



**The Federation of Motor Sports Clubs of India**

**2019**

**FMSCI 4 Wheeler Technical Regulations-RALLYING**

**Appendix J**

**Article 252**

**General Prescriptions for  
Production Cars (Group N), Touring Cars (Group A)**

Member of



## 2019 FMSCI Article 252 General Prescriptions for Production Cars (Group N) Touring Cars (Group A)

### Art. 1 GENERAL REMARKS

#### 1.1 Modifications

All modifications are forbidden unless expressly authorised by the regulations specific to the group in which the car is entered or by the general prescriptions below or imposed under the chapter "Safety Equipment".

The components of the car must retain their original function.

#### 1.2 Application of the general prescriptions

The general prescriptions must be observed in the event that the specifications of Production Cars (Group N), Touring Cars (Group A), do not lay down a more strict prescription.

#### 1.3 Material

The use of a material which has a specific yield modulus greater than 40 Gpa/g/cm<sup>3</sup> is forbidden, with the exception of plugs, exhaust coatings, water pump turbo joints, brake pads, brake calliper piston coatings, rolling elements of bearings (balls, needles, rollers), electronic components and sensors, parts weighing less than 20 g and all coatings with a thickness less than or equal to 10 microns.

The use of a metallic material which has a specific yield modulus Greater than 30 Gpa/g/cm<sup>3</sup> or of which the maximum specific UTS is Greater than:

- 0.24 Mpa/kg/m<sup>3</sup> for non-iron-based alloys and
- 0.30 Mpa/kg/m<sup>3</sup> for iron-based alloys is forbidden for the making of all the parts that are free or homologated as an Option Variant.

Ti-6Al-4V ASTM grade 5 type titanium alloy (5.5 < Al < 6.75, C max 0.10, 3.5 < V < 4.5, 87.6 < Ti < 91) is authorised, except for certain parts for which titanium is expressly forbidden.

No turning part of a turbocharger or of any equivalent supercharging system (except the rolling parts of the bearings) may be made from ceramic material or has a ceramic coating.

These restrictions do not concern the parts homologated with the standard vehicle.

The use of magnesium alloy sheet metal with a thickness less than 3 mm is prohibited.

**1.4** It is the duty of each competitor to satisfy the Scrutineers and the Stewards of the competition that his automobile complies with these regulations in their entirety at all times during the competition.

**1.5** Damaged threads can be repaired by screwing on a new thread with the same interior diameter ("helicoil" type).

**1.6** Any Group A car, homologated after 01.01.99, with the exception of kit variants, and competing in rallies must not be wider than 1800 mm.

Group N cars may compete in their integral version.

**1.7 Free**

"Free" means that the original part, as well as its function(s), maybe removed or replaced with a new part., on condition that the new part has **the basic** function relative to the original part.

**Art. 2 DIMENSIONS AND WEIGHT****2.1 Ground clearance**

No part of the car must touch the ground when all the tyres on one side are deflated.  
This test must be carried out on a flat surface under race conditions (occupants on board).

**2.2 Ballast**

It is permitted to complete the weight of the car by one or several ballasts provided that they are strong and unitary blocks, fixed by means of tools with the possibility to fix seals, placed on the floor of the cockpit, visible and sealed by the scrutineers.

**Application:**

Touring Cars (Group A) and Group R cars.

No kind of ballast is authorised in Production Cars (Group N).

In rallies, however, the carrying of tools and spare parts for the car in the cockpit and/or inside the engine bay and/or inside the boot only is allowed under the conditions laid down in Article 253.

**Art. 3 ENGINE****3.1 Supercharging**

In case of supercharging, the nominal cylinder capacity is multiplied by 1.7 for petrol engines and by 1.5 for diesel engine, and the car must pass into the class corresponding to the fictive volume thus obtained.

The car must be treated in all respects as if its cylinder capacity thus increased were its real capacity. This is particularly the case for assigning the car to its cylinder capacity class, its interior dimensions, its minimum number of places, its minimum weight, etc.

**3.2 Equivalence formula between reciprocating piston and rotary Engines (of the type covered by the NSU Wankel patents)**

The equivalent cubic capacity is equal to the volume determined by the difference between the maximum and minimum capacities of the combustion chamber.

**3.3 Equivalence formula between reciprocating piston and turbine Engines**

The formula is the following:

$$S (3.10 \times R) 7.63$$

$$C = \frac{\quad}{0.09625}$$

**S** = High pressure nozzle area - expressed in square centimeters by which is meant the area of the airflow at the exit from the stator blades (or at the exit from the first stage if the stator has several stages).

Measurement is done by taking the area between the fixed blades of the high pressure turbine first stage.

In cases where the first stage turbine stator blades are adjustable, they must be opened to their greatest extent.

The area of the high pressure nozzle is thus the product of the height (expressed in cm) by the width (expressed in cm) and by the number of blades.

**R** = the pressure ratio is the ratio of the compressor of the turbine engine.

It is obtained by multiplying together the value for each stage of the compressor, as indicated hereafter:

- Subsonic axial compressor 1.15 per stage
- Trans-sonic axial compressor 1.5 per stage
- Radial compressor 4.25 per stage

Thus a compressor with one radial and six axial subsonic stages is designated to have a pressure ratio of:

$4.25 \times 1.15 \times 1.15 \times 1.15 \times 1.15 \times 1.15 \times 1.15$  or  $4.25 \times (1.15)^6$ .

**C** = Equivalent cubic capacity for reciprocating piston engines in  $\text{cm}^3$ .

**3.4** All engines into which fuel is injected and burned downstream of an exhaust port are prohibited.

### **3.5 Equivalencies between reciprocating piston engines and new types of engines**

The FIA/FMSCI reserves the right to make modifications on the basis of comparisons established between classic engines and new types of engines, by giving a two-year notice from the 1st January following the decision taken.

### **3.6 Exhaust system and silencer**

Even when the specific provisions for a group allow the replacement of the original silencer.

The orifices of the exhaust pipes must be placed at a maximum of 45 cm and a minimum of 10 cm from the ground.

The exit of the exhaust pipe must be situated within the perimeter of the car and less than 10 cm from this perimeter, and aft of the vertical plane passing through the center of the wheelbase.

Moreover, adequate protection may be provided in order to prevent heated pipes from causing burns.

The exhaust system must not be provisional.

Exhaust gas may only exit at the end of the system.

Parts of the chassis must not be used to evacuate exhaust gasses.

### Catalytic exhausts :

Should two possible versions of one car model be homologated (catalytic and other exhaust), the cars must comply with one or other version, any combination of the two versions being prohibited.

**An authentic copy of the homologation document must be presented to the scrutineers for the competition.**

### **3.7 Starting on board the vehicle**

Starter with electric or other source of energy on board operable by the driver when seated in the seat.

### **3.8 Cylinders**

For non-sleeved engines, it is possible to repair the cylinders by adding material, but not parts.

### **Art. 4 TRANSMISSIONS**

All cars must be fitted with a gearbox including a reverse gear which must be in working order when the car starts the competition, and be able to be operated by the driver when he is normally seated.

### **Art. 5 SUSPENSIONS**

Suspension parts made partially or entirely from composite materials are prohibited.

### **Art. 6 WHEELS**

Wheels made partially or entirely from composite materials are prohibited.

#### Measuring wheel width

The width is to be measured with the wheel mounted on the car, on the ground, the vehicle in race condition, driver aboard, at any point along the circumference of the tyre, except in the area in contact with the ground.

When multiple tyres are fitted as part of a complete wheel, the latter must comply with the maximum dimensions for the Group in which these tyres are used (see Article 255-5.4).

### **Art. 7 BODYWORK / CHASSIS / BODY SHELL**

7.1 Convertible vehicles must comply in all respects with the specifications applying to open cars. In addition, cars with a rigid retractable roof must be driven exclusively with the roof closed and locked up.

#### **7.2 Minimum inside dimensions**

If a modification authorised by Appendix J affects a dimension stated on the homologation form this dimension may not be retained as an eligibility criterion for the car.

#### **7.3 Cockpit**

Inversion of the driving side is possible, on condition that the original car and the modified car are mechanically equivalent and that the parts used are provided by the manufacturer for such a conversion for the family concerned.

In particular, the steering column must pass through the body shell only via the hole made for that purpose by the manufacturer for the family concerned.

For R5, Super 1600, Super 2000 and WRC cars, the inversion of the driving side must be obtained by a complete steering system homologated in option variant by the manufacturer.

The hole allowing the passage of the steering column through the bodyshell must be homologated with this system.

Only the following accessories may be installed in the cockpit:

Spare wheels, tools, spare parts, safety equipment, communication equipment, ballast (if permitted), windscreen washer water container (Touring Cars Group A only).

All spare parts and tools must be fixed either behind the driver's and/or co-driver's seats or underneath the driver's and/or co-driver's seats.

The passenger area and seat of an open car must in no way be covered.

Containers for helmets and tools situated in the cockpit must be made of non-inflammable material and they must not, in case of fire, give off toxic vapors.

The original fitting of the air bags may be removed, without modifying the appearance of the bodywork.

7.4 All bodywork and chassis / body shell panels of the vehicle must be of the same material as those of the original homologated car and must be of the same material thickness as that of the original homologated car.

### 7.5 Headlamp mounting and protection

The boring of holes in the front bodywork for light brackets is authorised, limited solely to mountings. In rallies, non-reflecting protectors made from flexible material maybe mounted on the headlamps; they must not protrude forwards beyond the headlamp glass by more than 10 cm.

7.6 Any object of a dangerous nature (inflammable products, etc.) must be carried outside the cockpit.

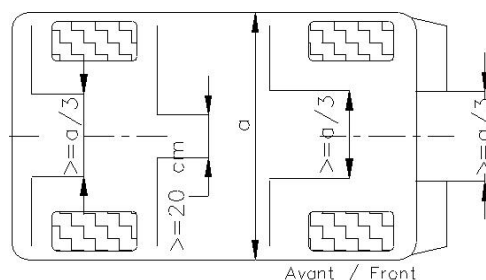
### 7.7 Mud flaps (in Rallies only)

It is possible to fit transverse mud flaps in conformity with the article below.

If transverse mud flaps are mandatory, this requirement must be mentioned in the supplementary regulations of the competition.

In any case, transverse mud flaps are accepted under the following conditions:

- They must be made of a flexible plastic material at least 4mm thick (minimum density = 0.85g/cm<sup>3</sup>).
- They must be fitted to the bodywork.
- They must cover at least the width of each wheel, but at least one third of the width of the car (see drawing 252-6) must be free behind the front wheels and the rear wheels.



### 252-6

- There must be a gap of at least 20 cm between the right and left mud flaps in front of the rear wheels.
- The bottom of these mud flaps must be no more than 10 cm from the ground when the car is stopped, with nobody on board.

- Above and over the entire height of the tyre, the entire width of the tyre must be covered (seen from behind).
- Mud flaps to prevent splashing towards the front, made from flexible material, may be installed at the front of the vehicle, if the supplementary regulations of the competition authorise them or impose them.
- They must not protrude beyond the overall width of the vehicle or beyond the original overall length by more than 10 cm, and at least one third of the width of the car must be free in front of the front wheels.

## **Art. 8 ELECTRICAL SYSTEM**

### **8.1 Lighting and signaling**

A fog light may be changed for another light, and vice versa, provided that the original mounting remains the same.

If the original rear view mirrors incorporate direction indicators and if the article of Appendix J applicable to the vehicle permits the replacement of the rear view mirrors, the direction indicators must be retained without necessarily being integrated in the rear view mirrors.

If the original rear view mirrors do not incorporate direction indicators, direction indicators must be retained but they may be moved from their original position.

### **8.2 Alternators and Alternator-starters**

The mounting of the alternators and alternator-starters are free.

### **8.3 Horn**

In rallies only, the noise level produced by the horn must be greater than or equal to 97 dB during at least 3 seconds, measured 7m in front of the vehicle.

## **Art. 9 FUEL - COMBUSTIVE**

### **9.1 Petrol**

The fuel must be commercial petrol which comes from a service station pump, or a fuel approved by the FIA or the ASN of the organising country supplied either in drums or in a dedicated tanker, without any additive other than that of a lubricant.

The only oxygenates permitted are paraffinic mono-alcohols and paraffinic mono-ethers (of 5 or more carbon atoms per molecule) with a final boiling point below 210°C.

The fuel is accepted or rejected according to the error definitions in the method.

If the fuel available locally for the competition does not comply with the above specifications, the ASN of the organising country must ask the FIA for a waiver in order to enable the use of such a fuel.

### **9.2 Diesel**

For Diesel engines, the fuel must be gas oil which comes from a service station pump, or a fuel approved by the FIA or the ASN of the organising country supplied either in drums or in a dedicated tanker, without any additive other than of a lubricant.

If the fuel available locally for the competition does not comply with the above specifications, the ASN of the organising country must ask the FIA for a waiver in order to enable the use of such a fuel.

### **9.3 Alternative Fuels**



The use of any other fuel is subject to approval by the FIA or the ASN of the organising country upon receipt of a written request.

**9.4 Oxidant**

Only air may be mixed with the fuel as an oxidant.

**9.5 Refuelling procedure**

Standardised coupling :

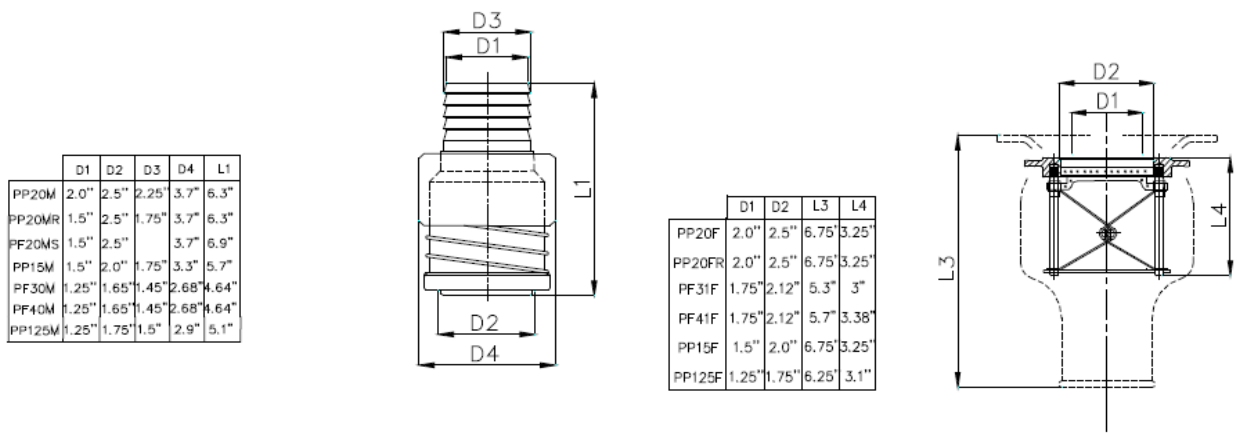
In case of a centralised system provided by the circuit or a system provided by the competitors, the refueling hose must be provided with a leak-proof coupling to fit the standardised filler mounted on the car (in accordance with Drawing 252-5; the interior diameter D must not exceed 50 mm).

All cars must be provided with fuel filler complying with this diagram.

This leak-proof fitting must comply with the dead man principle and must not therefore incorporate any retaining device when in an open position (spring-loaded, bayonet, etc.).

The air vent(s) must be equipped with non-return and closing valves having the same closing system as that of the standard filler and having the same diameter.

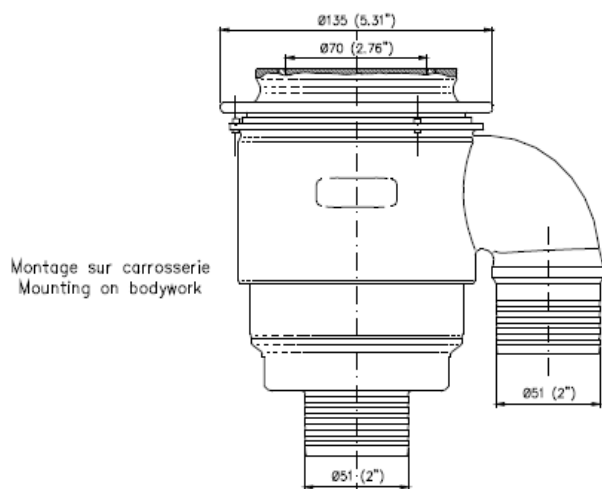
During refuelling the outlets of the air-vents must be connected with the appropriate coupling either to the main supply tank or to a transparent portable container with a minimum capacity of 20 liters provided with a closing system rendering it completely leak-proof.



Prise male / Push pull series male

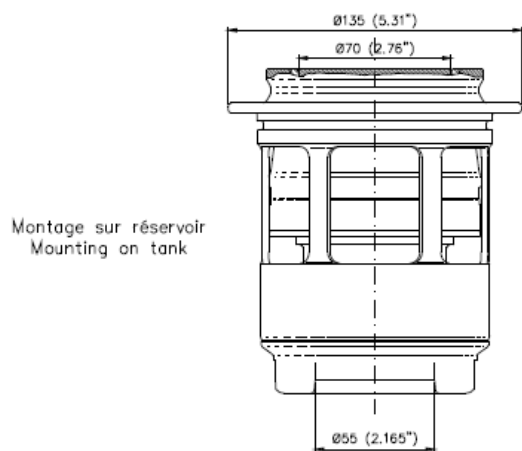
Prise femelle / Push pull series female

**252-5 (Version A)**



Montage sur carrosserie  
Mounting on bodywork

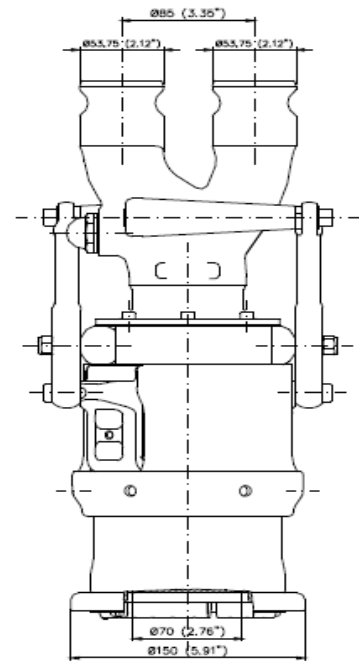
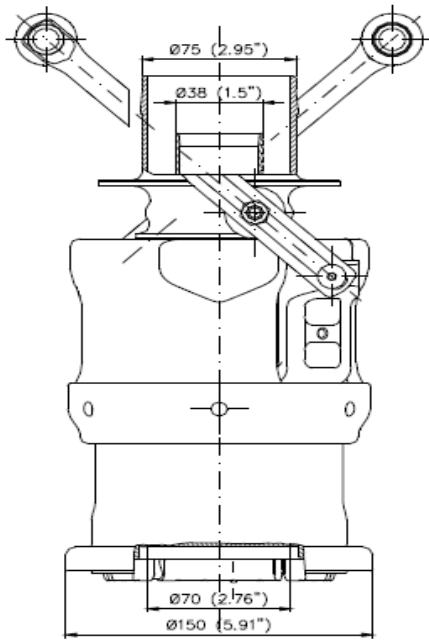
**Accoupleur Femelle**



Montage sur réservoir  
Mounting on tank

**Female Coupling**





### Accoupleur Mâle      Male Coupling

#### 252-5 (Version B)

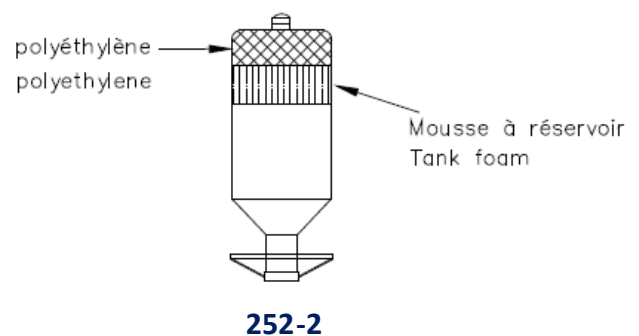
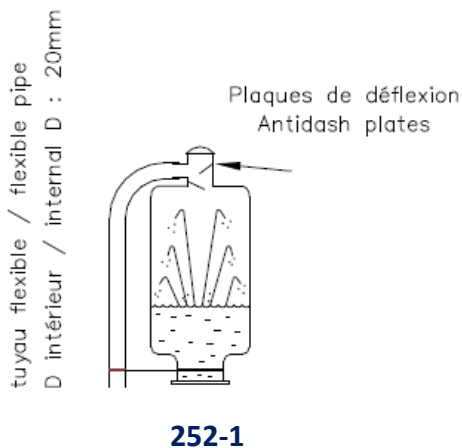
The venting catch tanks must be empty at the beginning of the refuelling operation.

In the cases where the circuits are unable to provide the competitors with a centralised system, they have to refuel according to the above procedure.

The level of the reserve tank may in no case be more than 3 meters above the level of the track where the refuelling is carried out.

This applies to the whole duration of the competition.

The overflow bottles must conform to one of the Drawings 252-1 or 252-2.



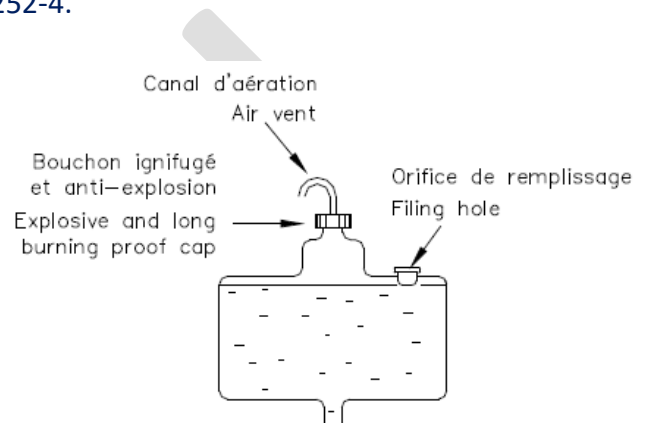
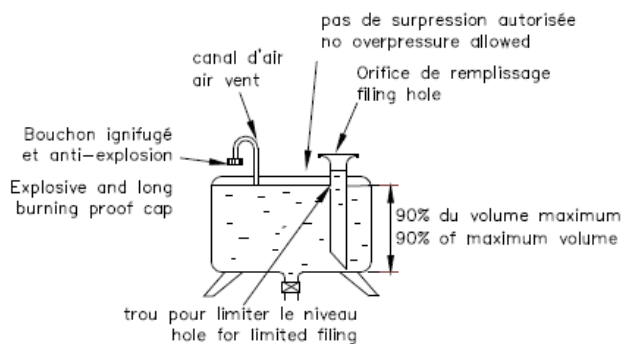
The reserve tank and all metal parts of the refuelling system from the coupling over the flow meter up to the tank and its rack must be connected electrically to the earth.

The application of the following is recommended :

- Each pit must be equipped with two aircraft type grounding connections.
- The refuelling system (including tower, tank, hose, nozzle, valves and vent bottle) must be connected to one of the above grounding connections for the entire duration of the competition.
- The car must be connected, at least momentarily, to the other grounding connection as soon as it stops in the pit.
- No fuel hose connection (fill or vent) unless and until conditions 2 and 3 have been fulfilled.
- All fuel-handling pit crew members must wear non-static protective clothing.

The refuelling tank may be one of the following :

- Models made of rubber, of the type FT3-1999, FT3.5-1999 or FT5- 1999, built by an approved manufacturer, or
- Tanks conforming to one of the Drawings 252-3 or 252-4.



### 252-3 252-4

#### Application :

For Touring Cars (Group A), refer to the general prescriptions of the FIA Championships.

#### 9.6 Tank ventilation

It is authorised to equip a tank with ventilation exiting through the car roof.

#### 9.7 Fuel Tanks – For FMSCI homologated/TDF vehicles, the standard OE tanks and the original plumbing is permitted

##### **Installation of the FT3-1999, FT3.5-1999 or FT5-1999 tank**

If a FT3-1999, FT3.5-1999 or FT5-1999 tank is used it may be placed either in the original location of the tank or in the luggage compartment.

There must be an orifice to evacuate any fuel which may have spread into the tank compartment.

The position and the dimension of the filler hole as well as that of the cap may be changed as long as the new installation does not protrude beyond the bodywork and guarantees that no fuel leaks into one of the interior compartments of the car.

If the filler hole is situated inside the car, it must be separated from the cockpit by a liquid-tight protection.

#### **Art. 10 BRAKES**

Carbon brake discs are forbidden.

#### **Art. 11 ENERGY STORAGE**

**Art.12 COOLING**

Except for the sole purpose of cooling the driver, the transporting and/or use of any solid, liquid or gas cooling agent, whether inside or outside the car, is prohibited at all times throughout the competition.

FMSCI