticks must be safety wired. External oil filter(s) screws and bolts that enter an oil cavity must be safety wired (i.e. on crankcase, **oil radiator**).

d) All motorcycles must have a closed breather system. The oil breather line must be connected and discharge in the air box.

e) 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.

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

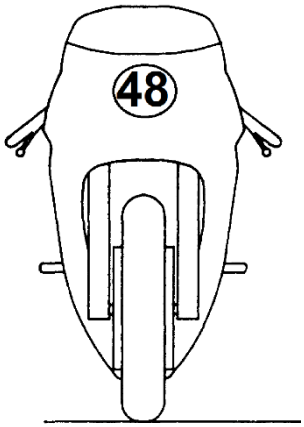
AACR 4.13 Timekeeping instruments

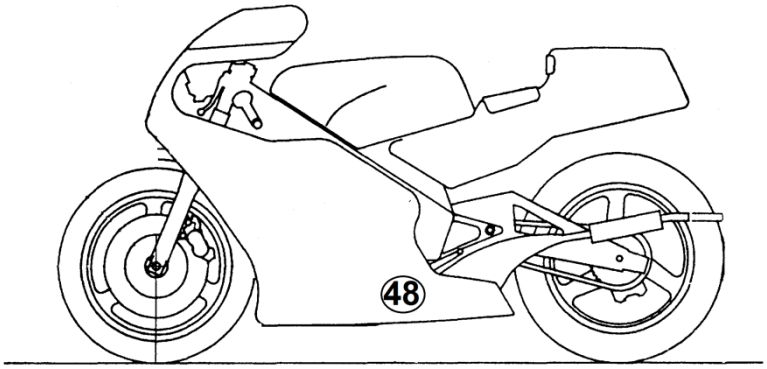
See AACR 0.8.

AACR 4.14 Onboard cameras

See AACR 0.10.

APPENDIX A: STARTING NUMBERS





The sizes for all the front numbers are:	Minimum height Minimum width Minimum stroke Minimum space between numbers	120 mm 60 mm 20 mm 10 mm
The sizes for all the side numbers are:	Minimum height Minimum width Minimum stroke Minimum space between numbers	100 mm 50 mm 15 mm 10 mm

APPENDIX B: MINIMUM WEIGHTS / THROTTLE BODY DIMENSIONS

(update Dezember-12-2020)

Motorcycle / Make	*Model Year*	*Minimum weight*	*Throttle body dia.*
Superstock 600			
Honda CBR 600RR	2009 on	**162 kg**	40 mm
Honda CBR 600RR (ABS)	2013 on		40 mm
Kawasaki ZX 6 R	2009 on		38 mm
MV Agusta F3 675	2013 on		50 mm
Suzuki GSXR 600	2008 - 2010		40 mm
Suzuki GSXR 600	2011 on		40 mm
Triumph Daytona 675	2009 - 2012		44 mm
Triumph Daytona 675	2013 on		44 mm
Triumph Daytona 675 (ABS)	2013 on		44 mm
Triumph Daytona 675R	2011 - 2012		44 mm
Triumph Daytona 675R (ABS)	2013 - 2015		44 mm
Yamaha YFZ-R6	2008 - 2016		41 mm
Yamaha YFZ-R6	2017 on		41 mm
Superstock 1000			
Aprilia RSV 4 Factory (all)	2009 on	**170 kg**	48 mm
BMW S1000 RR (ABS)	all		48 mm
BMW S1000 RR	all		48 mm
BMW S1000 RR	**2019 on**		**tbd**
Ducati 1199 R	2013 on		75.6 x 48 mm
Ducati Panigale R	2015 on		75.6 x 48 mm
Honda CBR1000 RR	2009 - 2013		44 mm
Honda CBR1000 RR (ABS)	2009 - 2011		44 mm
Honda CBR1000 RR SP	2014 - 2015		44 mm
Honda CBR1000 RR SP2	2017 on		48 mm
Honda CBR 1000 RR-R / SP	**2020 on**		**tbd**
MV Augusta F4 RR	2013 - 2014		50 mm
MV Augusta F4 RR	2015 on		50 mm
Kawasaki ZX10R	2008 - 2010		47 mm
Kawasaki ZX10R	2011 - 2015		47 mm
Kawasaki ZX10R	2016 on		47 mm
KTM RC8R	2009 on		52 mm
Suzuki GSXR1000 K9	2009 - 2011		44 mm
Suzuki GSXR1000 L2	2012 on		44 mm
Yamaha YFZ-R1	2012 - 2014		45 mm
Yamaha YFZ-R1	2015 on		45 mm
Superbike			
Aprilia RSV 4 Factory	all	**168 kg**	see ***Superstock 1000*** for specific Model and Model Year
BMW S1000 RR			
Ducati 1199 R / Panigale R			
Honda CBR1000 RR			
Kawasaki ZX10R			
KTM RC8R			
MV Augusta F4			
Suzuki GSXR1000			
Yamaha YFZ-R1			
Ducati Panigale V4R	**2019 on**	**168 kg**	**tbd**