INVITATION

Finnish Mileage Marathon Club r.y.

XXXVII PISIMMÄLLE®

PISARALLA 2012

Nokia 18-19. August 2012

INVITATION
PISARALLA PISIMMÄLLE® -MARATHON 2012

The 37th Pisaralla Pisimmälle® mileage marathon competition is arranged by the Finnish Mileage Marathon Club r.y. - FMMC. FMMC was founded in 1989 to serve the purpose of competition arrangements and to look after common interests of the teams.

1. LOCATION

The race will take place in Nokia, on the test and competition track of Nokian Tyres Ltd and Nokian Urheiluautoilijat (Racing Drivers Association of Nokia), see the map as an appendix. There is a 230V AC electricity with "Schuko" sockets available on the area. Unfortunately individual socket cannot be guaranteed for every team. The buildings on the area are aimed to be used as joint pits for competitors. Useful information on travelling in and to Finland may be found from the web-pages of Wikitravel (http://wikitravel.org/en/Finland).

The organisers would also like to draw your attention to the fact that ferry lines between Finland and Sweden/Estonia/Germany are quite busy during summertime so you should book your voyage well in advance, before summer season, if possible!

2. TIME

The competition will be held on 18-19. August 2012.

Saturday 18. August 2012

09:00 Sign-on begins
09:30 Scrutinising begins
10:00 Track open for testing
14:00 Deadline for sign-on and entries
14:30 Scrutinising queue will close
15:00 Meeting of competitors
15:30 Start of the competition
17:00 Start-queue will close
all vehicles in the queue will be topped up and may drive full time!
19:00 End of practice

Sunday 19. August 2012

09:00 - 09:30 Scrutinising
09:30 Meeting of competitors
09:45 Group photograph
10:00 Start of the competition
15:00 Start-queue will close
all vehicles in the queue will be topped up and may drive full time!
~16:00 Last competitors come to finish
17:00 Presentation of results

3. TRACK

The outermost circuit of the track area will be used for the competition. The length of the circuit is 1780 m and there will be 11 laps on the competition and the maximum time is 47 minutes. There is one major rise and descent on the track, which has a height difference of approximately 3 m. The track is approximately 140 m above sea level. See appendix 1. for overall view of the track region. Organisers reserve the right to alter the track if necessary.

4. ENTRY CONDITIONS

The race is open to all drivers aged at least thirteen (13) years on the day of the track testing. Team managers must be at least 18 years of age and major where resident. The entries are subject to no other restrictions.

A team manager, driver, and if desired a reserve driver, should be designated for each entry. The entry is not conclusive and also persons above may be changed at the latest during the sign-on before the event. Drivers under 18 years of age, or not major where resident, must show that they have their guardian's permission. (Appendix 3.). Towards every five (5) under-aged members of the team, there must be at least one 18 years old supervisor, who is major where resident.

The maximum number of competitors will be restricted to 15. Priority of acceptance of entries will generally be afforded to competitors in previous Pisaralla Pisimmälle® -marathons, their previous performances and also according to the order of entries being received. No entry fee will be required.

5. ENTRIES

An entry will only be considered as valid if the entry form (Appendix 3.) is duly completed and returned to the organisers with a diagram of the fuel system. The acknowledgement will be issued to the candidates via email or fax about a week after the entry has arrived to the organisers. An infopackage containing list of entrants, latest information about the competition and a request of confirmation will be sent via mail approximately a week after the final entry date. The entries should be sent to FMMC, address shown in article 16.

6. FINAL ENTRY DATE

The final entry date is ***Monday 2. July 2012.*** After that entries will be accepted only if the maximum number of competitors has not been exceeded.

7. SIGN-ON

The teams must sign-on before practising and at the latest *Saturday 18. August at 14:00*. Any team that has not passed through this control will be considered as a non-starter and its place attributed to a team on the waiting list.

8. REGULATIONS AND SCRUTINISING

The race and the competitors are subject to the regulations given as an appendix (Pisaralla Pisimmälle® 2012 Regulations) of this invitation as well as further instructions that the organisers may publish. The vehicles are to be scrutinised as told in the timetable.

9. FUEL AND FUEL TANK

The only fuels that may be used will be unleaded 98 octane petrol or diesel oil provided by the organisers. The competitor may also use a two-stroke petrol supplied by the organisers consisting of a mixture of 2% of high performance synthetic oil, this addition being considered as fuel consumed by the engine.

The standard tank specified by the organisers must be used. It must not be modified. Three capacities are available: 30, 100 and 250 ml. The tank has an integrated fuel valve. You may inquire tanks from the organisers, they will be charged as cost. Also the tanks used in France or in Belgium are permitted.

The organisers don't take any responsibility for the safety and durability of the tank, especially if the tank is used as pressurised. Every competitor pressurises the tank at one's own risk.

10. ENGINE KILL SWITCH

There is a regulation (article 4.15. of the regulations), which states that all vehicles must have a switch or similar device on the outside surface of the vehicle in order to turn off the engine. The organisers will provide each team with the required sticker to mark the switch.

11. VEHICLE IDENTIFICATION

Suitable and clearly visible, near flat surfaces must be provided for the following purposes:

- on each side and in the front, a 22x22 cm area for number stickers,
- on each side, a 22x22 cm area for sponsors of the organiser.

The competitors have right to have any number of advertisers or sponsors, but there are some restrictions concerning the subjects of the adverts. These restrictions include also the clothing of the team and they are as follows:

1. General restrictions of advertisement in Finland. (All advertising of tobacco-products is prohibited, restrictions on advertising alcohol.)
2. All advertisements have to be approved by the Technical Stewards and they have the right to disqualify the advertisement if they consider it as inappropriate.

12. ACCOMMODATION

Camping on the track area is possible. There is WC on the area, but no showers. There is a camping site “Viinikanniemi” approximately 10 km from the track. Hotel accommodation in Nokia is also possible.

13. COMPETITION CATEGORIES AND CLASSES

The competition has following categories and classes:

Categories:
- General Competition for all vehicles
- Petrol engine vehicles
- Diesel engine vehicles
- Best Improvement of Mileage:
  - This requires a result on two consecutive years.
  - Improvement will be calculated as relative percentage to the previous year’s result.
- The best Finnish newcomer

Classes:
- Open Class

14. INSURANCE

The organiser will provide the competition with the minimum insurance cover required by the Finnish legislation up to limits shown on the official notice board of the competition. This will cover only those being on the area as spectators. Otherwise competitors will take part with their own risk.

15. RADIO EQUIPMENT

A team may not disturb radio communication or telemetry of other teams or the organiser. Radio channels and frequencies to be used will be allocated on the meeting of competitors. The organiser recommends PMR 446 system to be used.

16. CONTACT INFORMATION

Entry forms should be sent to the address:

FMMC r.y.
c/o LTKY/Tippa-Team
YO-talo
Laserkatu 10
53850 LAPPEENRANTA
FINLAND

Further information may be required from:

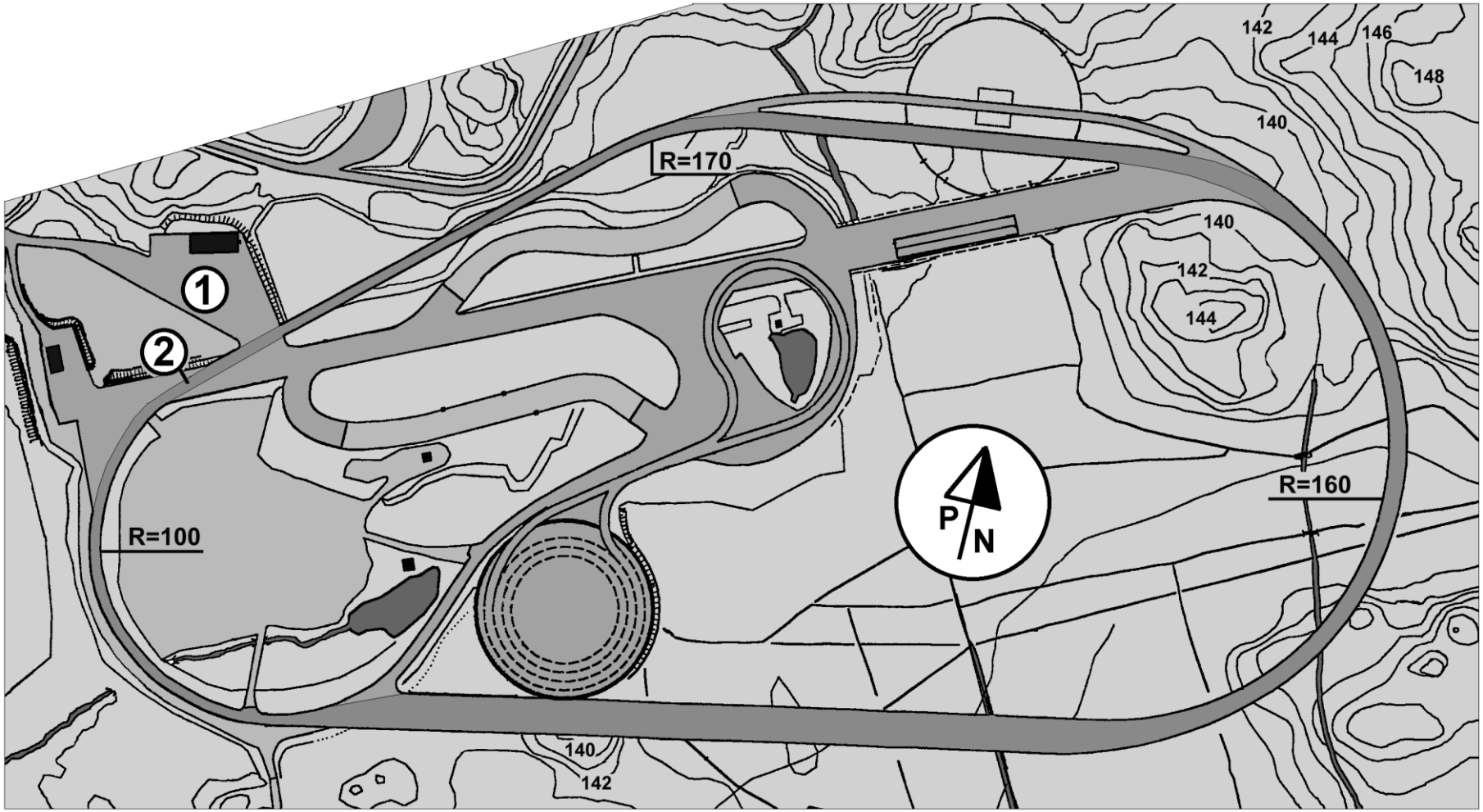
Kimmo Leikko	tel. +358 400 830 256	in Finland	0400 830 256
Pekka Lehtiö	tel. +358 40 707 9325	in Finland	040 707 9325
e-mail	fmmc@eco-marathon.net		
WWW	http://www.eco-marathon.net/		

On behalf of FMMC:

Tampere 3. May 2012

Kimmo Leikko
Chairman
FMMC

In the event of any dispute over interpretation of the terms used in the translation of this invitation and the regulations, the Finnish version will be the only one valid.



① Varikkoalue / Pit Area

② Lähtö / Start

Pituus / Length : 1780 m

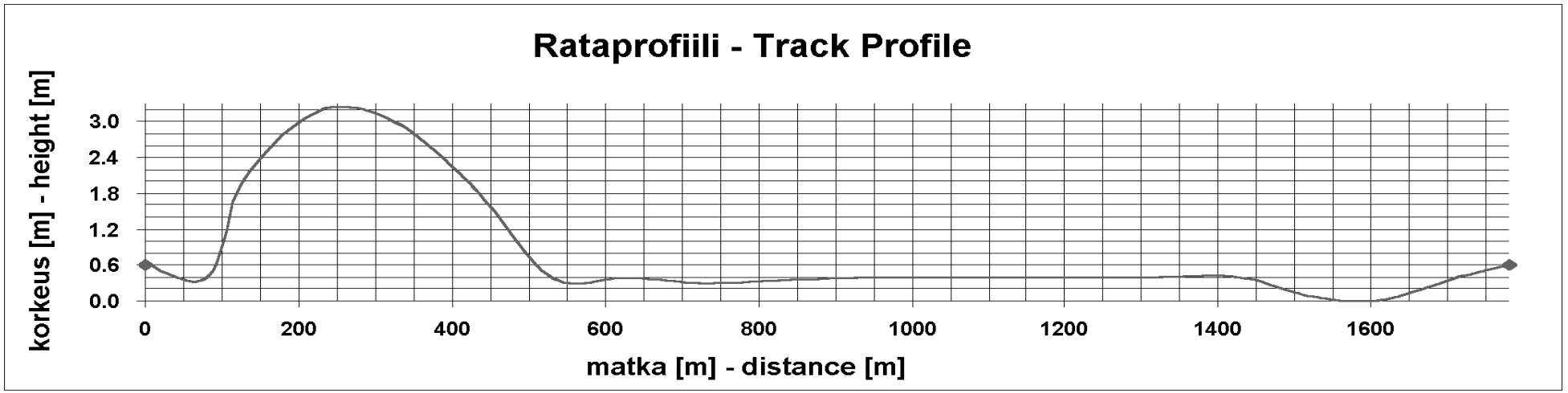
Ajosuunta myötäpäivään

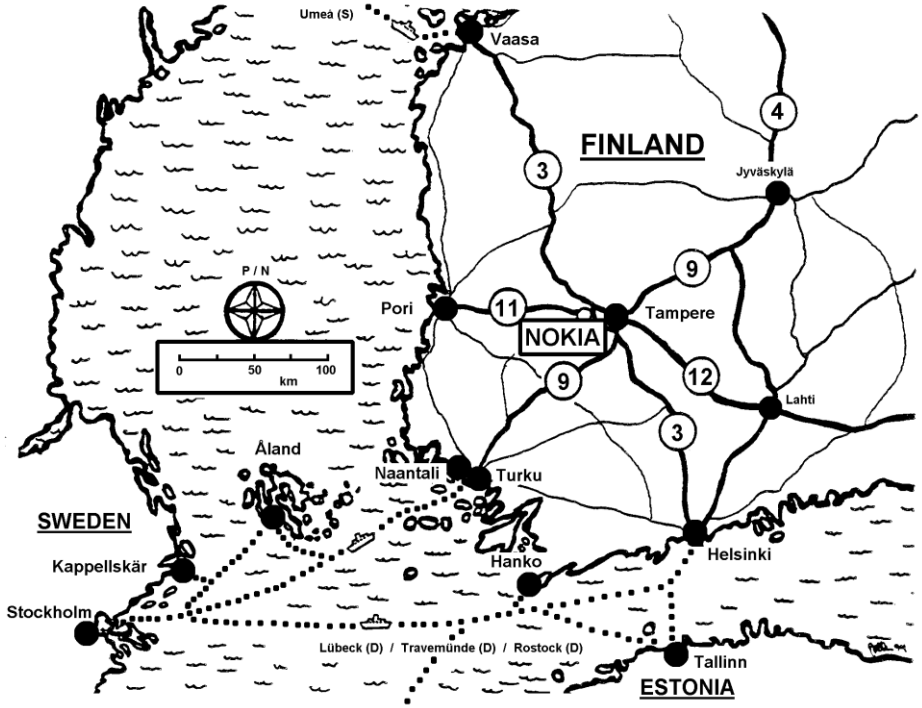
Clockwise driving direction

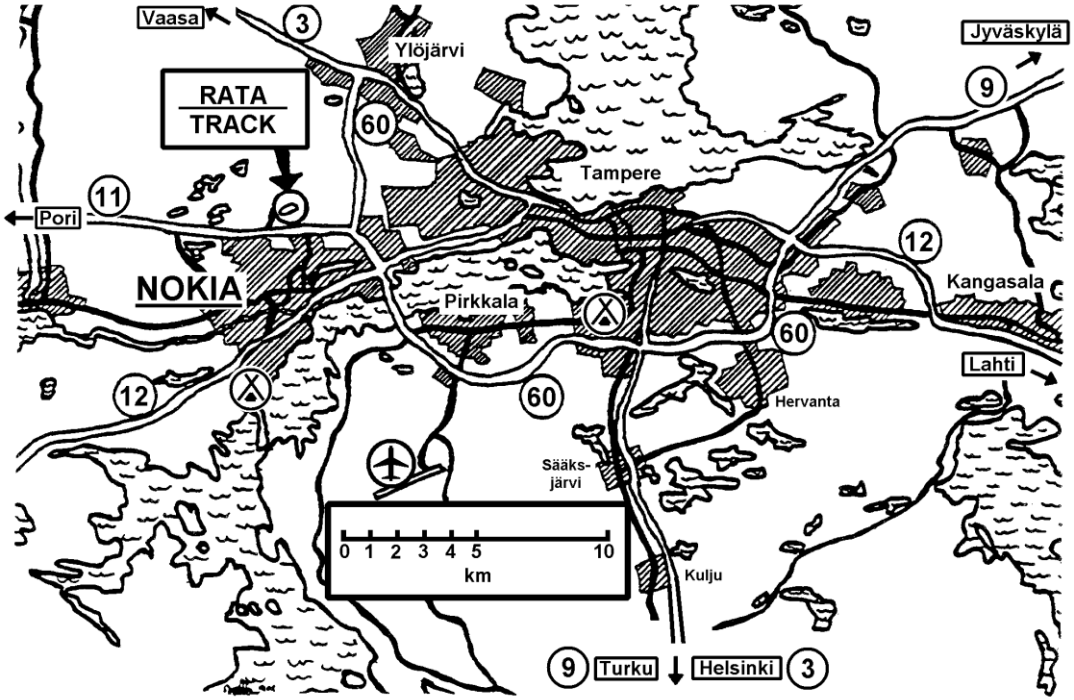
0 40 80 200

20 60 100 m

Liite 1. - Appendix 1.







Liite 2. - Appendix 2.

ENTRY FORM
PISARALLA PISIMMÄLLE® 2012

ENTRANT : _____
(Name of person or school, company etc. organisation)

TEAM NAME : _____

NAME OF VEHICLE : _____

RESIDENCE OF TEAM : _____
(Town and Country)

Please give us contacts where you can be reached also during July - August!

ADDRESS FOR CORRESPONDENCE (**Full** with all details and names; as wanted on the envelope) **:**

_____
_____
_____
_____
_____
_____

Address belongs to ❑ team ❑ organisation ❑ team manager

PHONE : _____
Number belongs to ❑ team ❑ organisation ❑ team manager

TELEFAX : _____
Number belongs to ❑ team ❑ organisation ❑ team manager

E-MAIL : _____
Address belongs to ❑ team ❑ organisation ❑ team manager

WWW-HOMEPAGE : _____
Address belongs to ❑ team ❑ organisation ❑ team manager

TEAM MANAGER :
Given name : _____
FAMILY NAME : _____
Date of birth : _____

DRIVER :
Given name : _____
FAMILY NAME : _____
Date of birth : _____

RESERVE DRIVER :
Given name : _____
FAMILY NAME : _____
Date of birth : _____

FUEL : ❑ 98 ❑ 98 / 2% ❑ Diesel

SIZE OF TEAM : _____ persons (approx. +/- 2, those coming to competition)

PREVIOUS PARTICIPATION TO PISARALLA PISIMMÄLLE® ? :

Team : ❑ Yes ❑ No **Vehicle :** ❑ Yes ❑ No

HAS THE TEAM PARTICIPATED TO EUROPEAN MARATHONS BEFORE ?
IF YES, BEST PERFORMANCES :

France : ❑ Yes ❑ No, Result : _____ km/l
Belgium : ❑ Yes ❑ No, Result : _____ km/l
Great Britain : ❑ Yes ❑ No, Result : _____ km/l
Germany : ❑ Yes ❑ No, Result : _____ km/l
Finland : ❑ Yes ❑ No, Result : _____ km/l

HAS THE TEAM PARTICIPATED TO OTHER MARATHONS IN THE WORLD ?
IF YES, BEST PERFORMANCES :

Marathon : _____, Result : _____ km/l
Marathon : _____, Result : _____ km/l
Marathon : _____, Result : _____ km/l
Marathon : _____, Result : _____ km/l

We hereby apply for an entry in the Pisaralla Pisimmälle® 2012 -competition thus admitting that we have taken due note of the regulations and invitation and approve them. We also give up all our rights for compensations and claims in case of accident or the competition being modified, cancelled, postponed or changed earlier.

Place and date : _____

Manager's signature : _____

Driver's signature : _____

Reserve driver's signature : _____

GUARDIAN'S PERMISSION FOR DRIVERS NOT MAJOR

DRIVER :

I _____ hereby give _____ permission to be a driver for a team above in the event in question, thus admitting that I have taken due note of the regulations, invitation and entry form and approve them. I also give up all our rights for compensations and claims in case of accident or the competition being modified, cancelled, postponed or changed earlier.
Address and phone of guardian : _____
_____
Place, date and signature of guardian : _____

RESERVE DRIVER :

I _____ hereby give _____ permission to be a driver for a team above in the event in question, thus admitting that I have taken due note of the regulations, invitation and entry form and approve them. I also give up all our rights for compensations and claims in case of accident or the competition being modified, cancelled, postponed or changed earlier.
Address and phone of guardian : _____
_____
Place, date and signature of guardian : _____

All information given in Vehicle Data section may be used for bulletins or given to announcer unless specifically forbidden!

VEHICLE DATA

ENGINE :

Type : ❑ Petrol ❑ Diesel
❑ 4-stroke ❑ 2-stroke ❑ Other : _____

Number of cylinders : _____ **Capacity (cc) :** _____

Ignition : ❑ Breakers ❑ Electronic ❑ Other : _____

Lubrication : ❑ Wet sump ❑ Dry sump ❑ Oil injection
❑ Mixture 2% ❑ Other : _____

Starter : ❑ Electric ❑ Manual ❑ Other : _____

Cooling : ❑ Water ❑ Air ❑ Other : _____

Battery : ❑ No ❑ Yes, capacity (Ah) : _____

Fuel distribution : ❑ Carburettor ❑ Injection (❑ Electronic / ❑ Mechanical)

TRANSMISSION :

Clutch : ❑ Manual ❑ Centrifugal ❑ Other : _____
Final Drive : ❑ Chain ❑ Belt ❑ Other : _____
Number of gears : _____

CHASSIS :

Type : ❑ Tubular ❑ Platform ❑ Hull/Tub ❑ Other : _____

Materials used : _____
_____

Number of wheels : ❑ 3 ❑ 4

Tyres ; Type and size : _____

Brakes : ❑ Block ❑ Drum ❑ Disk ❑ Other : _____

Brake control : ❑ Cable ❑ Hydraulic ❑ Rod ❑ Other : _____

BODYWORK :

Type : ❑ Open ❑ Closed

Materials used : _____

_____

Overall height (cm) : _____ **Overall width (cm) :** _____

Track (cm) : _____ **Wheelbase (cm) :** _____

Weight of the vehicle (kg) : _____

RADIO CONNECTIONS :

Does the team use radio connections during the competition?:

❑ No ❑ Yes (❑ Voice radio, frequency: _____ ❑ Radio modem, frequency: _____)

Please attach a diagram of the fuel system!

TEAM INFO

Please tell us about your team and its history (e.g., when founded, record, major occurrences and achievements, etc.) :

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REGULATIONS

PISARALLA PISIMMÄLLE® 2012

GENERAL REGULATIONS

1. PRINCIPLE OF RACE

The principle of the race is to use as little fuel as possible during the race on a given distance to be covered within a given time according to these regulations.

2. SCRUTINISING

On the day of the race no vehicle will be admitted onto the racetrack before the Technical Stewards, appointed by the organisers, have approved the design, construction, road worthiness, braking efficiency, safety and compliance with these regulations, especially those relating to propulsion and fuel supply system. The Technical Stewards will be considered as being de facto judges of all these aspects, and their decision is final without appeal. This approval will not prejudge the results of the subsequent inspections that the Technical Stewards may make at any time during the competition.

The Technical Stewards have the right to seal any part or component of the vehicle if they consider it as necessary.

The Jury reserves the right to claim any parts of the vehicle for inspection. It should be able to make this inspection within 30 minutes after the claim. The Jury should make such a claim within 30 minutes after the end of the race. Only the persons appointed by the Jury, including representatives of competitor in question, are permitted to be present at the inspection. If needed the parts may be dismantled. The Jury reserves the right to penalties, up to disqualification, if regulations have been violated. In cases where regulations have not been violated the representatives of the Jury are bound to confidentiality.

If any technical changes are made to the vehicle after scrutinising, the changes must be scrutinised before competing.

3. METHOD OF PROPULSION

A heat engine using only fuels mentioned in article 6. of these regulations must solely produce the propulsion. The type or design of the engine will not be subject to any restrictions.

If any kind of stored energy (electric, pneumatic, etc.) is used for other purposes than for self-starter, ignition system, measuring and control instrument circuits and injector nozzle, the competitor must prove the Technical Stewards that this energy is replaced during the race by the engine. However use of stored electrical energy is tolerated on the engine lubricant circulation when starter motor is running.

Pressurising the fuel with air is also allowed on conditions mentioned in article 8.

VEHICLE DESIGN

4. GENERAL CONSTRUCTION AND SAFETY OF VEHICLE

4.1. The structure of the vehicle must be safe to its driver and surroundings. The vehicle must not have any sharp edges of prominent parts that may be of danger to others. The vehicle must have 3 or 4 carrying wheels, which, in normal running conditions, must all be in continuous contact with the track. The maximum height of the vehicle, measured at the highest point of the vehicle, is 1.25 times the track of the two outermost wheels, which must be at least 50 cm and at most 110 cm. The wheelbase of the fore- and rearmost axles must be at least 100 cm.

4.2. The vehicle must have at least two brakes or fully independent braking systems, so that a failure in one of the systems does not prevent the other from operating. However these braking systems may effect on the same wheel if it is the centremost wheel of the 3-wheeled vehicle. The brakes will be submitted to the

Technical Stewards for approval. The driver must be able to operate the brakes without loosing the steerability of the vehicle. The efficiency of the brakes will be tested using a test-bench where the vehicle is inclined to a 20% slope. The brake being controlled may not slip during the test. Each brake will be tested separately.

4.3. A self-starter may be used during the race on condition that it can only operate when the ignition and fuel supply systems are operating normally. It must be demonstrated that the starter does not provide the vehicle with any propulsive force. The vehicle must have a red light indicating the operation of the starter. The brightness of the light should be equal to car brake light and it must be seen to both sides and back of the vehicle. This indicator light must be connected directly to terminals of an electric self-starter. See example on page 7.

4.4. The vehicle must have a clutch system so that it can be immobilised on the start line just before the start of the attempt and then make a standing start without any outside assistance.

4.5. The driving compartment must be designed in order to enable outside assistance to easily extract the driver from the vehicle. Vehicles must be equipped with a cockpit opening large enough for the driver to get easily out of the vehicle by one's own means. This opening can be fully or partially closed by a hinged, removable or folding element on condition that an opening mechanism can be easily actuated both from the inside and the outside without the use of any tool, and that the outside opening system is clearly indicated. It is forbidden to fasten or consolidate the fastening of the cockpit cover with tape. Both sides of the cockpit must provide a protection for the driver against possible lateral shocks. A prone 'head-first' driving position is prohibited.

4.6. In the normal driving position, the driver must have adequate direct 180-degree horizontal angle of vision to the front. This visibility must be achieved without aid of any optical devices. The vehicle must be equipped with driving mirrors providing rear view on both sides. The correct visibility of these mirrors will be submitted to the Technical Stewards for approval. The recommended minimum size of the mirrors is 25 cm^2 each.

4.7. There must be a fireproof separation or bulkhead between driving and engine compartments in such a way that the driver would not have a direct contact with the possible fire. Only control and measuring circuits and electric wires may pass through this separation. This separation does not have to be fixed.

4.8. The front and rearwheels may be steered. However the organisers would like to draw the attention of the participants to the fact that steerable rearwheels might have a negative influence on the vehicle's stability.

4.9. All intentional changes to the aerodynamic form of the vehicle during the attempt are prohibited.

4.10. The vehicle must be equipped with an effective horn. Use of an automobile type horn is recommended.

4.11. The maximum permitted sound level is 100 dB(A) measured on soft ground at 50 cm from the side of the vehicle's exhaust outlet.

4.12. The wheels inside the bodywork must be made inaccessible to the driver by a partition.

4.13. The vehicle must be fitted with an efficient rollbar, the transversal size of which must be larger than the height and breadth of the drivers allowed to drive the vehicle. This rollbar must be able to stand a 70 kg static force applied in its centre without bending. To improve the driver's safety in case of a collision, it is recommended that the carrying chassis of the vehicle extends in front of the driver's feet or there is a rigid protective device fixed firmly to the carrying chassis of the vehicle. It is also recommended that there are no rigid structures above the driver's legs.

4.14. Driver's seat must be equipped with an efficient 4-point safetybelt with a buckle specifically designed for this purpose. The belt must be firmly attached to carrying chassis or rollbar, not to removable parts of bodywork.

4.15. There must be a switch or similar device fitted on the outside surface of the vehicle in order to turn off the engine. This device must be marked with a sticker specified on page 7 of these regulations.

4.16. Each vehicle must be equipped with a fire-extinguishing device. Acceptable devices are either an extinguishing blanket having a minimum size of 90 x 120 cm or a fire extinguisher having a minimum capacity of 1 kg.

VEHICLE CLASSES

5. OPEN CLASS

FUEL SUPPLY SYSTEM

(P) refers to pictures on pages 8-9 of these regulations

6. FUEL

The only fuels that may be used are those specified in he invitation of the event. These fuels will be supplied by the organisers. The competitors can procure the quantities of fuel required for practising and the race from the officials responsible for measuring the fuel consumption.

This fuel must be used alone with no additive; only the power produced in the engine by its combustion with air can be used for propulsion, with the exception of factors considered natural, such as wind and gradient. No other product liable to be used as fuel should be transported on board the vehicle. Water injection is also permitted.

7. GENERAL REGULATIONS OF FUEL SYSTEM

7.1. The fuel supply system must be translucent and designed in such a way that it can be fully drained and filled again before the attempt up to a given mark. After a top-up, after the attempt, it should provide an exact indication of the volume of fuel consumed. The competitors are recommended to carefully avoid any increase in the temperature of the circuit, which would lead to the formation of vapour bubbles. Conversely, cooling of the fuel below the ambient temperature is not permitted.

7.2. Competitor must use a fuel tank specified in the invitation of the event.

7.3. (P) All fuel and pressure circuits, including the pressure reservoir, must be of translucent and semi-rigid or rigid materials. All pipes of the system must be made of the non-coloured polyamide-tube used for pneumatic assemblies.

7.4. (P) There must not be any kind of valve, non-return valve, gauge, etc., fitted to the fuel pipe between the tank and the fuel distributor (carburettor/ injector nozzle/ pressure-pump). As an exception to this a translucent non-coloured fuel filter, and for a diesel engine a switch-off valve, are permitted.

7.5. (P) Design of fuel system, including fuel distributor, must be such that possible vapour bubbles can be easily noticed and removed. Inside diameter of fuel pipes after tank must be at least 4 mm for easiness to remove possible bubbles.

7.6. The fuel system must not, even partially, be situated in driving compartment. The whole fuel supply system must be in a ventilated compartment behind a fireproof separation or bulkhead and inaccessible and unalterable by the driver except for the control circuits.

7.7. (P) If the fuel system incorporates any mechanism or device regulating the fuel flow (e.g. float- or diaphragm-chamber), there must be a provision for testing its operation by the ability to draw off some of the fuel inside that system. There must, therefore, be a drain tap or similar device acceptable to the Technical Stewards. When drawing off the fuel, the fuel level in the tank must drop. When the fuel drawn off is returned to the tank, the fuel level should rise back to the original level.

7.8. Only non-pressurised fuel system is permitted for carburettor-engines.

7.9. Recycling engine blowby gas back to the engine is prohibited during the race.

8. PRESSURISED FUEL SYSTEM

8.1. (P) When pressurised fuel system is used, the maximum pressure allowed, including the pressure reservoir, is 5 bars and the vehicle must be fitted with a pressure meter, which constantly shows the pressure in the system. Normal running pressure must be clearly indicated on the meter. The pressure must not significantly change during the attempt. The fuel tank must be at atmospheric pressure when the measurements of the fuel level are made.

8.2. (P) The pressure system must have a coupling for a reference pressure meter of the organiser. Accepted couplings are a normal car tyre valve, which has a thread and needle compatible to TR412 valve (Ø 7.7 mm) or pneumatic female quick-release coupling compatible either with eurostandard 7.4 (Cejn 320 etc.) or smaller Camozzi 5x50.

8.3. (P) If a pressure regulator is used in the system, the pressure meter and the coupling mentioned in articles 8.1 and 8.2. must be on both sides of the regulator.

8.4. (P) In pressurised fuel systems the maximum capacity of the tank is 100 ml.

8.5. (P) The pressurised air circuit must be equipped with a safety valve set to 5 bars maximum.

8.6. (P) Pressurisation of the system, including the pressure reservoir, will take place at the start top-up by the means of a hand-pump.

9. PRESSURE-PUMP (E.G. DIESEL)

9.1. (P) Pressure-pump is permitted only when over 5 bar pressure is needed. If the pump produces over 10 bar pressure the fuel pipes between the pump and the injection nozzle must be metallic.

9.2. (P) The pipe between the pump and the injector nozzle must not be fitted with any kind of a valve, non-return valve, coupling, tap etc.

9.3. (P) The fuel system before the pressure-pump must be non-pressurised.

9.4. (P) Operating power for a pressure-pump must be taken from the engine. N.B.! For example an electric pump is permitted on conditions mentioned in article 3.

SAFETY

10. DRIVING

No vehicle should be moved or driven on the track against the driving direction. Competitors are requested to leave room for those wishing to pass them. All passing must be done with utmost care. The competitor driving ahead is allowed to choose one's driveline freely as long as it does not deliberately interfere or danger other competitors.

Slip streaming of other competitors is prohibited.

11. DRIVER'S SAFETY

On the racetrack, during both the testing and the race, the drivers must wear protective helmets, which will be submitted to the Technical Stewards for approval. The helmet must be approved to traffic-use in EU. Cyclist-helmets are forbidden. It should always be possible for the drivers to get out of their vehicles or for rescuers to remove them in case of accident or emergency. Drivers may not wear synthetic clothes.

12. ACCESS TO RACETRACK

Throughout the race, all members of the teams must keep off the track, with the exception of the drivers on or in their vehicles. No vehicle nor any member of the team personnel should enter the track to provide assistance without special permission from the organisers.

In case of failure or accident, the driver must remove his/her vehicle from the track. If he/ she no longer wishes to continue, he/ she must wait for the assistance until helpers are given permission to go to the track.

RACE PROCEDURE

13. DISTANCE AND SPEED OF COMPETITION

The competitors must complete a given distance at a minimum average speed of approximately 25 km/h. The distance and maximum time are specified in the Invitation. Switching off the engine and rolling on neutral are allowed during the race.

In case of delay considered excessive by the Timekeepers, who will in this respect to be considered as de facto judges, the competitor concerned will not be timed and should give way to those awaiting their turn, thus renouncing any priority over them.

14. START OF RACE

The vehicles must be stopped on the start line and make a standing start engine running with no outside assistance. The vehicle on the start line must give way to those already taking their laps on the track.

The competitors will wait until the start line is clear in order to get into place in their turn, but the starting orders can be drawn by lot if the Timekeepers so decide.

15. INCIDENTS DURING RACE

The driver will be required to indicate to the Timekeepers or the Technical Stewards any movement, made or attempted, by means other than the vehicle's own motive power, and the lap will not be taken into account. If this type of incident is not indicated the driver will be automatically excluded. Nevertheless, if repairs can be made on the spot and if the vehicle has not advanced, the laps need not be invalidated. The competitors will be solely responsible for submitting themselves to all the aforesaid obligations to the Timekeepers and Technical Stewards.

16. MINIMUM WEIGHT OF DRIVER

The minimum weight of the driver wearing his/ her racing clothes is 45 kg. Ballast will be fitted in the vehicle in case the minimum weight is not met. The weight of the driver as well as the use of the ballast are surveyed during the competition by random checks. At the finish-line a 1 kg tolerance to the weight of the driver is accepted.

17. RESULTS AND MEASUREMENT

17.1 Before the start of the attempt the Fuel Measurers will top-up the tanks. After the attempt competitors must not carry out any work on their vehicles before having permission by Technical Stewards or Fuel Measurers. The Measurers will measure the fuel consumed during the attempt either by volume or by mass. The completed race laps will only be taken into consideration for the results if they have been completed in the time allowed during the hours in which the track is officially opened to the competitors and if the vehicle's fuel consumption is officially measured and the sheet duly signed. The competitors will be entitled to obtain confirmation from the official Timekeeper that they have duly completed the race in the regulation time before having their fuel consumption measured. The organisers reserve the right to define the procedures by which the consumed fuel volume is measured and if required, corrected depending on temperature variations and to measure the total volume of fuel contained in the fuel supply system.

17.2. All fuel quantities will be normalised to following physical values:

- Petrol (98 and 98/2%):	density 0.750 kg/l,	caloric value 43.5 MJ/kg,	temperature 15^{o}C
- Diesel:	density 0.835 kg/l,	caloric value 43.5 MJ/kg,	temperature 15^{o}C

17.3. Provisional results will be displayed as soon as the race has ended and will indicate the competitors fuel consumption, calculated both in l/100 km and km/l. Also the energy index is to be calculated and displayed at the same time. The energy index (EI) takes into account the three main parameters describing generally the energy efficiency of the engine/ vehicle assembly:

EI: Energy index
C: The volume of fuel consumed in ml
M: The weight of the vehicle + driver assembly in kg
V: Average speed in km/h

$$EI = \frac{MxV}{C}$$

18. COMPLAINTS

Complaints will only be accepted from the team managers or the drivers and will be received by the Technical Stewards or the Jury. According to their subject, these complaints should be made within the following times:

- Vehicles : within ten minutes following the end of the race.
- Conduct of competitors and drivers : within ten minutes following the end of the race.
- Results: : within 30 minutes after the result in question is displayed.

19. DISPUTES

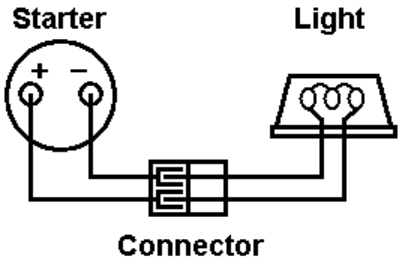
In case of dispute the decision of the Jury will be binding and without appeal.

20. RIGHTS OF ORGANISERS

The organisers reserve the right:
- To modify, postpone, or cancel the race in the case of unforeseen circumstances, notably on mete-orological grounds. No indemnification will be paid.
- To exclude, disqualify or penalise any competitor who, according to the Jury's judgement, may have been assisted thus violating these regulations, may have impeded other competitors, may have strayed from the normal racetrack or have acted in such a way as to provide a wrong idea of the results, in particular insofar as concerns the fuel consumption or propulsion.

Any case not provided for in these regulations will be judged with the sovereign power of the Jury. By the fact of his/ her entry, every competitor accepts the terms of these regulations as well as the decisions and the sovereign power of the Jury. This concerns also the competitor him-/ herself as well as his/ her team members or other representatives.

SELF-START INDICATOR ; [4.3.]

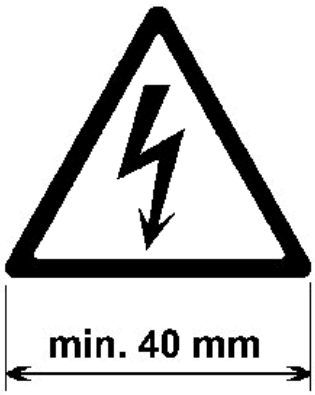


Indicator light must be connected directly to terminals of starter.

Connector will be allowed.

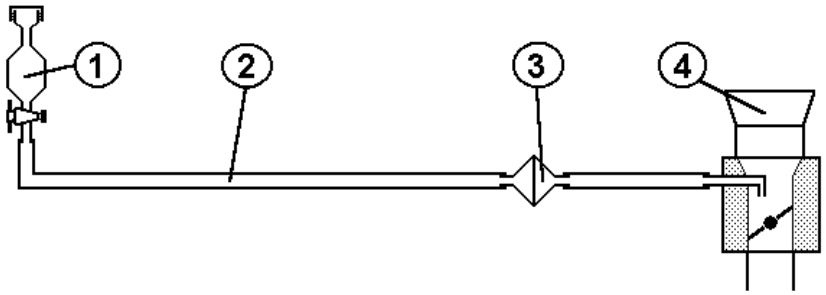
ENGINE KILL SWITCH MARKING ; [4.15.]

Each vehicle must have a switch or similar device on the outside surface of the vehicle in order to turn off the engine. This device must be marked with a label having a black arrow inside a black triangle on a yellow background. The side of the triangle must be at least 40 mm.



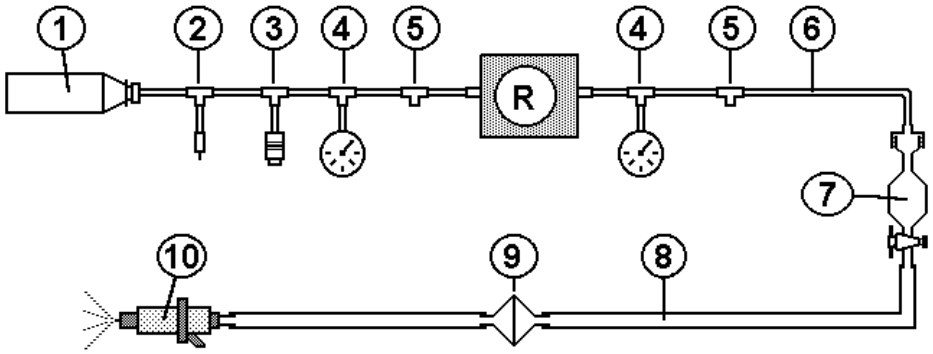
BLACK FIGURE ON A YELLOW BACKGROUND

NON-PRESSURISED FUEL SYSTEM



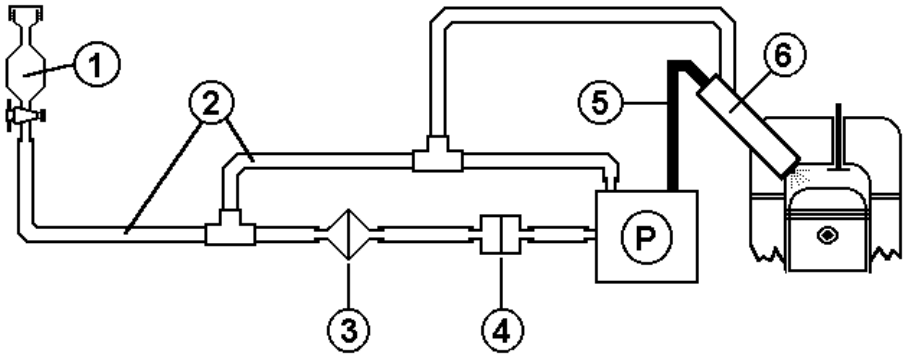
1. Fuel tank
2. Fuel pipe made of translucent non-coloured pneumatic-tube, inside diameter at least 4 mm ; [7.3. , 7.5.]
4. Carburettor
- Only translucent fuel filter **(3.)** permitted between tank **(1.)** and carburettor **(4.)** ; [7.4.]

PRESSURISED FUEL SYSTEM



1. Translucent pressure reservoir, maximum pressure 5 bars ; [7.3. , 8.1.]
- E.g. plastic soft drink bottle is suitable
2. Valve for pressurisation ; [8.6.]
3. Safety valve set to 5 bars maximum ; [8.5.]
4. Pressure meter constantly showing the pressure of the system [8.1.]
5. Coupling for reference pressure meter of the organiser ; [8.2.] ; page 6
R. Possible regulator. **NB!** If regulator is used the meter **(4.)** and the coupling **(5.)** must be fitted on both sides of the regulator. ; [8.3.]
6. Pressure pipe made of translucent non-coloured pneumatic-tube, also before possible regulator ; [7.3.]
7. Fuel tank, capacity max. 100 ml ; [8.4.]
8. Fuel pipe made of translucent non-coloured pneumatic-tube, inside diameter at least 4 mm ; [7.3. , 7.5.]
- Only translucent fuel filter **(9.)** permitted between tank **(7.)** and injector nozzle **(10.)** ; [7.4.]

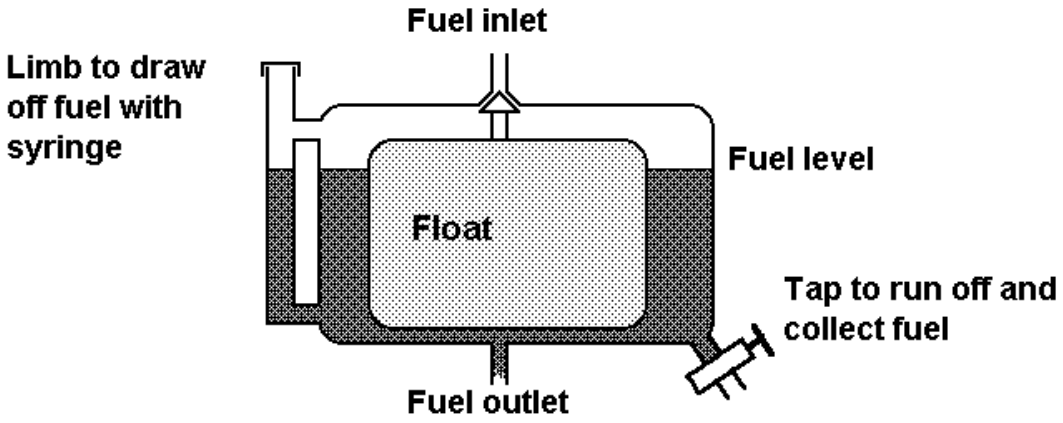
PRESSURE-PUMP



1. Fuel tank
2. Fuel pipe made of translucent non-coloured pneumatic-tube. Inside diameter at least 4 mm ; [7.3. , 7.5.]
P. Pressure-pump, operating power taken from the engine ; [9.4.]
- Only translucent fuel filter **(3.)** and switch-off valve for diesel engine **(4.)** permitted between tank **(1.)** and pump **(P.)** ; [7.4.]
- Fuel system before pump **(P.)** must be non-pressurised ; [9.3.]
- Fuel pipe **(5.)** after pump **(P.)** must be metallic, if pressure is over 10 bars ; [9.1.]
- Pipe **(5.)** must not be fitted with any kind of valve, coupling. tap etc. ; [9.2.]
- Although direct injection is illustrated here, this system is allowed to use also with injection to inlet manifold.

NEEDLE VALVE TESTING ; [7.7.]

TWO POSSIBLE METHODS SHOWN HERE AS AN EXAMPLE



PRESSURISED FUEL SYSTEM

TOP-UP PROCEDURES AT THE START:

1. the competitor arrives to top-up with the whole system (including pressure reservoir) unpressurised;
2. system is topped up well above the level line;
3. system is compressed to the pressure marked on the meter;
4. fuel valve is opened;
5. competitor starts the engine, engine must run until the fuel has dropped under the level line;
6. fuel valve is closed;
7. tank is decompressed;
8. tank is topped up well above the level line;
9. fuel temperature is taken;
10. fuel is levelled to the line with syringe;
11. system is compressed to the pressure marked on the meter;
12. fuel valve is opened;
13. competitor may proceed to startline.

This procedure is used in order to ensure the same pressure in the whole system as well as to uncover possible 'hide-ups' for fuel

TOP-UP PROCEDURES AT THE FINISH-LINE:

COMPETITOR MAY NOT DO ANYTHING FOR THE VEHICLE BEFORE GIVEN PERMISSION!

1. there must not be any vapour bubbles in the system;
2. pressure is checked to be same as at start, fuel valve is closed and tank decompressed;
3. fuel is topped up with burette;
4. fuel temperature is taken;
5. system is compressed to the pressure marked on the meter;
6. fuel valve is opened;
7. measurers will check that fuel level doesn't drop significantly (more than a few millimetres);
8. if there is a significant drop, the valve is closed, system decompressed, more fuel topped-up, system compressed again, valve opened etc…

NON-PRESSURISED AND PRESSURE-PUMP (E.G. CARBURETTOR AND DIESEL)

TOP-UP PROCEDURES AT THE START:

1. system is topped up well above the level line;
2. fuel temperature is taken;
3. fuel is levelled to the line with syringe;
4. competitor may proceed to startline.

TOP-UP PROCEDURES AT THE FINISH-LINE:

COMPETITOR MAY NOT DO ANYTHING FOR THE VEHICLE BEFORE GIVEN PERMISSION!

1. there must not be any vapour bubbles in the system;
2. fuel valve is closed;
3. fuel is topped-up with burette;
4. fuel temperature is taken.

MEASURING BY MASS

TOP-UP PROCEDURES AT THE START:

1. the competitor arrives to top-up **with the whole system empty**, system will be taken out of the vehicle and weighed as empty;
2. system will be filled up and possible vapour bubbles removed;
3. system will be weighed as filled up;
4. system will be installed to vehicle compressed to the pressure marked on the meter, competitor may proceed to startline.

TOP-UP PROCEDURES AT THE FINISH-LINE:

COMPETITOR MAY NOT DO ANYTHING FOR THE VEHICLE BEFORE GIVEN PERMISSION!

1. fuel valve is closed and tank decompressed;
2. system will be taken out of the vehicle and weighed;
3. system will be emptied and weighed as empty;
4. the result will be calculated by converting the consumed mass to volume according to determined physical values.

NORMALISING THE RESULTS TO STANDARD PHYSICAL VALUES

MEASURING BY VOLUME

1. Measured consumed volume (V_A) will be corrected on temperature variations. The density of fuel used in this correction should be the true density (ρ_T) of each fuel.

$$V_C = V_A * (1 - \alpha(T_2 - 15)) + V_{TOT} * \alpha(T_3 - T_1) \ , \ \alpha = \frac{7.7 * 10^{-4}}{\rho_T} \ , \text{ where}$$

V_C : Temperature corrected volume of consumed fuel (ml)
V_A : Volume added at finish
V_{TOT} : Total volume of fuel system
T_1 : Temperature of fuel system at start (^oC)
T_2 : Temperature of added fuel
T_3 : Temperature of fuel system at finish top-up
ρ_T : True fuel density of fuel at 15^oC (kg/l)

2. Temperature-corrected volume will be normalised by the density and caloric value of the fuel.

$$V_N = V_C * \frac{Q_T}{Q_N} * \frac{\rho_T}{\rho_N} \ , \text{ where}$$

V_N : Normalised fuel consumption (ml)
V_C : Temperature corrected volume of consumed fuel
Q_T : True caloric value (MJ/kg)
Q_N : Normalised caloric value
ρ_T : True density of fuel (kg/l)
ρ_N : Normalised density of fuel

MEASURING BY MASS

1. Fuel system is weighed before and after the attempt. The consumed mass of fuel will be converted to volume (V_C) by using the normalised density of each fuel.

2. The volume will be normalised by the caloric value of the fuel.

$$V_N = V_C * \frac{Q_T}{Q_N} \ , \text{ where}$$

V_N : Normalised fuel consumption (ml)
V_C : Mass converted volume of consumed fuel
Q_T : True caloric value (MJ/kg)
Q_N : Normalised caloric value