

# 2009 SUPERSTARS<sup>®</sup>

## ITALIAN CHAMPIONSHIP/INTERNATIONAL SERIES

### TECHNICAL REGULATIONS

Fully complete originals of these Regulations are filed at CSAI (Technical Commission) in Milan, FGS Organisation in Rome and Oral Engineering Srl in Modena.

THE FINAL TEST OF THESE TECHNICAL REGULATIONS SHALL BE IN ITALIAN VERSION, WHICH WILL BE USED SHOULD ANY DISPUTE ARISE AS TO THEIR INTERPRETATION

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#### **ARTICLE 1: DEFINITIONS**

##### **1.1. Car Name**

The name of the car shall include the manufacturer's name and the homologated model in that order.

##### **1.2. Model car and car**

Model car refers to the general classification of all cars belonging to the same commercial model, as designated by the Manufacturer.

Car means each individual vehicle used by a Competitor to participate in the Championship.

The car type is homologated by the Permanent Bureau and added to **TABLE A** of these regulations.

Cars belonging to the homologated models are registered for the Championship by the Competitors.

##### **1.3. Homologated Cars**

Cars are included in the new CSAI Group denominated STS and are detailed in the list of homologated vehicles (**TABLE A**) that is issued every year by the SUPERSTARS Permanent Bureau. Technical details relative to each car are specified in the SUPERSTARS Technical Sheets.

##### **1.4. Bodywork**

The suspended part of the car, in contact with the external air stream. This definition does not include any part clearly associated with the functioning of the engine, transmission and moving parts.

##### **1.5. Cockpit**

The volume of the car accommodating the Driver.

##### **1.6. Engine displacement**

The volume swept by the pistons in the cylinders. It is expressed in cubic centimetres. When calculating engine displacement, the  $\pi$  number must be considered to be equal to 3.1416.

##### **1.7. SUPERSTARS weights**

With reference to the provisions of the Sporting Regulations, the following SUPERSTARS weight categories are established:

- Sporting Weight (Sw): handicap weight assigned in accordance with SUPERSTARS Sporting Regulations; it is considered separately from the weights described below;
- Technical Weight (Tw): weight of the car model, prepared for racing, specified in the SUPERSTARS Technical Sheet;
- Driver Reference Weight (RefW): defined as 85 kg; this value is used when calculating Car Weight
- Driver Weight (Dw): actual weight of an individual driver, weighed with full racing equipment, according to the schedules and methods contemplated by the SUPERSTARS Sporting Regulations;
- Car Weight (Cw): equal to the sum of the Technical Weight and the Reference Weight ( $Cw = Tw + RefW = Tw + 85$ ). The Car Weight, indicated in TABLE (A), is the value taken into consideration when a technical scrutining is made, in compliance with the SUPERSTARS Sporting Regulations.

##### **1.8. Ballast**

Ballast is subdivided into three types:

- Sporting ballast: ballast necessary to achieve Sporting Weight, assigned according to SUPERSTARS Sporting Regulations;
- Technical ballast: ballast necessary to integrate Car Weight and/or Technical Weight.
- Special ballast: ballast applied only in the cases provided for by articles §7.1.1. (sequential manual gearbox) and §12 (BRAKES).

##### **1.9. Wheel and complete wheel**

The wheel is composed of the rim. The complete wheel includes both the rim and the tyre.

##### **1.10. Supercharging**

The increase in mass flow of the fuel/air mixture inside the combustion chamber (besides the mass flow induced by normal atmospheric pressure, the air intake effect and the dynamic

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effect of the intake and/or exhaust system) obtained by whatever means. The injection of fuel under pressure is not considered as supercharging.

#### 1.11. Exhaust system

The system for releasing the engine exhaust gases, consisting of the following:

- exhaust pipe (or primary): pipe(s) from the flange on the engine head to the exhaust pipe connection
- exhaust pipe (or secondary): pipe(s) from the exhaust manifold connection to the rear of the car (gas outlet); it may be composed of more than one part.

Silencers and catalytic converters may be installed in, and form an integral part of, the manifold and the exhaust pipe(s).

If supercharging occurs by means of a turbocharger unit, the latter shall be considered an integral part of the manifold, whereas the entire exhaust system after the unit shall be considered the exhaust pipe.

#### 1.12. Steering

Steering includes all the equipment from the steering wheel to the steering box brackets.

#### 1.13. Active systems

Any system continuously detecting the changes in one or more parameters and using the measured value(s) in order to control one or more devices affecting the dynamic features of a car.

#### 1.14. Mechanical component

Any mechanical part necessary for propulsion, suspension, steering and braking, as well as any accessories, whether moving or not, that are required for their normal operation.

#### 1.15. Original

Component or part of the car Model, as homologated and sold by the Manufacturer for road use.

Unless expressly authorized by these Regulations, the exclusive use of original parts or components throughout the Event is mandatory.

#### 1.16. STS Technical Kit

The STS TECHNICAL KIT consists of the set of one or more non-original parts or components, approved and homologated by the **Permanent Bureau** for each STS Car Model.

The use of a Technical Kit is optional; if used, it must be applied in its entirety and it must completely replace the relevant original parts.

The characteristics of the Technical Kit are described in the SUPERSTARS Technical Sheet, in the *Additional Information* section.

The application of the Technical Kit is permitted only following the publication, in the appropriate STS bulletin (see art.1.19, *STS Bulletin*), of the approval by the **Permanent Bureau** and the relevant CSAI-stamped amendment to the SUPERSTARS technical sheet.

#### 1.17. Appendix J

Appendix J of the FIA International Sporting Code.

#### 1.18. Championship Event

The days in which the practice sessions (free and qualifying) and the races take place according to the SUPERSTARS Italian Championship calendar and the International Series.

#### 1.19. STS Bulletin

Sporting or Technical announcement made by the Permanent Bureau to Competitors, Tuners and to all parties concerned by the activities of the SUPERSTARS Championship, containing information concerning the Championship underway. STS Bulletins are published on the SUPERSTARS Championship web site and distributed electronically and/or in print.

#### 1.20. H gearbox and sequential gearbox

An "H" gearbox is defined as a mechanical gearbox operated via a control lever that moves in an H-shaped pattern. This system is operated exclusively through a lever positioned in the central tunnel of the cockpit.

A sequential gearbox is defined as a gearbox equipped with an operating system in which the control lever moves in a straight line and in which gear ratios must be selected sequentially, without the possibility of skipping intermediate gear ratios. This system is operated exclusively

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through a lever positioned in the central tunnel of the cockpit.

Any other type of gearbox whose operation differs from the categories specified above is defined as an automatic or semiautomatic gearbox.

Both permitted gearbox types, "H" and sequential, must be operated exclusively through a lever system positioned in the transmission tunnel area; controls positioned at the steering wheel, even if mechanical, are prohibited.

#### **ARTICLE 2: SPIRIT OF THE REGULATIONS AND APPROVALS**

##### **2.1. Technical scrutineering**

Technical inspections may be performed on any part of the car, according to methods and schedules contemplate by the Specific Event Regulation. Specifically, technical scrutineering of the engine may be performed:

- a) On a roller bench, to measure power at the wheels
- b) Through the engine's disassembly, performed at the racetrack or in any other place defined as appropriate for this purpose.

##### **2.2. SUPERSTARS<sup>®</sup> Technical Sheet**

As a member of the Permanent Bureau, the SUPERSTARS Technical Manager draws up the SUPERSTARS<sup>®</sup> Technical Sheet during the course of the homologation of a new car model that will compete in the the Championship, as listed in **TABLE A**, containing the technical description of all of the car's components, both original and belonging to Tecchnical Kits.

Competitors and/or Tuners who intend to request the homologation of a new car Model must provide, at their own expense, the technical data requested by the SUPERSTARS Technical Director for Technical Sheet completion purposes, under penalty of rejection of the Model's homologation request by the Permanent Bureau.

The SUPERSTARS Technical Sheet is to be considered as an annex to these Regulations and, as such, as an integral part thereof.

Submission of the Technical Sheet is compulsory for all calendar Races, during the pre-race scrutineering, under penalty of non-admission to the race.

The Technical Sheet is valid for SUPERSTARS only, in all its formats (Trophy, Championship, Series, etc.).

#### **ARTICLE 3: PERMITTED/MANDATORY MODIFICATIONS AND ADDITIONS**

The **Permanent Bureau**, in collaboration with CSAI, hereby reserves the right to amend these regulations even during the racing season and to subsequently inform Competitors thereof by means of the STS Bulletins.

Any and all amendments to these Regulations are subject to prior approval by CSAI's Technical Sub-committee.

Any part that is damaged due to an accident must be replaced by an original part, and/or homologated Kit parts as provided in these Regulations.

The use of titanium, magnesium alloys or composites (MMC) is prohibited except where expressly authorised.

#### **ARTICLE 4: BALLAST**

With reference to Art. 1.8 (Ballast), all ballasts indicated therein shall consist strictly of solid and unitary blocks, which shall be positioned inside a container to be fastened to the car's flatbed using at least four M12 12.9 class screws. This container must be positioned on the flatbed of the front passenger's seat and must weigh up to 80 kg. If the weight mentioned above exceeds this limit, the excess ballast must be positioned as indicated above, in one or more containers, and must also be fastened using the aforesaid method to the car flatbed, provided it is positioned inside the wheel base.

All containers, which must be prepared for the lead-sealing inspection, constitute (screws and washers included) integral part of the ballast.

The containers containing the sports ballast must be marked with yellow paint, those containing the technical ballast with red paint. The special ballast containers must be marked with the letter:

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- **C**, if related to the overweight provided for by art. 7.1.1 (sequential manual gearbox)
- **F**, if it falls within art.12 (BRAKES)
- **C+F**, in case both of the above specified cases apply

Please note that the use of the technical ballast and of the special ballast must always be declared during the pre-race inspection, to be subsequently indicated in the technical passport.

#### **ARTICLE 5: SAFETY REQUIREMENTS**

FIA Appendix J, Article 253 and subsequent updates, and specific provisions, if any, as contemplated by these Regulations, are applicable.

The following is reminded and specified.

#### **5.1. Additional Fasteners**

Original hinges and locking mechanisms may be removed from both the bonnet and from the boot lid.

If the original hinges are retained, fitting two safety fasteners for the bonnet and the boot lid is mandatory.

If the hinges are removed, fitting four safety fasteners is mandatory.

#### **5.2. Seat**

The only permitted seats are FIA-homologated seats in accordance with FIA's Appendix J, Article 253.16 and FIA's STANDARDS 8855-99.

If the original seat attachments or supports are modified or replaced, the new attachments must be approved by the seat manufacturer, and shall comply strictly with FIA's Appendix J, Art. 253.16.

It is reminded that the seat model and FIA homologation are specified in the Technical Pass, which is always checked by CSAI Technical Scrutineers during pre-race scrutineering.

#### **5.3. Safety Belts**

The seat belts shall comply with FIA's Appendix J, Art.253.6 and FIA TECHNICAL LIST FIA No. 24.

The admitted seat belts are of at least five-point anchorage, FIA homologated type in compliance with standards 8853/98 or 8854/98 and equipped with a turnbuckle release system.

Installation of the safety belts shall be carried out as per FIA's Appendix J, Article 253.6.

It is recommended to carefully follow the regulations for installation and operational configuration of the belts, as shown in the drawing in FIA's Appendix J 253-61.

It is preferable to use the original anchorage points; if the original anchorage points cannot be used, new ones must be created, fixed to the body as specified in the aforementioned article and illustrated in Drawings 253-62, 253-63 or 253-64.

Alternatively, the rear anchorages may be fitted to the rollbar with the addition of a rear crossbar, as stated in the above-mentioned article and illustrated in the Drawings in FIA's Appendix J, 253-66 and 253-67.

It is reminded that the seat belt model and FIA homologation are specified in the Technical Pass, which is always checked by CSAI Technical Scrutineers during pre-race scrutineering; if the seat belts are replaced by another homologated model and/or make, the Pass shall be updated by the competent Sports Authority (National Technical Delegate).

#### **5.4. Rollcage**

It is mandatory to use a rollbar that is compliant with FIA Appendix J, Article 253.8 and models manufactured by constructors certified with a FIA/ASN homologation.

If a rollbar built according to the drawings contained in drawings in FIA Appendix J is used, the rollbar must mandatorily be built according to the provisions of Art. 253.8 and specifically in compliance with articles 8.1 (General remarks), 8.3 (Technical specifications), 8.3.3 (Specifications of materials) and drawings 253-1 to 253-36; the configurations defined in drawings 253-12/13/14, 253-4, 253-7, 253-6, and 253-31 are specifically recommended.

The MINIMUM ROLLCAGE CONFIGURATION, depending on the STS homologation year (**TABLE A**), are as follows (FIA's Appendix J, Art. 253.8.3.2.3):

- BMW M5: FIA's Appendix J, Drawing 253-36A
- AUDI RS4: FIA's Appendix J, Drawing 253-36B
- JAGUAR S: FIA's Appendix J, Drawing 253-36B

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- BMW 550i: FIA's Appendix J, Drawing 253-36C

On all models issued with a new STS homologation, rollbars built according to FIA Appendix J are subject to the minimum configuration, as shown in drawing 253-36C of FIA Annex J.

Supplementary reinforcement members must have a minimum thickness of 1mm thick and a minimum diameter of 30 mm.

It is confirmed that the minimum rollbar tube dimensions are as follows (FIA's Appendix J, Art. 8.3.3):

- Main rollbar,  $\Phi 45 \times 2.5$  mm or  $\Phi 50 \times 2.0$  mm tubes
- Secondary parts,  $\Phi 38 \times 2.5$  mm or  $\Phi 40 \times 2.0$  mm tubes

#### **5.5. Protective Padding for the driver**

As prescribed in FIA's Appendix J, Art. 253.8.3.5, where the driver's body may come into contact with the rollbar, flameproof padding shall be provided.

Where the driver's crash helmet may come into contact with the rollbar, the padding shall comply with FIA 8857-2001, type A (see FIA TECHNICAL LIST No. 23).

#### **5.6. Extinguishers and Extinguishing Systems.**

The use of the extinguishing products BCF and NAF is prohibited for both systems described in Art. 5.6.1 and 5.6.2.

These Regulations refer to the provisions in FIA's Appendix J, Art. 253.7.

##### **5.6.1. Manual Extinguishers**

The installation of one or two manual fire extinguisher(s), in accordance with FIA's Appendix J, Art. 253.7.3, is mandatory.

The extinguisher(s) shall be easily accessible for the driver when seated normally with his safety belts fastened.

The mountings shall be able to withstand a deceleration of 25g.

Only extinguishants homologated by FIA can be used, as per FIA's Appendix J, Art. 253.7.3.2.

On each extinguisher fitted to a vehicle the following information shall mandatorily be visible for the technical scrutineering:

- Capacity

- Type of extinguishant
- Weight or volume of the extinguishant
- Date the extinguisher must be checked, which shall be no more than two years after the last check or filling.

##### **5.6.2. Extinguishing Systems**

As an alternative or in addition to a manual extinguisher, an FIA homologated extinguisher system is permitted. This shall be installed in compliance with FIA's TECHNICAL LIST No. 16 and set out as per Article 253.7.2 of FIA's Appendix J.

The driver must be able to trigger the system control when seated normally with his safety belts fastened.

Should an automatic system be used, it is mandatory to provide a second means of triggering from the outside, situated close to the windscreen pillar on the driver's side; this control shall be combined with the battery circuit-breaker switch or situated close to it.

The external triggering control shall be marked with letter E in red inside a white circle at least  $\Phi 10$  cm in diameter with a red edge.

#### **5.7. Safety Nets**

The use of an homologated safety net affixed to the driver window is mandatory, in compliance with FIA Appendix J, Art. 253.11.

The net must consist of cloth strips with a minimum width of 19 mm (3/4").

The mesh size shall be min. 25x25 mm and max. 60x60 mm.

The strips must be made of flameproof material and sewn together at each crossing. The net must be fastened to the safety rollcage and must be used every time the car is used on the racetrack, for the entire duration of an Event, and positioned in such a way as to cover the window opening as far as the center of the steering wheel.

#### **5.8. Cockpit escape**

The cockpit shall be designed so as to allow the driver to exit from his normal driving position in 7 (seven) seconds through the

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driver's door and in 9 (nine) seconds through the passenger's front door.

When testing the above times, the driver must be wearing all the personal protective equipment (fireproof overalls, helmet, gloves, shoes, etc.), the safety belts must be fastened, the steering wheel must be in place in the most inconvenient position, the doors must be closed, and the safety net must be in place (see Art. 5.7, *Safety nets*).

#### **5.9. Rear View Mirrors**

It is mandatory to install two external rear-view mirrors.

The original mirrors may be replaced as per FIA's Attachment J, Art. 253.9; (see also art. 13.9, *Cockpit ventilation system*).

Each rear-view mirror shall have a reflecting surface of at least 90 cm<sup>2</sup>.

The inside rear-view mirror may be removed, or its position moved, providing it is installed in a safe place.

#### **5.10. Windshield**

Replacing the original windshield with another, equivalent one, is permitted providing it is homologated for road use: for the purpose, the marking of the latter will apply.

The windshield must be made of laminated glass, in compliance with the provisions of FIA Appendix J, Art. 253.11.

#### **5.11. Safety fasteners for rear window**

The use of safety fasteners applied on the rear window is recommended.

#### **5.12. HANS<sup>®</sup> System**

The use by the driver of a HANS<sup>®</sup> system and compatible helmet, as required by CSAI Yearbook N.S.8 2009, art. 6.2 (paragraphs c1, c2, c4 and c5) is mandatory.

#### **5.13. Towing eye**

Two trailer tow rings, one in the front and the other in the rear, must be mounted as provided for in Attachment J FIA, Art. 253.10.

The rings must be clearly visible and painted in yellow, red and orange.

### **ARTICLE 6: ENGINE**

Tuning of the engine shall comply with the contents of these Regulations, the SUPERSTARS Technical Sheet and, for all other details, the manufacturer's workshop manual.

#### **6.1. Engine Displacement**

In accordance with Art. 1.7 *Engine displacement*, the displacement of SUPERSTARS cars shall comply with the value stated in the STS Model Technical Sheet.

#### **6.2. Head gasket and compression ratio**

The material of the cylinder head gasket is free, however the its thickness and the compression ratio shall be as specified in the STS Technical Sheet.

#### **6.3. Engine Flywheel**

Flywheel weight, shape and material are free.

#### **6.4. Ignition and Injection**

##### **6.4.1. Electronic Control Unit**

The engine ECU and the relative cabling are free.

Installation of switches on the cabling between the engine control unit and a sensor is prohibited.

##### **6.4.2. Fuel Injectors**

The injector model is free, however the number of injectors may not be changed. Their location and fastening must remain unchanged from the original.

##### **6.4.3. Dashboard**

Electronic dashboards may be installed instead of the original ones, also for engine data acquisition purposes.

##### **6.4.4. Spark Plugs**

The make and type of ignition spark plugs is free, but the number is not.

##### **6.4.5. Traction and braking control**

Any function related to drive control shall be rendered permanently inoperative (see Art. 7.6 *Transmission control and sensor*), and any ABS systems are prohibited (see art. 12, *BRAKES*).

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**6.5. Turbocompressor or compressor engines**

The original supercharging system must be maintained.

In particular, the maximum pressure generated by the supercharging system at any time during operation must be as specified by the manufacturer for the original car model, and indicated in the Complementary information section of the SUPERSTARS technical sheet.

Any system or device having the purpose of modifying supercharge pressure is prohibited.

Tuners and/or Competitors shall provide a M8x1 threaded bore at the position indicated by the manufacturer for the Technical Officers and the members of the **Permanent Bureau** to connect a pressure sensor for supercharging pressure checks.

If the manufacturer of a car model fails to indicate the drilling position, the **Permanent Bureau** shall establish the technically most suitable position, followed by CSAI approval.

At any time during the Championship and at any time during a SUPERSTARS Event, the **Permanent Bureau** will monitor the supercharge values of the models with supercharged engines, with the aim to assess and determine the most appropriate technical corrective measures.

**6.5.1. Intercoolers**

Intercoolers and the respective ducting must be retained as in the series model but the fastening clamps may be replaced with non-originals.

Intercooler air intakes and the respective ducting are free. For models originally equipped with intercooler, not suitable for racing purposes, the **Permanent Bureau** may authorize the various modifications designed to improve their efficiency.

**6.6. Data Acquisition**

With reference to the provisions of Art. 18, TELEMETRY, radio data transmission is prohibited.

Car and engine data acquisition is permitted provided that data are only downloaded via cable. Cabling of the data acquisition system shall be completely physically independent from engine/car control cabling.

In the event of use of an original engine ECU that also includes an engine data acquisition

system, this system may be used together with the original cabling.

**6.7. Cooling system**

The radiator is not subject to any restrictions and its position and angle of inclination may be modified, provided that no modifications are made to the chassis and bodywork.

Replacing the mechanical water pump with an electrical type is permitted, provided that no modifications are made to the bodywork.

The original expansion tank may be replaced provided it is fitted inside the engine compartment.

The cooling pipes outside the engine block and their accessories are free.

Pipes with different diameters and/or in different materials may be used.

Radiator thermostat and fans are free.

**6.8. Intake System**

All intake pipelines upstream (intended as going from the outside to the engine) of the airbox are free.

The original airbox must be maintained, including position, shape and size of the air intakes, or must comply with specifications in the Special Technical Kits.

All airbox air intakes leading to the airbox must be inside the engine compartment, without any modifications to the bodywork or, if air is taken in from outside the car, the air intakes shall be in the front bumper, in the zone described in Art. 13.3.2, *Front bumper*.

Variable intake systems are prohibited. If already fitted in the original engine, it must be removed or else locked in a position specified in the model's technical sheet, and shall remain in that position throughout the Championship.

On STC's request, the system lock position shall be punched with lead seals.

**6.9. Throttle control**

Electronic throttle control systems are prohibited even if this system is installed on the car at origin.

The electronic control shall be replaced with mechanical drive system in which the throttle's opening and closing are controlled by a steel cable connected directly to the accelerator

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pedal; dual cable control is permitted provided the second cable is a safety cable and that it is wired in parallel with the first.

Throttle control potentiometers may be either retained in their original locations or displaced, but they have to be kept and in working condition.

On STS BMW M5 (STS-0002/04 homologation) and JAGUAR S-TYPE (STS-0003/04 homologation) models the electronic throttle(s) control may only be retained if combined with the series Engine Control Unit.

In all cases, the ratio between the accelerator pedal stroke and the throttle opening angle shall be 1:1 at all times (linear function, between the pedal stroke and the throttle rotation: depressing the pedal halfway corresponds to 50% throttle opening, and depressing the pedal completely corresponds to 100% throttle opening).

#### 6.10. Timing and valve timing systems

Tuning of the opening and closing valves is free of any restrictions.

Variable timing systems are accepted, as long as they are provided for in the original version. These systems can be blocked by adding or eliminating material.

#### 6.11. Air Restrictor

A car model which is originally equipped with a turbocompressor supercharge system can be homologated and entered in the STS list of homologated cars (**TABLE A**), providing it is equipped with an Air Restrictor. The number and type will be determined each time, based on the type of engine which is mounted on the car model at issue.

The type and size of the Air Restrictor shall be at the Permanent Bureau's sole discretion, and these characteristics may be modified or changed at any time according to the principle specified above.

Competitors must be prepared to install an Air Restrictor with a different size even between two different races in the same Championship, also in-between Events in the event the overall performance of a car is excessively different from that of the other participating cars; in any case, the provisions of the SUPERSTARS Sporting Regulations concerning the **Permanent Bureau's** prerogatives apply.

The quantity and the size of the Air Restrictor is indicated in the *Complementary information* section of the SUPERSTARS technical sheet.

All the air feeding the compressor must pass through the Air Restrictor(s), which must be made of metal or a metal alloy and it has to be possible to seal it/them, taking care what described on drawing J-253-4.

Concerning the atmospheric engines, the **Permanent Bureau** can decide the application of an Air restrictor on them, also during the homologation process of a new STS car model and/or, if needed to reach a behaviour balance, during the Championship, as set forth by SUPERSTARS Sporting Regulations. The quantity and the size of the Air Restrictor is indicated in the *Complementary information* section of the SUPERSTARS technical sheet.

#### 6.12. Lubrication

Baffle plates may be fitted to the oil sump. The original engine oil scavenging system must be retained.

Oil radiators and their connections are free, provided that they are mounted without any modification to the bodywork and within the profile of the same.

If not originally contemplated, an oil radiator may be installed.

To allow lubrication oil temperature sensors to be fitted (gearbox, differential housing, etc.), threaded bores or inlets with a maximum diameter of 14 mm may be drilled on the housings.

It is mandatory to fit a semitransparent exhaust recovery tank of at least 2 litres capacity.

The make of lubricants is free.

The oil filter is free, however it must be retained.

#### 6.13. Exhaust system

The original primary exhaust pipe must be retained. If it originally includes a catalytic converter, the latter may be emptied.

The secondary exhaust system (exhaust or secondary pipe) from the primary pipe onwards is free after. However it must include a catalytic converter. For cars with supercharged engines, the exhaust system may only be modified downstream from the Turbocompressor.

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All cars must be fitted with one catalytic converter per bank. The only catalytic converters permitted are those homologated by FIA/CSAI (see FIA TECHNICAL LIST no. 9).

Variable exhaust systems are prohibited. If the original car is equipped with such a system, it must be rendered inoperative. Upon request of the **Permanent Bureau** and/or of CSAI Technical Officials, the system's disablement shall be punched with lead seals.

Location and number of lambda sensors are free.

All the exhaust gases must pass through the catalytic converter.

The exit of the exhaust pipe must be located in the rear half of the car and may not protrude from the perimeter of the car.

#### 6.14. Exhaust noise level

The noise generated by the car may not exceed **95 dB(A) at 3800 rpm** at any time during the Event (see also Annuario CSAI 2009, S.R. 9 art. 10.6.3).

Noise shall be measured at a distance of 0.5 m and at a 45-degree angle to the exit point of the exhaust. (see also Annuario CSAI N.S.9 Art.10.1).

All the actions taken to prevent the maximum noise level being exceeded must be permanent and must not be inactivated by the exhaust pressure.

#### 6.15. Engine mounts

The elastic components of the engine mounts may be replaced by rigid elements provided that their dimensions are identical to the originals and there is no change to the position of the engine.

#### 6.16. Replacement of the original engine

Pursuant to the SUPERSTARS Sports Regulations, the replacement of the original engine of an STS homologated race car with another engine having the characteristics indicated by the Sports Regulations is permitted without the need for approval by the **Permanent Bureau**.

The modalities for installing the engine on the frame must be established and agreed between the STS Technical Manager, as member of the **Permanent Bureau**, and the subject who has

made the request. In the case where such option is granted to a recently homologated model, the **VM (Engine Variant)** variant will be added to the related SUPERSTARS model technical sheet, containing the technical characteristics of the substitute engine, while the completion of the sheet item concerning the original engine will be omitted.

If, on the other hand, the engine substitution is carried out on an already homologated model, the VM variant will be added to the model sheet.

As a general rule, during the positioning of the substitute engine, the engine axis must be kept in a horizontal position and its direction (longitudinal/transversal) must remain the same as original. Any exceptions to this rule must be expressly authorized by the **Permanent Bureau**.

### ARTICLE 7: TRASMISSION

#### 7.1. Gearbox

With reference to the provisions of art. 1.20, *H gearbox and sequential gearbox*, the use of automatic or semiautomatic gearboxes is not permitted.

Only the gearbox and ratios specified in the SUPERSTARS Technical Sheet may be used on the vehicle.

On new homologated car models, where a mechanical gearbox is not available as standard or optional equipment, but the model itself belongs to a construction group with various makes, a mechanical "H" gearbox, or a mechanical sequential gearbox (see art. 7.1.1 *Mechanical sequential gearbox*) of a model of another group make may be installed, provided the technical specifications of the replacement gearbox are compatible.

A car model may also be fitted with the mechanical "H" gearbox of a car belonging to a different group, provided that it is homologated by the Manufacturer for road use.

The mechanical "H" gearbox and mechanical sequential gearbox mounts are free, and all fixing points to the bodywork can be reinforced locally.

##### 7.1.1. Mechanical sequential gearbox

For each STS-homologated car model, the Permanent Bureau may be requested to

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add the technical specifications, drawings and/or images of a mechanical sequential gearbox to the SUPERSTARS Technical Sheet. For each STS-homologated car model, the first requesting party may indicate a single series of a maximum of 6 gear ratios (intended as decimal numbers resulting from the Z2/Z1 ratio, precise to **first** decimal points), excluding reverse gear, which will be added to the SUPERSTARS Technical Sheet in the *Additional Information* section.

A single final drive may be associated with the mechanical sequential gearbox, chosen from the **three** that are associable with the traditional mechanical gearbox (see art 7.3 *Final drives*).

In case a car is equipped with a mechanical sequential gearbox, it will be assigned an additional technical weight of +30 kg, to be special ballast and marked with the letter C (see articles 1.8, Ballasts and 4, BALLASTS).

During pre-race technical scrutineering, Competitors are required to declare whether they are using mechanical sequential gearboxes or not. This information will be recorded on the technical passport; failure to declare this will be deemed as non-compliance and will be communicated to the Board of Sports Commissioners, which has the authority to apply penalties including exclusion from the race.

#### 7.2. Clutch

The Clutch is free, including the type of operation.

Carbon-disc clutches are prohibited.

The Clutch may be operated by the Driver's foot only, via a mechanical or hydraulic system.

#### 7.3. Final drive

As well as use of the original final drive ratio, as specified by the Manufacturer of the car model or contemplated for the replacement "H" gearbox/differential group, as contemplated by art 7.1 *Gearbox*, a request may be made to the **Permanent Bureau**, as an option for each car model, for a maximum of two optional final drive ratio, whose specifications will be added in the

*Additional Information* section of the SUPERSTARS Technical Sheet.

The three drive pairs permitted for a car model may be associated with the mechanical "H" gearbox, while only one may be associated, on the SUPERSTARS Technical Sheet, with the mechanical sequential gearbox.

All final drives, original and optional, shall be valid for each car model, and not for each single car or Competitor.

The use of approved bevel gears is subject to the communication, via the appropriate bulletin, and/or to the publication of the SUPERSTARS technical data sheet of the granting of the approval by the Permanent Bureau and of the related date of application.

#### 7.4. Differential

A mechanical self-locking differential may be installed on a car, provided that it fits in the original differential housing (whether front or rear).

"*Mechanical self-locking differential*" means any system having exclusively mechanic operation, i.e. without the aid of a hydraulic or electric control system.

For cars with four-wheel drive, it is prohibited to use any mechanical or electronic system in the main (central) differential that is capable of actively modifying drive allocation between the front and rear axles while the car is in motion, even if it is part of the standard equipment.

The calibration and the drive allocation of the central differential is fixed and entered in the SUPERSTARS technical sheet.

Reinforcing the differential fixing points at the chassis locally is permitted.

In case the **Permanent Bureau** issues a Technical Kit that contemplates replacement of the differential(s), photos and technical specifications of the replacement differentials must be added to the SUPERSTARS technical sheet. In case one or more Technical Kits for differentials are issued for the same car model, the relative information (technical specifications, photos and/or drawings) must be added to the *Additional Information* section of the SUPERSTARS Technical Sheet.

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**7.5. Transmission shafts and axle shafts**

The original transmission shafts between gearbox and differentials must be retained. If the original gearbox and/or differential are replaced, increasing or reducing the length of the shaft and/or serial shafts in order to adjust them to the new fittings, or replacing the latter with new ones is permitted, providing the same inner and outer diameters and material are retained, and only the axial length is modified. The series axle shafts must be retained.

**7.6. Transmission control and sensors**

All traction control systems are prohibited. All traction control sensors on wheels, crankshaft and differential shall be removed. A sensor may be used on just one front wheel for the sole purpose of monitoring the car's speed.

**7.7. Miscellaneous**

It is permitted to install an oil cooling system for gearbox and differential, combined with an oil recirculation system. The oil circulation pumps for both gearbox and differential can be of the mechanical or electric type. The oil cooler(s) shall be inside the car perimeter but may not be in its cockpit. The gear shift linkage is free. Modifications to the bodywork for the fitting of a new gear shift linkage shall only be permitted if they are not in conflict with other provisions in these Regulations. Gear shifting shall be mechanical. The gear shift lever is free. Transmission supports are free. Reverse gear must be retained and functional on both original and replacement gearboxes. If the original gearbox and/or the differential/s are replaced, it is possible to use small wires or transverse bars to mount them at the original fitting points at the chassis.

**ARTICLE 8: STEERING**

Original power steering may be replaced by an electronically driven power steering system.

It is permitted to mount a power steering oil cooling system, including a radiator and the relevant pipes.

The steering-wheel, steering-column and relevant mounts, down to the steering-box, are free.

It is permitted to add a spacer between steering wheel and steering column.

It is permitted to block the steering-column on the transverse front bar of the main cage, by means of push bars or other system, providing the latter does not hinder the same steering-column from collapsing.

The original connection between steering column and steering linkage must be retained (see also Art. 9.1, *revolving parts*).

The original steering lock control and steering-wheel adjustment system must be removed.

**ARTICLE 9: SUSPENSION**

**9.1. Revolving parts**

The location of the suspension anchorage points to the hub carriers and the bodywork (or chassis) must remain unchanged.

Silent blocks may be replaced with uniball joints, providing the static and/or dynamic resistance of the parts to which they are applied is not affected in any way.

The original arms supporting the silent blocks may be cut or modified in order to accommodate a new uniball seat.

The use of non-original arms, even if the geometry and/or material are the same, is not permitted.

It is permitted to insert a steel washer between the silent block and the head of the bolts used for fixing the mountings to the chassis; alternatively, steel blocks may be used.

The toe adjusters may be replaced by uniball joints following the provisions specified above for silent blocks. This does **NOT** apply for the steering adjusters.

In the case of the McPherson suspension type, it is permitted to mount upper support plates for shock absorber misalignment and/or the use of eccentric bushes, in order to achieve the maximum permitted camber and caster values.

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If another type of suspension (e.g. double wishbone-multilink) is used, misalignment of the rotation axes of suspension struts is permitted. The permitted camber and caster values are as follows:

- Maximum negative camber permitted, front and rear: **4° 30'** per wheel, (four degrees and thirty minutes, sexagesimal) or **4.50°** (sexadecimal,  $0.50^\circ = 30'/60$ ).
- Maximum caster deviation from original value:  $\pm 2^\circ$

Toe adjustment is free.

If the toe adjuster arms are clearly weak, they may be either reinforced or replaced; in this case the **Permanent Bureau**, after a technical assessment, will issue a specific Technical Kit, described in the *Additional information* section of the SUPERSTARS Technical Sheet.

#### 9.2. Reinforcements

Reinforcing suspension parts by addition of material is **NOT** permitted except for the uniball joints mounting area.

**LOCAL** reinforcing of the suspensions anchorage points to the chassis is permitted.

#### 9.3. Shock Absorbers

Shock absorbers are free provided their number, type (telescopic, arm, etc.), operating principle (hydraulic, friction, mixed, etc.) and attachment points are retained as original, except for camber and caster adjustments (see art. 9.1, *Revolving parts*).

Adjustment of springs and shock absorbers from the cockpit is prohibited.

Gas shock absorbers will be considered as hydraulic shock absorbers. Shock absorber tanks may be fixed to the chassis, provided that this does not require modifications that are not permitted by these Regulations. If they are fixed inside the cockpit, they must be suitably protected.

#### 9.4. Coil springs

Size of springs, number of coils and type of spring (e.g. linear, progressive, etc.) are free. However only ferrous materials may be used.

A coil spring may be replaced by two or more springs of the same type, concentric or in series, provided they can be fitted without any

modifications other than those specified in Art 9.5 (*Helical spring encasing*).

Size, shape and material of spring seats are free. The spring seats may be adjustable.

#### 9.5. Coil spring housing

Should it not be already provided for on the original model, it is permitted to change the positioning of the springs and to mount them co-axially around the shock-absorber.

#### 9.6. Antiroll bars

Anti-roll bars and their mounts are free, provided that the original anchorage points on the chassis remain unchanged.

Only mechanically operated anti-roll bar systems are permitted; electronic/hydraulic pitch and roll control must be rendered inoperative even when provided as standard.

Adjustment of the bar rigidity from inside the cockpit is prohibited.

Any connections between dampers are prohibited.

Any connections between front and rear anti-roll bars are prohibited.

Titanium alloy anti-roll bars are prohibited.

### **ARTICLE 10: WHEELS AND TYRES**

#### 10.1. Wheel and complete wheel

##### 10.1.1. Wheel

Maximum wheel (rim) dimensions are 9.5 x 18". Wheels must weigh no less than 10 kg (-3%).

Wheel construction is free, however they must be made from

- a) casted or forged Aluminium alloy;
- b) Magnesium casted alloy. Forged magnesium wheels are prohibited, even if contemplated on the original model.

The wheel fixing bolts must be replaced with stud bolts.

When inflated to the pressure of 2 bar, the complete wheel must fit inside a profile 650 mm in diameter.

##### 10.1.2. Tyres

Tyres shall be supplied by a Manufacturer to be designated by the STC.

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The type and number of tyres for each event is set out in the Sporting Regulations.

**TABLE B** specifies the constructor's fundamental parameters for use of PIRELLI Slick P0 265/645-18 tyres.

PIRELLI provides no warranty for the use of these tyres in the event of use at pressures other than those stated.

As specified in the SUPERSTARS 2008 Sporting Regulations, the assignment of the tyres to each Driver will be done by lot.

#### 10.2. Maximum car track

The maximum front and rear track values are established by the **Permanent Bureau** and stated in the SUPERSTARS Technical Sheet.

The maximum track will be measured in accordance with the CSAI Yearbook, NS.9, Art. 12 (in millimetres, horizontal to ground level, steering wheels in straight position, with the car without fuel and with no-one on board).

Spacers to increase car track may also be inserted behind the wheel hub bearings.

#### 10.3. Tyre warmers

The use of tyre warmers and/or of any other system for increasing the tyres' temperature in pitlanes and on the starting grid is prohibited.

The use of any chemical method for increasing the temperature and/or performance of tyres is prohibited.

#### **ARTICLE 11: GROUND CLEARANCE**

No part of the car, except for rims or tyres, may touch the ground when the tyres on one side of the car are flat.

To test this, the pressure valves of the tyres on the same side of the car shall be removed. This test must be carried out on a flat surface.

#### **ARTICLE 12: BRAKES**

The original braking system must be replaced by one of the two **Permanent Bureau**-approved kits, **STS-BRAKE K1** or **STS-BRAKE K2**, whose characteristics are detailed in **TABLE C**.

The two Kits may be used only in their entirety; parts or subassemblies of one may not be used in the other.

Cars using the STS-BRAKE K2 kit will be penalized with an additional technical weight of +10 kg, provided their car weight is less than 1400 kg. The additional weight is to be entered as special ballast and marked with the letter F (see articles 1.8, Ballasts and 4, BALLASTS).

The STS-BRAKE K2 kit is allowed only on 2-wheel drive models.

During pre-race technical scrutineering, Contestants must declare which of the two brake kits they intend to use, and this information will be annotated on the technical passport; failure to declare this will be deemed as non-compliance and will be communicated to the Board of Sports Commissioners, which has the authority to apply penalties including exclusion from the race.

#### 12.1. Brake control systems

Any ABS devices are prohibited (see also art. 6.4.5, *Traction and braking control*).

#### 12.2. Braking system characteristics

The braking system and accessory components must be compliant with the following requirements:

- Brake circuits and their locations are free provided they comply with the requirements made in Article 253.3.1 of FIA's Appendix J.
- Brake circuits may be replaced by aircraft grade circuits. The connection of the twin braking circuit is free.
- The original hand brake may be removed and/or replaced by a manual, driver-operated hydraulic system.
- If the original car is originally equipped with servo brakes, the latter may be disconnected or removed.
- Balancing the braking load between the front and rear axles is permitted on condition that this adjustment is manual and may be effected solely by the driver. The adjustment system is free provided that it is mechanically operated. Any other adjustment systems are prohibited including inertial systems.

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- Brake pads are free as for both their material and attachments (they may be either glued or riveted).
- A single cooling pipe is allowed on each front brake disc, having a cross-section equivalent to a maximum diameter of  $\Phi 100$  mm. Cooling pipes must be fitted inside the front bumper at a height not exceeding 500 mm from ground (see art. 13, *BODYWORK*).
- The type of connection of the air pipes to the openings is free.
- The disc protection plates may be removed, or else their shape may be modified.
- Disc bells and racing caliper adjustment plates for STS kits are free.
- Pedals are free, as well as is the brake pump.
- Cooling of rear brake discs is permitted by means of pipes with maximum diameter  $\Phi 100$  mm or equivalent section, provided the latter do not protrude from the perimeter of the car.

#### **ARTICLE 13: BODYWORK**

All parts of the bodywork, including any part having an aerodynamic influence, must be rigidly secured to the entirely sprung part of the car (chassis/coachwork) and must have no degree of freedom. They must be fixed securely and remain immobile in relation to this part while the car is in motion.

At least two safety hooks must be fitted to securely fix the engine/bonnet/boot lids (see also Art. 5.1, *Additional fasteners*). It must be possible to remove or open the bonnet and boot lids without using any tools.

#### **13.1. Reinforcement**

Strengthening the sprung part of the chassis is permitted provided the material used follows the original shape and is in direct contact with it.

Reinforcement using composite materials is prohibited.

The paint of the body may be removed completely and all the soundproofing materials may also be removed.

#### **13.2. Reinforcement bars**

Reinforcement bars and/or specific frames may be fitted to the body (or chassis) attachments of the suspensions on the same axle, from one side to the other of the car longitudinal axis.

The distance between any suspension attachment point and the bar anchorage point may not exceed 100 mm, except in case of a crossbar homologated with safety rollcage, or when an upper bar is secured to a Mac Pherson (or similar) suspension.

In this case, the maximum distance between the anchorage point of the bar and the upper joint shall be 150 mm, as per drawings 255-4 and 255-2 of FIA's Appendix J.

Apart for the above points, the bar must have no anchorage points to either the body or mechanical parts.

The bars must be removable and bolted in place. A removable front reinforcement bar and/or a frame, anchored (bolted or welded) in four points, as shown in **ANNEX 3**, may be installed.

#### **13.3. Changes to Decorative and Aerodynamic Components**

The following modifications are compulsory:

##### **13.3.1. Bodywork width**

As a result of the modification of maximum car track (Art. 10.2, *Maximum car track*) the width of the front and rear mudguards, at the wheel axis, must be increased to the extent of covering at least the upper halves of the wheels when measured vertically over the most protruding point of the mudguard.

##### **13.3.2. Front bumper**

Observing the car in racing conditions, the shape and material of the part of the front bumper between the ground and a vertical height of 500 mm are free.

This zone may contain the water, oil, intercooler and power steering radiator cooling air intakes, and must mandatorily include the air intakes for the airbox (unless otherwise specified in art. 6.8, *Intake system*).

The part of the bumper above the 500 mm height from the ground must retain its original shape, except for the zone joining the modified mudguard, as according to art. 13.3.3 (*Front and rear mudguards*), with

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which it must be strung together. The material is free of any restrictions

The height of 500 mm shall be measured vertically, with the car in racing conditions, standing on a smooth horizontal surface and with the tyres inflated to a pressure of 2.0 bar.

A bottom aerodynamic device keeping a constant max overhang of 30 mm from the outermost top profile of the original bumper and/or of the body (above the height of 500 mm) may be installed at the base of the bumper (see **ANNEX 2**).

The application of aerodynamic devices, other than those mentioned above, to any part of the front bumper is prohibited.

The original radiator grille, with the logo of the car Manufacturer, must be retained, even if all or part of it is within the free zone described above.

For all Championship Events, Competitors are required to make an original front bumper available to the CSAI Scrutineers and the STS Technical Director, to allow appropriate dimensional checks.

The horizontal bottom surface formed by the bumper's bottom profile must be closed by a shield as indicated in **ANNEX 2**.

Apart from the surface described above, installation of a flat bottom is not permitted (see art. 13.3.7, *Underbody*).

#### 13.3.3. Front and Rear Mudguards

Front and rear mudguards may be modified as per 13.3.1 (*Bodywork width*). The modifications made must not give rise to any cutting edges.

It is permitted to create linkages between the said borders and the respective doors.

It is permitted to replace the front bumpers with other ones, made of light material and with a different shape, for the sole purpose of covering the front wheels, as provided for in articles 13.3.1 *Bodywork width*, and 13.3.2 *Front bumper*.

It is permitted to remove the innerwheel arches, both front and rear, or apply air ducts to them for brake cooling purposes.

#### 13.3.4. Doorsills

**Only for all model cars, homologated from 2008:** The shape of the doorsills have

to remain the same as the original, the material is free.

Along an horizontal plane, starting from the front and the rear borders of the original doorsills up to an overall maximum length of 250 mm, it is allowed to modify the shape strictly for the purpose of being strung together with the front and rear bumpers.

It is allowed to apply air ducts on the whole surface of the doorsills.

Any modification cannot have any aerodynamic effect and any part of the doorsills can be outside the external border of the car; the external rear mirrors are not considered as border of the car.

**For all models, whose have been homologated before year 2008:** shape and materiale of doorsills have to be retained as per the ones used at the end of the 2007 Championship; for any type of modification, Competitors and/or Tuners must submit an approval request to the Permanent Bureau, complemented by adequate technical documentation (photos, drawings, dimensions, etc.).

The provisions of art. 11, *GROUND CLEARANCE* must be abided by.

#### 13.3.5. Rear wing

Just one model of single element rear wing is homologated and permitted for the SUPERSTARS Championship. Its profile is illustrated in **ANNEX 1**.

Installation of this wing is compulsory for all Championship Events. An exclusive Supplier has been selected for this wing (see list of mandatory Suppliers), to whom purchase orders must be submitted directly.

The wing will be supplied without side panels. These will have to be constructed directly by Competitors and fitted to suit the respective car models.

#### 13.3.6. Rear Wing Positioning

The rear wing may be installed either on the bodywork or directly on the rear compartment lid, exclusively by means of the two side panels (central supports applied to the rear compartment lid are not permitted), in the manner described below.

**Longitudinal Positioning:** with reference to the car longitudinal axis seen from above,

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the rear wing including the side panels must be positioned in such a way that the only part not protruding from the external contour of the bodywork is at the intersection between the car longitudinal axis and the rearmost point of the wing itself. For the purpose of positioning the rear wing, the rear bumper is considered as part of the bodywork.

**Vertical Positioning:** with reference to the car longitudinal axis in a side view, the rear wing must be positioned at a maximum height from the ground of 1,250 mm. For this purpose, only the intersection between the car longitudinal axis and the topmost point of the wing is considered.

Side panels must NOT be taken into account when measuring maximum height.

Maximum height of the rear wing from the ground must be measured with the car on a flat, smooth surface and with all the tyres inflated at 2.0 bar pressure.

#### **13.3.7. Underbody**

The original protective panels must be removed. However a flat bottom may not be installed except in the circumstances set forth in art. 13.3.2, *Front bumper*.

#### **13.4. Windscreen wiper**

Motor, position, blades, supports and mechanisms are free. However there must be at least one windscreen wiper provided for the windscreen.

The capacity of the washer tank may be increased.

The headlamp wipers may be removed.

The seal and/or decorative cover concealing the windscreen wiper mechanism and motor may be removed.

#### **13.5. Doors**

For cars using a **technical** ballast to achieve technical weight (see art. 4, *Ballast*), the doors must be retained as original.

It is permitted to remove soundproofing materials as well as trimmings and to remove or replace all the internal parts.

It is also permitted to trim internal sheet plates up to the external contour (except for side parts).

It is permitted to remove the inner door panels, along with the anti-intrusion bars, if contemplated originally, upon the following conditions:

- a) A composite material side protection panel is installed. This panel's minimum configuration is illustrated in drawing 255-14 of FIA Appendix J.
- b) The inside of the door is filled with energy-absorbing material that must extend vertically from the base of the door for a minimum height of 350 mm.

If the door's original structure is not modified (removal, including partial, of tubes and reinforcements), the door panel may consist of either a metal sheet with a minimum thickness of 0.5 mm, or a carbon fibre panel with a minimum thickness of 1 mm, or a sheet in another solid, non-flammable material with a minimum thickness of 2 mm).

If the hindmost point of the driver's shoulders is situated behind the door pillar, the rules listed above also apply to the rear driver's side door or (in case of 3-door cars) to the inner panel. The body compartment comprised between the external sheet plates and the inner panel must be filled as per point b) of this article.

Only for cars not using any ballast to achieve technical weight (see art. 4, *Ballast*), is it permitted to replace the original with other doors in carbon fibre/kevlar, upon the following conditions:

- c) That the outer shape is identical to the original;
- d) That all specification about items a) and b) of this article, are kept.
- e) That the shape of the doors' outer and inner sheet plates has not been modified;
- f) A composite material side protection panel is mandatory for the door on the driver's side. It must be built according to drawing 255-14 of FIA Appendix J and must be fastened to the safety cage or to the body and its height must extend from the base of the door to the maximum height of the door protection cross (if, in the conditions contemplated by art 5.4, *Rollcage*, the driver's side reinforcement cross is not present, a cross must anyhow be applied). If the hindmost point of the driver's shoulders is situated behind the door pillar,

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the side protection panel must also mandatorily extend to that point of the rear door, and must be fastened to the safety cage or to the body.

It will not be permitted to use ballast in order to achieve the technical weight even after replacing the doors technical ballast is not permitted for the purpose of reaching the technical weight (see art.4, BALLASTS).

### **13.6. Front and rear compartment lids**

The front lid may be replaced using a carbon/kevlar model having identical external contour.

If the original front lid is retained, it must be mandatorily stripped of the soundproofing and insulating material.

Solely for the purpose of a more effective discharge of hot air from the engine compartment, the front lid may be fitted with one or more air outlets (the air must be discharged in the direction of the windscreen).

Subject to art. 5.1, *Additional fasteners*, the original hinges and lock systems may be removed from both front and rear lids, whether original or carbon/kevlar type.

Only on cars using no ballast to achieve the technical weight (see art. 4, *Ballast*), is it permitted to replace the rear compartment lid using another carbon/kevlar lid having identical external contour.

If the original hinges are removed from the rear lid (boot cover), the latter must be suitably secured in place when the rear wing (Art. 13.3.6, *Wing positioning*) is mounted directly on the lid.

The safety of the rear lid anchorage may be assessed by the CSAI Scrutineers and STC staff at any moment during the Event and at their absolute discretion.

### **13.7. Windows**

The door windows may be replaced with compact polycarbonate (lexan) windows having a minimum thickness of 3 mm, and they may be locked in position. If the main lexan window on the driver's side no longer opens, the window must incorporate a section with a sliding horizontal opening.

The rear window may be replaced with a compact polycarbonate (lexan) window with a minimum thickness of 4 mm.

The use of coloured glass and/or safety films is permitted for the side and rear windows only. In this case, a person 5 metres away must be able to see the driver and the inside of the cockpit.

The use of smoke grey or silver films is not permitted.

### **13.8. Cockpit**

It is mandatory to remove all insulating or soundproofing materials, the original upholstery and linings as well as the original safety belts and carpets, and all the relative mounting plates.

The original air conditioning system may be removed.

The following are permitted:

- the horn is free;
- the seat supports may be modified in compliance with art. 5.1, *Additional fasteners*;
- the steering wheel is free, however it must be closed. The alarm locking system must be rendered inoperative;
- A quick coupling system is recommended for the steering wheel.

### **13.9. Cockpit Ventilation**

In order to let air into the cockpit, the following options are available:

- Use the original outlets
- Make an air intake duct in the outside rearview mirrors (with a maximum surface area of 25 cm<sup>2</sup> per rearview mirror)
- Apply an air duct on the car roof.

Only if the original rear windshield is replaced by a similar, polycarbonate one, holes may be made in it for the sole purpose of creating satisfactory air circulation in the cockpit.

Making holes in the windshield and in the side windows is prohibited, apart from the provisions applicable to the driver's side window.

### **13.10. Console**

The original dashboard and centre console may be removed.

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Instruments are free. However, their installation may not cause any risks.

Original switches may be replaced with switches having a different design and may be fitted in different locations on the dashboard or centre console. Any opening resulting from replacements must be closed. The positions of the direction indicator and the windscreen wiper controls are free.

**13.11. Luggage Compartment and Engine Compartment**

Soundproofing materials and trimmings in the luggage compartment must be removed.

The original seals fitted to render the engine compartment watertight may be removed, except for the seal located on the firewall that separates, when the lid is closed, the engine compartment from the cockpit and the front volume connected to it.

Airtight separation must be provided between the cockpit and the engine and luggage compartments, using the methods described in Art. 15.1 *Fuel tank*, for fuel tank insulation.

**13.12. Heating and air conditioning system**

The original heating and air conditioning systems may be removed, provided that adequate windscreen defrosting is ensured (see also art. 13.9, *Cockpit ventilation*).

**13.13. Pneumatic Jacks**

It is permitted to install pneumatic jacks for raising the car.

The pneumatic circuit may be supplied only by an external air source; a tank installed in the car is not permitted.

**ARTICLE 14: ELECTRICAL SYSTEM**

**14.1. Cables and looms**

Apart from the provisions of art.6.4.1 *Electronic Control Unit*, looms are free.

**14.2. Battery**

Make and capacity of the battery(ies) are free. However, the dry type is mandatory.

At any time, it must be possible to start the engine using the energy of the battery carried on board the vehicle.

No more than 2 (two) batteries may be carried on board.

The battery may be positioned solely in the rear half of the car. It must be fitted to the bodywork by means of a mount and two metal clamps with an insulating cover, fixed to the floor by bolts and nuts, as specified in Appendix J FIA, Art. 255.5.8.3 and in compliance with drawings 255-10 and 255-11.

The battery must be protected electrically by means of a cover that covers it completely.

**14.3. Voltage generator**

The voltage generator is free.

**14.4. Lighting**

A lighting system in good working order is mandatory.

Particular care must be taken to ensure that the rear brake lights are functioning properly.

Non-original headlights may be used, although they must fit perfectly in the original housings.

If the original headlights are retained, or replaced with glass headlights, a transparent safety film must be applied to prevent glass fragments from scattering over the track in the event of collision.

The upper and lower headlight edges must be covered with adhesive tape.

The front and rear fog lights may be removed.

A reverse light may be mounted, provided that it can only be switched on when the reverse gear is engaged and the relevant regulations in force are complied with.

**ARTICLE 15: FUEL SUPPLY SYSTEM**

**15.1. Fuel Tank**

The original fuel tank must be replaced with an FT3 1999, FT3.5 or FT5 safety fuel tank (as per FIA's Appendix J, Article 253.14 and relevant FIA STANDARDS), to be installed either in the same location or in the luggage compartment.

If the tank or any part of the fuel supply circuit is located in the luggage compartment, the

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latter must be separated from the cockpit and protected by a leak-proof fire protection system. The fire protection must be provided by two aluminium panels, the first fitted in the place of the original rear seat back and the second on top of the rear shelf. After the protective panels have been mounted, all the holes in the original metal parts must be sealed in an airtight manner with filler or flame-retardant tape.

It must not be possible to see any light filtering into the cockpit through the protective panels on a brief visual inspection.

The maximum capacity for the FT3 1999, FT3.5 or FT5 tank is 120 litres.

The use of safety foam in FT3 1999, FT3.5 or FT5 tanks is recommended, as specified in FIA's Appendix J, Art. 253.14.4.

Safety fuel tanks have a specified lifetime of 5 years; on expiry, the tank must be replaced or overhauled.

However the tank is mounted and/or protected, the manufacturer's dataplate specifying its characteristics and expiry date must be visible.

If a FT3 1999, FT3.5 or FT5 safety tank is used, fuel pipes must be replaced with aviation grade pipes; the path of these pipes is free, although installation must be as per Article 15.2 *Fuel lines*.

For fuelling purposes, it is permitted to use an external fuel filler fixed to the bodywork, as per FIA's Appendix J, Art. 253.14.5.

#### 15.2. Fuel Lines

Fuel lines are free provided that they comply with FIA's Appendix J, Art. 253.3 and with special reference to Art. 253.3.2 and the relative drawings 253-59 and 253-60 (connections through the protective panels).

As prescribed by FIA's Appendix J, Art. 253.3, fuel lines passing through the cockpit must not have any connections.

For the purpose of technical scrutineering, the fuel intake connection shall be installed in the engine compartment or in the luggage compartment, never in the cockpit.

#### 15.3. Fuel Pumps

They are free in terms of type and number and must be separated from the cockpit by means of a leak-proof fire protection. Also fuel

pumps must comply with FIA's Appendix J, Article 253.3.

#### **ARTICLE 16: FUEL**

The only permitted fuel is the fuel supplied in the circuit by SUPERSTARS<sup>®</sup> official supplier (see the Sporting Regulations).

##### **16.1. Fuel checks**

Any fuel samples taken on the starting grid will not entitle Competitors to a subsequent top-up; consequently, the provisions of S.R. 9 art. 6.6 of the Annuario CSAI shall not apply in such circumstances.

The employed fuel's compliance may also be checked on the racetrack, with appropriate equipment issued to Technical Officials, for comparison with a reference sample provided by the fuel supplier. The check may take place at any time during the event.

Independently from the checks described above, Sporting Officials may order laboratory analyses through the procedures contemplated by S.R. 9.

#### **ARTICLE 17: ICE**

Carrying and/or using natural or chemical ice whether inside or outside the car is prohibited throughout the event.

#### **ARTICLE 18: TELEMETRY**

It is permitted to use an engine and car data acquisition and telemetry system, provided that it is fully separate from the engine and car cabling and management system. Consequently, the engine must be fully operative even after removing the telemetry system (see also art. 6.6, *Data acquisition*).

Telemetry data may only be transmitted via a cable that is directly connected to the car; it is prohibited to transmit data from the car in motion in any way except for radio communication between the driver and the pit.

It is permitted to use pulse generators (time transponder) to provide time information, provided that they are separate parts, not related in any way to engine control.

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**ARTICLE 19: ON BOARD CAMERA**

It is permitted to install an on-board camera supplied by the STS Srl.

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**TABLES**

**TABLE A:**  
**STS HOMOLOGATED CARS AND TECHNICAL WEIGHTS**

CAR MODEL	INLET SYSTEM	TRACTION	VEHICLE WEIGHT [kg] <sup>(1)</sup>	MODEL YEAR	STS HOMOLOGATION/ YEAR
AUDI RS4	ASPIRATED	4WD	1480	FROM 2005	STS-0001 / 06
BMW M5	ASPIRATED	RWD	1350	UNTIL 2004	STS-0002 / 04
JAGUAR S TYPE R	VOL. COMPR.	RWD	1375	UNTIL 2005	STS-0003 / 04
BMW 550i	ASPIRATED	RWD	1310	FROM 2006	STS-0004 / 06
CADILLAC CTS-V	ASPIRATED	RWD	1375	FROM 2007	STS-0005 / 08
BMW M3 4 doors	ASPIRATED	RWD	1425	FROM 2008	STS-0006 / 08
CHRYSLER C-300 SRT8	ASPIRATED	RWD	1510	FROM 2007	STS-0007 / 08
MERCEDES C-63 AMG	ASPIRATED	RWD	1495	FROM 2008	STS-0008 / 08
CHEVROLET CR8	ASPIRATED	RWD	1375	FROM 2008	STS-0009 / 08

**NOTES:**

(1) Car Weight (Cw) = Technical Weight (Tw) + Reference Weight (RefW) = Technical Weight + 85 kg

Technical Weight: see homologation technical sheet, art. 202

**TABLE B:**  
**RECOMMENDED PARAMETERS FOR USE OF PIRELLI P0 265/645-18 TYRES**

<b>OVERALL WEIGHT OF THE VEHICLE UP TO 1370 kg</b>	
Cold tyre pressure	1.8 [bar]
Operation pressure (hot tyre)	2.6 [bar]
<b>OVERALL WEIGHT OF THE VEHICLE GREATER THAN 1370 kg</b>	
Cold tyre pressure	2.1 [bar]
Operation pressure (hot tyre)	2.9 [bar]

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**TABLE C:**

**COMPULSORY BRAKING SYSTEM KIT: TECHNICAL SHEET<sup>(1)</sup>**  
**(SUPPLIED BY TECHNAUTO, Italy)**

<b>STS-BRAKE K1</b>	
<b>PART DESCRIPTION</b>	<b>SUPPLIER CODE</b>
Front caliper AP 6 pistons	CP5060
Front brake disc 356x32 mm (floating)	CP5772-1128/29
Piston for front caliper Al alloy $\Phi 27.0$ mm (2x) / $\Phi 31.8$ (2x) / $\Phi 38.1$ (2x)	
Piston for front caliper Steel alloy (option) $\Phi 27.0$ mm (2x) / $\Phi 31.8$ (2x) / $\Phi 38.1$ (2x)	
Rear caliper AP 4 pistons	CP5040
Rear brake disc 280 mm x 25,4 mm (floating)	CP3580-814/15
Piston for rear caliper Al alloy $\Phi 38.1$ mm (4x)	
Piston for front caliper Steel alloy (option) $\Phi 38.1$ mm (4x)	

<b>STS-BRAKE K2</b>	
<b>PART DESCRIPTION</b>	<b>SUPPLIER CODE</b>
Front caliper AP 6 pistons	CP5095-ST5
Front brake disc 355.6x35.56 mm	CP5772-ST5 (1136/1137)
Piston for front caliper Steel alloy $\Phi 27.0$ mm (2x) / $\Phi 31.8$ (2x) / $\Phi 38.1$ (2x)	
Rear caliper AP 4 pistons	CP3799-ST5
Rear brake disc 330 mm x 32 mm	CP3870-ST5 (1130-1)
Piston for rear caliper Al alloy $\Phi 34.9$ mm (2x) / $\Phi 28.6$ mm (2x)	
Piston for front caliper Steel alloy (option) $\Phi 34.9$ mm (2x) / $\Phi 28.6$ mm (2x)	

**NOTES:**

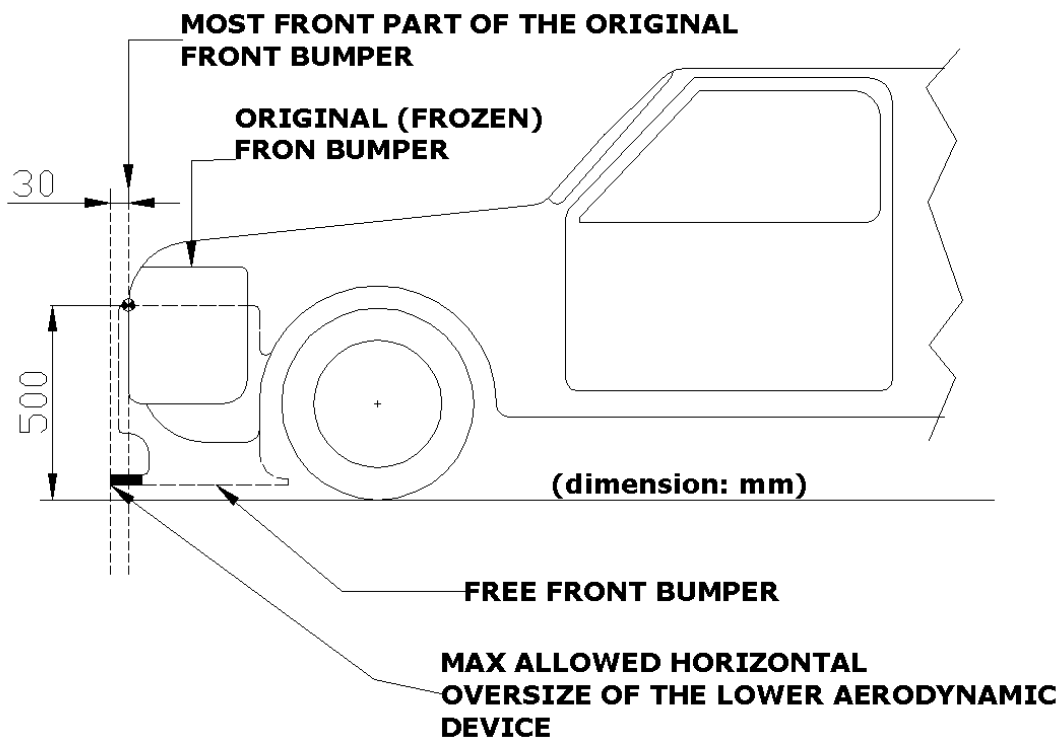
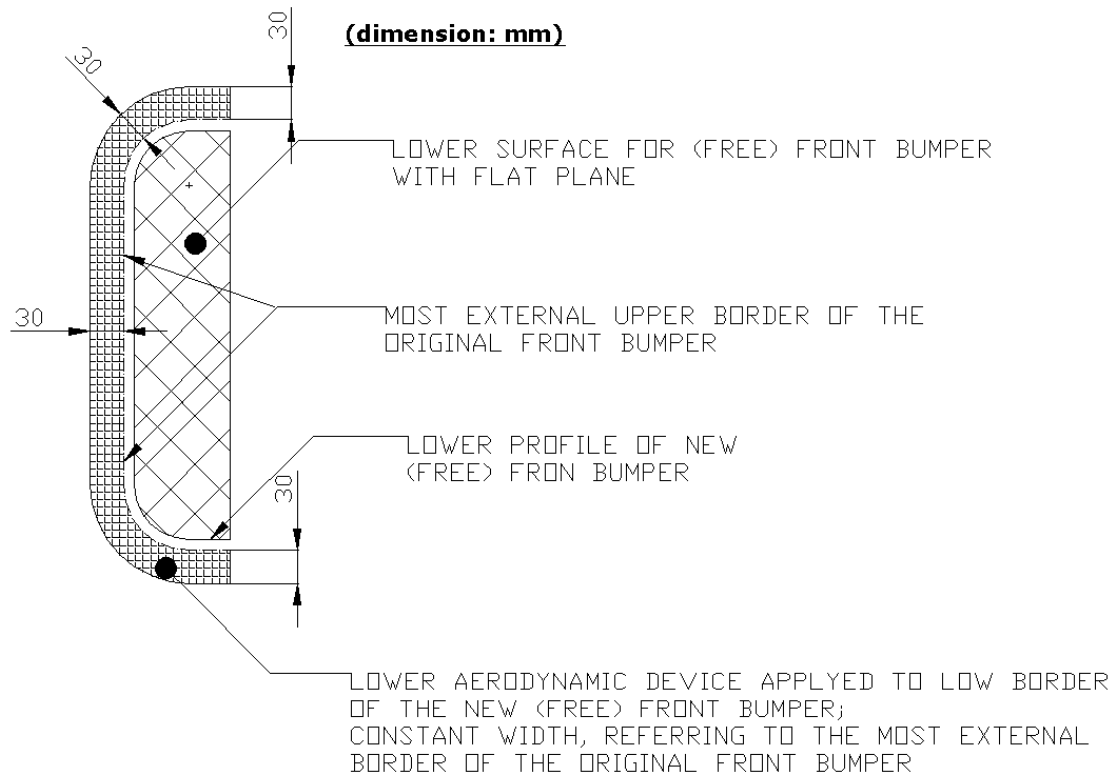
- (1) The two KITS may be used only in their entirety; parts or subassemblies of one may not be used in the other.
- (2) The **STS-BRAKE K2 KIT** is allowed only on 2-wheel drive models.
- (3) Cars using the **STS-BRAKE K2 KIT** will be penalized with an additional technical weight of +10 kg, provided that its technical weight is less than 1400 kg.



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**ANNEX 2:**

**LAYOUT OF FREE PART OF FRONT BUMPER BOTTOM SURFACE AND BOTTOM AERODYNAMIC DEVICE**



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## **ANNEX 3:** **EXAMPLE OF REINFORCEMENT BARS**



## **LIST SUMMARY OF MODEL CAR OMOLOGATION TECHNICAL SHEETS**

the list of SUPERSTARS homologation sheets follows; they have to be considered as attach of the present Regulation and part of it.

ANNEX STS-0001:	AUDI RS4 MODEL TECHNICAL SHEET
ANNEX STS-0002:	BMW M5 E39 MODEL TECHNICAL SHEET
ANNEX STS-0003:	JAGUAR S TYPE R MODEL TECHNICAL SHEET
ANNEX STS-0004:	BMW 550i E60 MODEL TECHNICAL SHEET
ANNEX STS-0005:	CADILLAC CTS-V MODEL TECHNICAL SHEET
ANNEX STS-0006:	BMW M3 4 DOORS MODEL TECHNICAL SHEET
ANNEX STS-0007:	CHRYSLER 300-C SRT8 MODEL TECHNICAL SHEET
ANNEX STS-0008:	MERCEDES C-63 AMG MODEL TECHNICAL SHEET
ANNEX STS-0009:	CHEVROLET LUMINA SS MODEL TECHNICAL SHEET

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**LIST OF COMPULSORY SUPPLIERS**

**COMPULSORY SUPPLIERS**

**1. CM Composit Srl: 2006 VERSION REAR WING**

via della Tecnica, 597  
I-41058, Vignola (Mo)  
Reference contact: Mr. Degliangeli  
T. +39-059-763900

**2. TECNAUTO Snc: COMPULSORY BRAKING KIT**

via. G. Agnesi, 3  
I-20135 Milano  
Reference contact: Mr. Oscar Nicola  
T: +39-02-58309596  
F: +39-02-58309641  
e-mail: [oscar@tecnautosrl.com](mailto:oscar@tecnautosrl.com)