

## Annex 1 of the ALS General Regulations

# Technical regulations for cars participating in the ALS

## 1. General

- 1.1. Under any circumstances there must not be any operating fluid leaking from the car.
- 1.2. Any change on the car is prohibited if it is not explicitly permitted in these regulations or specified as recommended equipment. The parts of the car must have their original function.
- 1.3. Every competitor must prove to technical and sport marshals that his or her car fully conforms to these regulations for the entire time of the event.
- 1.4. The term „**free**“ in these regulations means, that the original part can be removed or replaced by a new part, but its function must remain the same.
- 1.5. The term „**arbitrary**“ in these regulations means that the original part as well as its function can be removed or replaced by a new part.
- 1.6. For the purpose of assigning to the division the data concerning the nominal engine capacity are taken from the submitted Technical licence or from the car licence issued by the ARC for the ALS series. By bringing the car to the administrative and technical check the participant declares that the engine in the car corresponds to the type and engine capacity entered in the Technical licence or in the car licence issued by the ARC.
- 1.7. In case of **supercharging** the nominal cylinder capacity is multiplied by the coefficient of 1.3 for petrol engines and by the coefficient of 1.2 for diesel engines and the car is moved to a division which corresponds with the capacity calculated this way. Under any circumstances the car is considered as if the engine capacity calculated this way was the real capacity. This especially applies for classification into division according to the cylinder capacity.
- 1.8. The capacity equivalency between the engine with reciprocating pistons and the engine with rotary pistons (NSU-Wankel type) is determined by the difference between maximum and minimum capacity of a working chamber, which is usually stated in the Technical licence, by multiplying by the coefficient of 1.3.

## 2. Necessary equipment

Every car must be equipped with the following:

- 2.1. A fire extinguisher containing at least 2 kg of extinguishing agents placed within the driver's reach fastened in such a way that it can be released without any tools. The fire extinguisher must have a valid revision!
- 2.2. Front and rear tow hooks (in a stand-by mode) visibly marked – by an arrow, freely accessible.

- 2.3. Four-point safety belts for the driver's seat. The driver is fastened with at least two shoulder straps and one lap strap. Anchorage points on the shell: two for lap strap, two or possibly one symmetrical with the seat for shoulder straps. It is not allowed to attach the safety belts to the seats or to the seat holder.
- 2.4. Safety cage. At the administrative and technical check completeness of welds, attachment to the shell (foot of the frame) will also be checked. It is recommended to make the safety cage following the technical documentation of the Appendix „J“ of the FIA Sporting Regulations.

### **3. Recommended equipment**

- 3.1. The driver's sport/racing seat.

### **4. Allowed modifications**

#### **4.1. Engine**

It is allowed to remove plastic covers used to cover mechanical components of the engine space which have only aesthetic function and soundproof material and lining, which is not visible from the outside and is fixed to the bodywork of the car.

- 4.1.1. Inside parts of the engine are free. Usage of any free part must not cause a change in a nominal engine capacity according to the article 1.6.
- 4.1.2. Flywheel – free.
- 4.1.3. Parts of the system for preparation of fuel mixture are free providing that the original principal of fuel supply is maintained (eg. the system of petrol injection cannot be replaced by the carburettor and vice versa).
- 4.1.4. The compressed-air cooling system of the supercharged engines is free.
- 4.1.5. Coolant radiator is free, but it must be in its original place.
- 4.1.6. Thermostat, temperature and the system of switching the fan on are free.
- 4.1.7. Oil radiator is arbitrary, but it must be placed outside the space where the driver is and within the bodywork outline. Lubrication system is free.
- 4.1.8. An air filter and air pipes to the engine block are free.
- 4.1.9. Ignition is free.
- 4.1.10. Sensors (temperature, pressure, lambda probes etc.) are free.
- 4.1.11. The engine control unit is free. The system of obtaining data is arbitrary.

4.1.12. Engine and gearbox holders must be original and fixed to the bodywork in original places, while the material of the elastic part is free.

4.1.13. The exhaust pipe is free. However it must open into the atmosphere behind the front door.

4.1.14. Cylinder head sealing is free.

## **4.2. Transmissions**

### **4.2.1. Clutch**

Clutch plates are free as well as their number. The diameter of the clutch plate can be enlarged. The principle of the clutch control must be maintained.

### **4.2.2. Gearbox**

The inside of the gearbox is free. Articulated joints are free. A sequential gearbox may be used.

4.2.3. The differential is free, however it must be fixed to the original holders.

4.2.4. Input shafts are free.

## **4.3. Suspension**

4.3.1. Strengthening of structure elements of suspension (with the exception of anti-roll bars) and its fixing points is allowed by adding material. The strengthening of suspension must not be made of a hollow body and must not allow two different parts to be joined together.

4.3.2. Helical springs, torsion bars and leaf springs are free.

4.3.3. Spring seats are free and can be adjustable.

4.3.4. Shock absorbers are free providing that their number, type (telescopic, lever etc.), principle of operation (hydraulic, frictional, mixed etc.) and fixing points are maintained. Silentblocks can be replaced by „Uniball“ joints. With regard to their principle gas shock absorbers are considered as hydraulic shock absorbers.

## **4.4 Wheels**

4.4.1. Wheels may be arbitrary. They must be covered by fenders. Wheel attachment by bolts may be changed to attachment by pins and nuts provided that the number of fixing points and the diameter of the threaded parts will be maintained. Wheel attachment with a central nut is allowed.

4.4.2. Spare wheel(s) is/are not required. If there is one, it must be properly fixed.

## **4.5. Brake system**

Brake system is arbitrary providing that: it includes at least two independent circles controlled by the same pedal. (These two circles must be separately identifiable between the brake pedal and calipers, without any other connection than mechanical device for division of the braking power and/or ABS).

4.5.1. Power brake booster is arbitrary. Brake power regulators and anti-lock braking system are arbitrary.

4.5.2. Brake cooling is arbitrary.

4.5.3. Brake discs are free, but they must have at least the same diameter and thickness as serial discs.

4.5.4. It is allowed to replace hydraulic pipes with airplane pipes. Brake fluid containers can be placed in the space for the crew.

4.5.5. Brake calipers are free. Only one caliper is allowed on each wheel. The caliper must be mounted on the original fixing points which must not be mechanically adjusted.

#### **4.6. Power steering is arbitrary.**

#### **4.7. Bodywork**

##### 4.7.1. Lightening and reinforcement

Reinforcement of bodywork is allowed providing that the material traces the original material and it is firmly connected with it. Soundproof insulation material can be removed. Unused holders (e.g. spare wheel), placed on the bodywork can be removed. Reinforcement bars can be fixed to assembly points on the bodywork or after adjustment, on each side of the car in its longitudinal axes. The condition is that struts are dismountable and are fastened with bolts or pins. Reinforcement of suspension elements is allowed if the reinforcement material traces the original shape and is firmly connected with it.

##### 4.7.2 Exterior

4.7.2.1. The bonnet can be replaced with laminate or other material. It is allowed to place ventilation and suction openings in it.

4.7.2.2. Original fenders can be replaced with laminate or plastic ones or made from carbon materials. Fixing the fenders by weld can be substituted with bolts and nuts.

4.7.2.3. Motor, placement, blades and mechanism of wipers are arbitrary but there must be at least one wiper on the windscreen. Capacity of a windscreen washer tank is free. The tank can be moved into the space for the crew, into the boot or into the engine bay.

4.7.2.4. It is allowed to remove outside decorative strips.

4.7.2.5. Points for placing the jack can be reinforced, moved and their number can be increased.

4.7.2.6. The windscreen must be original (glass), other windows can be replaced with

plastic ones (e.g. Makrolon). The material of the windows must have the producer's certificate approving its use for a car. Additional fixation of windscreen and side windows can be mounted.

- 4.7.2.7. The car must have a rear-view mirror inside and outside one on the left and one on the right.
- 4.7.2.8. Mounting of bottom covers is allowed.
- 4.7.2.9. It is allowed to use removable pneumatic jacks, but without a compressed-air bottle inside the car.
- 4.7.2.10. Door hinges cannot be changed. Hinges and/or joints of the bonnet, boot, back (fifth) door are arbitrary. It must be possible to open the doors, bonnet and boot from the outside.
- 4.7.2.11. Aerodynamic elements as wings, spoilers etc. are allowed providing that they must not enlarge any dimension of the car according to the Technical licence by more than 200 mm.

#### 4.7.3. Space for the crew

- 4.7.3.1. It is allowed to remove the passenger seat as well as back seats.
- 4.7.3.2. Dashboard – equipment placed under this dashboard, which does not form its part, can be removed. It is allowed to remove a part of the central console, on which there is not heating or devices.
- 4.7.3.3. Door – It is allowed to remove soundproof insulation material providing that the appearance of the door is not changed. It is prohibited to remove the side protective bracing. Door covering panels may be replaced with panels made of metal sheet (min. thickness: 0.5 mm), of carbon composite (min. thickness: 1 mm) or of another solid and non-flammable material (min. thickness: 2 mm). It is allowed to replace power windows with manual windows. If the windows are plastic without possibility to open, ventilation must be installed inside the car.
- 4.7.3.4. We recommend to remove rugs, ceiling upholstery and rear boot cover. It is allowed to remove soundproof insulation material and lining with the exception of those mentioned in the articles 4.7.3.2. (dashboard) and 4.7.3.3. (door).
- 4.7.3.5. Original heating system can be removed, but electric or similar demisting system.
- 4.7.3.6. Air-conditioning is arbitrary.
- 4.7.3.7. Steering wheel arbitrary – it is allowed to remove theft protection. Mechanism for a quick release of the steering wheel is allowed.

4.7.4. Other accessories are allowed without limitations if they improve aesthetic appearance of the car interior or comfort (lights, heating, ardio etc.). Functions of all the controllers (steering whee, pedals, levers) must remain original. It is allowed to adjust them to be better controlled or better accessible, eg. lengthening of the hand brake lever, additional layer of brake pedal etc. Also allowed is the following:

- 4.7.4.1. Measuring devices, meters etc. can be installed or replaced and they can possibly have other functions. Such installation must not cause any danger.
- 4.7.4.2. Electric switches and controls placed on the steering column can be freely exchanged as far as their purpose, placement or number is concerned among accessories.

- 4.7.5. Devices for lighting and signalization must comply with the road traffic regulations. Original headlights can be replaced with different ones with the same lighting ability providing no other openings are made in the bodywork and the original openings are completely covered. It is allowed to change the control system of pop-up headlights and its source of energy. Additional headlights are recommended. If needed they can be mounted by embedding into the front part of the car or radiator mask. Original additional headlights can be put out of service and covered with an adhesive tape. It is allowed to replace one rectangle headlight with two round ones and vice versa.
- 4.7.6. The original fuel tank must be in its original place. The original tank can be replaced with safety tank but only if it is equipped with a certificate/homologation certificate (it must be handed in at the administrative and technical check), if it has a filler neck making it possible to use common fuel nozzle when refuelling, the filler neck leads to the outside of the bodywork. The fuel tank and parts of the fuel system including a fuel supply hose must be separated from the space for the driver by a fireproof screen, or a cover. Fuel pipes must be protected against damage and fire. Any installation of an additional fuel tank with capacity higher than 4 % of the capacity of the original tank is prohibited.

Maximum permitted capacity of the safety tank is for:

Division 1 and 2	100 l
Division 3	110 l
Division 4	120 l
Division 5	100 l
Division 6	according to the homologation of the car

#### 4.7.7. Electrical system

- 4.7.7.1. Trade mark, capacity and cables of the battery are free. Position of the battery is free providing it is fixed to the bodywork. If the battery is inside the car, it will be covered with a non-conductive cover and the cover will be firmly fixed.
- 4.7.7.2. It is allowed to replace the generator with more powerful one. A dynamo can be replaced with an alternator and vice versa.
- 4.7.7.3. It is allowed to add fuses to the electrical circuit.
- 4.7.7.4. Electrical wiring is free.
- 4.7.7.5. We recommend to make outside and inside battery disconnect switches. Mark the switch outside with the red lightning sign on the bodywork.

These Technical Regulations were approved by Auto Rallye Cross, s.r.o. in Brno on 10th February 2012.