

NAVIGA

World Organisation for Modelshipbuilding and Modelshipsport
Weltorganisation für Schiffsmodellbau und Schiffsmodellsport
Organisation Mondiale de Navimodelisme et de Sport Nautique



Competition Rules

FSR

V-H-O

2012

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Amendments, Additions and proposals for improvements are to be directed to the NAVIGA Section Management via the representative of the Country, last date two months before a World Championship.

Incase of doubt of the interpretation of the Rules and Regulations the English text will be prevail.

The NAVIGA Executive Committee

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Competition rules for radio controlled models in categories FSR-V-H-O

1. Defenition of models

Models in the FSR categories are controlled by the competitor using radio control. These are model boats of free design, wich conform to the race requirements, however should in form and design look like a boat.

2. CLASS FSR

2.1. CLASS FSR-V

The category FSR-V can be divided into the following groups:

Class FSR-V 3.5	Free build racing models for endurance races (20-30 min.) with internal combustion motor up to 3.5 cc and below waterline propulsion.
Class FSR-V 7.5	Free build racing models for endurance races (20-30 min.) with internal combustion motors above 3.5 cc up to 7.5 cc and below waterline propulsion.
Class FSR-V 15	Free build racing models for endurance races (20-30 min.) with internal combustion motors above 7.5 cc up to 15 cc and below waterline propulsion.
Class FSR-V 27	Free build racing models for endurance races (20-30 min.) with internal combustion motors (petrol-motors with sparkplug ignition) above 15 cc up to 27 cc and below waterline propulsion.

Class FSR-V 35

Free build racing models for endurance races (20-30 min.) with internal combustion motors (petrol-motors with sparkplug ignition) above 27 cc up to 35 cc and below waterline propulsion



2.2. CLASS FSR-H

The category FSR-H can be divided into the following groups:

- Class FSR-H 3.5** Free build HYDRO – planes* with internal combustion motor up to 3.5 cc and with surface drive propulsion.
- Class FSR-H 7.5** Free build HYDRO – planes* with internal combustion motors above 3.5 cc up to 7.5 cc and with surface drive propulsion.
- Class FSR-H 15** Free build HYDRO – planes* with internal combustion motors above 7.5 cc up to 15 cc and with surface drive propulsion.
- Class FSR-H 27** Free build HYDRO – planes* with internal combustion motors (petrol-motor with sparkplug ignition) above 15 cc up to 27 cc and with surface propulsion.

Remark: * HYDRO – planes (A free build model with three ore more planing surfaces)



2.3. CLASS FSR-O

The category FSR-O can be divided into the following groups.

- Class FSR-3.5** Free build OFFSHORE boats with internal combustion motor up to 3.5 cc and with surface drive propulsion.
- Class FSR-7.5** Free build OFFSHORE boats with internal combustion motors above 3.5 cc up to 7.5 cc and with surface drive propulsion.
- Class FSR-15** Free build OFFSHORE boats with internal combustion motors above 7.5 cc up to 15 cc and with surface drive propulsion.
- Class FSR-27** Free build OFFSHORE boats with internal combustion motors (petrol-motors with sparkplug ignition) above 15 cc up to 27 cc and with surface drive propulsion.
- Class FSR-35** Free build OFFSHORE boats with internal combustion motors (petrol-motors with sparkplug ignition) above 27 cc up to 35 cc and with surface drive propulsion. *Nationellt tillåts motorer upp till 51cm³.*
- Klass FSR-26 Z** *Klass FSR-026 Zenoah Offshorebåtar med otrimmad bensinmotor max 26 cc enligt särskilt reglemente.*



3. PRINCIPAL AND GENERAL RULES

3.1. Principal Rules

3.1.1. Competitions where the rules apply

- (1) World Championships
Continental Championships
International Competitions
International Friendly Competitions
- (2) For countries associated with NAVIGA it is recommended, that they use this rules in their national events.
- (3) The year of the competition is from January 1st until January 1st of the next year.
- (4) *Nationella tillägg och avvikelser (kursiv stil) gäller endast vid nationell tävling.*

3.1.2. Entry Fee and Payment

Entry Fees for official NAVIGA events are as follows:

- (1) Seniors 20.00 per class. 15.00 for organisers. 5 for the section. Juniors 15.00 per class. 10.00 for organisers. 5 for the section.
- (2) *Startavgiften vid nationell tävling beslutas av sektionensmötet.*
- (3) The organisation have to pay for the judges:

Shelter and Food for the working days on World and Continental Championships.
For the first 3 working days 10 each day.
For the other working days 5 each day.
For International Competitions only Shelter and Food.

3.1.3. Protest Fees

The protest fee at all official NAVIGA competitions is 10.
Nationellt är protestavgiften 200 sek

3.2. Personal Rules

3.2.1. Age Groups

At NAVIGA events the competitors are divided into two Age Groups-Juniors and Seniors.

- (1) A Junior is someone who in the year of the competition is not older than 18 years.
(A Junior is someone who in the year of the event does not have their 19th birthday)
- (2) For safety reasons the junior competitors in the FSR 15 cc engines classes must be at least 12 year old.
- (3) Juniors are not allowed to take part in the FSR 27 cc and FSR 35 cc classes.
- (4) *Vid otillräckligt antal juniorer för att bilda klass, tävlar de med seniorerna*

3.3.2. Competitor registration

- (1) In order to compete in a championship or other international event an application must be made country's association on behalf of the competitor.
- (2) The application should be received by Organisers in accordance with their terms and can be refused if received late.
- (3) An association is only allowed to enter competitors if their country's membership subscriptions, as set by NAVIGA, have been paid.
- (4) By entering the competition the competitor accepts the rules that apply.
- (5) *(1) Deltagare i nationella och internationella tävlingar skall ha av förbundet utfärdad tävlingslicens.*
- (6) *(2) Vid registrering skall SMBF-licens kontrolleras. Vid registrering kontrolleras också att betalningar är rätt.*
- (7) *(3) Om deltagare är utländsk skall istället för SMBF-licens kontrolleras att denna är medlem i sitt lands förbund och har rätt att tävla utomlands.*

3.2.3. Maximum Allowed Competitors

- (1) At the World Championships each country is allowed to enter the following number of competitors in Senior and Junior:

- (2) In the FSR-V/H/O classes 3 competitors and the title defedant.
 In the FSR-V/H/O classes it can be more, if one country have a competitor in the final the country have the right for 1 extra place in the next World Championship.
 If they have 2 competitors in the final than they have 2 extra place's for the next World Championship, in this case they have the right for 5 competitors, the maximum is 5 competitors and the title defedant.
- (3) The host country (organizer from the world-championship) can enter 5 competitors and the title defandant, but the maximum is 5 regardless of the result at the last championship.
- (4) At the Continental Championships each country is allowed to enter the following number of competitors in Senior and Junior:
- (5) In the FSR-V/H/O classes 5 competitors and the title defenanant.
 In the FSR-V/H/O classes it can be more, if one country have a competitor in the final the country have the right for 1 extra place in the next Continal Championship. If they have 2 competitors in the final than they have 2 extra place's for the next Continental Championship, in this case they have the right for 5 competitors, the maximum is 7 competitors and the title defandant.

3.2.4. Assistants and substitution of the competitor

- (1) In each class a competitor is allowed to have an assistant who will be designated by the competitor.
- (2) Tha assistant is allowed to help the competitor in the preparations for the start and until the finish of the race.
- (3) Substitution of the competitor is NOT allowed during the race.
- (4) *Codriver är obligatoriskt nationellt.*

4.3. Technical rules

3.3.1 Propulsion of models and fuel

- (1) Only internal combustion motors are allowed. Jet engines and other forms of non standardised propulsion are not allowed.

3.3.2. Fuel

- (1) Free fuel is allowed except in the FSR 27 cc and 35 cc class.
- (2) Fuel in the FSR 27 cc and 35 cc class must be a petrol-oil mixture. Petrol can be of any octane level.
 The use of Methanol mixtures is prohibited.

Bränslet som används i klass FSR-O35(50), klass FSR-O27 och Klass FSR-O26 Zenoah skall vara handelsbensin och uppfylla kraven för Svensk Standard EN 228 och SS 15 54 22. Dock

får Miljöbränsle av Alkylattyp användas. Endast olja får blandas i bränslet. Bränslet E85 får användas.

3.3.3. Noise reduction, noise level measurement and rules

- (1) Internal combustion engines must be equipped with a device to reduce noise levels.
- (2) The equipment used to assess the noise level shall not exceed approx. 0.3 dB and must be in accordance with EEC and analogue rules. Noise level indicator issued by a recognised authority, must be readily available.
- (3) If for noise level measurements, self-registration equipment is used, these should reflect the measurements of the noise level indicator without too many differences. It is therefore recommended that a comparison between the equipment in use should take place. The comparison has to be checked by the Jury or the Organisers at the start of the event/race and maintained throughout.
- (4) Noise level readings should be taken by individuals who have been trained appropriately and have practical experience.
- (5) The noise meter should be set on “ SLOW ”.

3.3.4. Methods for measuring noise levels in the FSR-V/H/O category

3.3.5. General

- (1) The measurement microphone must be positioned as follows:

Height 100 cm. Approx. X 20 cm. Above water level.

Position 25 metres to the right for FSR-V and to the left for FSR-H/O at the right angle to the centre line of the FSR course and 22 metres away from the line connecting the two lowest buoys and securely attached.

- (2) At least three noise level measurements must be taken for each model during the race, under the following conditions.
- (3) There should be no other boat within 15 metres around the model being measured. The noise measurement must be taken when the boat is on the base line at least 15 metres away from the microphone.
The measurements must be evenly spaced during the race.

- (4) The competitor must be advised immediately if their boat exceeds 80 dB/A. If the second measurement also exceed the noise level they will receive a warning and if the third measurement exceed thenoise level they will be immediately disqualified.

3.3.6. Application and use of radio control equipment and frequency control

- (1) During official NAVIGA events only digital and proportial operated radio control equipment is allowed. The radio control be capable of working within 10 kHz, the use of any other frequency bands may be possible.
- (2) It must be posible to change frequency at short notice. Each competitor must have four different pairs of crystals.
- (3) The use of the radio control equipment is subject to the regulations of the country where the NAVIGA event is held. Organisers must list the available frequencies in the entry form. *Föraren är alltid ansvarig för att hans utrustning uppfyller lagkraven och att dom frekvenser som används är tillåtna*
- (4) It is recommended that frequency checks are carried out to avoid frequency clashes. At World and Continal Championships there must be frequency checks.
- (5) The re-run of a race due to radio problems can be refused by the race officials, if the planned finishing time of a race or championships is seriously endangered.
- (6) The freqencies must be recorded in MHz only. *2,4 GHz är tillåtet.*
- (7) Radio's may not switched on within 1000 metres of the competition area. Competitors who dissobey the rules will be disqualified from the whole competition. *Gäller under pågående heat. Gäller naturligtvis inte dom som kör I heatet.*

3.3.7. Buoys dimensions, Constuction, Anchorage

- (1) The race course has to be marked by buoys. Each buoy must be concist of two colours and have good visible coloured stripes. The buoys have to anchored so that they are at a right angle to the water surface.
- (2) The buoys must be cylindrical and minimum of 20 cm. and maximum 50 cm. above the water surface. The buoys must be 40 cm. to 50 cm. in diameter.
- (3) The bouys must be made of materials such as polystyrene, or natural fibres, etc.
- (4) *Skall vara gjorda så att dom inte skadar båtarna vid påkörning*

3.3.8. Starting pontoon, Construction and Materials

- (1) Starting pontoons have to provide adequate space for the competitors, their model, assistants and judges. Any obstructions which could endanger the safety of the competitor and models should be avoided.

- (2) The starting pontoon must be a minimum of (13 x 1.5 metres) 19,5meter long and 1.5 meter wide. *Bryggan bör vara 1,5m bred och så lång att varje tävlande ges 1,5m.*
- (3) Access to the starting pontoon should be clear. The surface of the pontoon must be non slip even when wet.
- (4) The starting pontoon should when occupied not move, rol or in any way change position.
The surface of the starting pontoon must not be higher than 50 cm. above the water surface.
- (5) Floating starting pontoons are only allowed when the anchoring and stability are sufficient to prevent rolling caused by waves or movement of people.

3.3.9. Lapcounting

- (1) World Championships – Continental Championships – International events can only count by Transponder counting.

3.3.10. Transponder mounting FSR-V/H/O

- (1) The transponder should not be more than 25 cm. from the back of the boat.

3.3.11. Transponder Counting FSR-V/H/O.

- (1) For lap counting only 2 or 3 operators of the counting equipment and 1 or 2 announcers are needed. *Vid transpondervarvräkning, en varvräkningsfunktionär som övervakar systemet. Denna ska ha tillräckliga kunskaper om utrustningen.*
- (2) The announcers and operators work in pairs and will be responsible for counting the models. The announcers will cal the number of the model is passing the finishing line and the lap will be recorded by the counting equipment operator.
- (3) *Gäller ej vid transpondervarvräkning.*
- (4) Lap counters will only do the lap counting. Any lap deductions will be recorded by the assistant pontoon judges and will be deducted (FSR-V/O classes) from the total of laps recorded by the lap counters at the end of the heat.
- (5) There is only one finish line for all models FSR-V/H/O. The finish line is located on the left hand side from the pontoon. The lap counters will be located in a raised position in line with the finish line. *Vid lika varv avgör tiden, den som har den kortaste tiden vinner.*
- (6) In the event of equal number of laps, the competitor whose model passed the finish line first, will be the winner. A competitor with the start position number higher than 1 can only be the winner, if they have overtaken all models in the start numbers lower than them.
- (7) If boats stopped before the end of final, the last passing from the finish line is the finishing time.

Example:

Boat 1 have 68 Laps 30.12.1.

Boat 2 have 66 Laps 28.36.3.

Boat 3 have 66 Laps 29.12.8.

Boat 2 have the second place (better time) and boat 3 have place three.

The time should be measured to a 0,01 second.

3.4. SPORT RULES

3.4.1. The Competition Area

- (1) The competition site especially the racing water and the surrounding areas should be selected by the organisers to give competitors the best possible conditions to achieve good results.
- (2) The organisers must ensure that adequate safety measures are in place to protect competitors, officials and spectators from possible dangers.
- (3) The competition site, the racing water and surrounding area must be checked prior to the race by the race officials. In the event of complaints the organisers must attempt to correct this immediately.
- (4) The competition site and the water must not be contaminated by mineral oils, grease and other poisonous substances.
- (5) Failure to comply with this rule will result in disqualification of the competitor, who will not be able to lodge a protest.

3.4.2. Starting area, the preparation and access permission.

- (1) The starting area is the enclosed area directly adjacent to the racing water, in which the starting pontoon is located from which the competitors launched their model.
- (2) The preparation area is an enclosed area, where all competitors prepare the models and equipment for the start and serves as a waiting area during the event.
- (3) The preparation area should be located as close as possible to the starting area, subject to local facilities. It should provide accommodation and protection from weather *Nationellt krävs inte regnskydd.*
- (4) conditions for the models. Only officials, competitors and assistants engaged in the event are allowed in the preparation area.
- (5) The minimum requirements for a starting area in the class FSR-V/H/O category are. One starting pontoon this should be minimum 19.5 meters long and 1.5 meters wide. With numbered starting positions:
Class FSR-V from place 12 till 1.
Class FSR-H from place 1 till 8.

Class FSR-O from place 1 till 10.

- (6) Tables and chairs for the judges possibly protected from the weather.
 - 1 Noise meter.
 - 3 Yellow cards one with the number 1, one with the number 2, one with S (safety) on it.
 - 1 Red card.
 - 1 Signal device to indicate the Start/Finish of the heat.
 - 1 Computer – clock to indicate the racing time.
- 1 Public address system.
- 2 Sets of number plates with the numbers 1 to 12.
 - 1 Board with the drawing of the respective FSR course.

- (7) On the starting pontoon it is prohibited to use umbrellas during the race.

- (8) The organiser has to provide 2 rescue boats, 1 powered rescue boat and spare rescue boat.

The powered rescue boat must be stationed on the right hand side for the FSR-V class. FSR-H/O classes the rescue boat must be stationed on the left hand side. The crew for the rescue boat have to be provided by the organiser.

- (9) Inflatable boats, and other boats which could be damaged on impact and endanger the lives of the crew, are not allowed to be used as rescue boats. The crew of the rescue boat must wear life jackets. If the protective suits are not life belts, the rescue boats must be equipped with safety boards, which should be mounted on the outside to prevent damage.

- (10) The rescue service FSR-V is controlled by a start position official. The model must be rescued in the shortest possible time, causing minimum disturbance to the models still racing ensuring that all the competitors are treated fairly. Powered rescue boats must be used slowly, so that the bow waves have no adverse influence on the race. The continuous circling of rescue boat within the course should be avoided. The powered rescue boat should preferably be used to rescue those models which are farthest from the start jetty.

- (11) FSR-V boats must have a proper lifting point, in order to ensure a quick rescue.

- (12) FSR-V/O 27cc and 35cc boats must have a towing eye on the front for rescue purposes.

- (13) In classes FSR-H/O the rescue of models is only performed after completion of the heat. Rescue from a boat in the FSR-H/O during the race, only with a special permission from the judge (if a boat is zinc).

- (14) The starting pontoon has to be divided into approximately 1.5 metre sections for each competitor. The starting positions must be numbered and allocated prior to the race. FSR – starting pontoons must have a board in front to prevent boats landing on the pontoon. *Gäller ej nationellt.*

- (15) At World and Continental Championships of the FSR group, the organiser must provide a 1 metre high platform as part of the starting pontoon for the competitors to drive from. *. Gäller ej nationellt.*
- (16) The raised platform must also be numbered with starting positions. The competitor is left the choice from which level they wish to drive. The competitor and assistant can only use the allocated starting position.
- (17) Safety nets or other safety devices must be positioned around the competition site to avoid endangering spectators. This should take into consideration models that might collide or come off course.
- (18) During the race no body is allowed in the water. Competitors not obeying this rule will be disqualified.
- (19) It is prohibited, to run engines within 200 metres around (only with the radio out) the starting pontoon.

3.4.3. Allowed number, entries and condition of model.

- (1) Entry of a boat to other classes is not allowed. (V can only run in V classes, H only in H classes and Offshore only in offshore classes).
- (1) In the category FSR each competitor can register for the event two models per class.
- (2) It is the choice of the competitor which of the two models he will use for a race. Both models can be brought into the preparation area. However, only one model can be taken on the starting pontoon. The model which is on the pontoon can no more be changed for that heat. After start radio control (frequency) and closing radio control it is not possible to change crystals or repair other radio problems and take part on that heat.
- (3) Each model must from start to finish of the event show the condition in which it has been originally registered. If during the start a part is missing or such a part has been added i.e. this part was lost during the race, this start will be without time i.e. without a score registered. The decision rests with start official.

3.4.4. Registration Numbers

- (1) At all NAVIGA events all models must have fixed registration numbers.
- (2) The registration numbers are given out by the respective country. If the nationality is not part of the registration number it must be attached to the models. Registration numbers and nationality must not be changed and must permanently be fixed on the hull.
- (3) *Registreringsnumret= licensnumret tilldelas av SMBF tillsammans med klubben. Det består av bokstaven "S" för Sverige (Ej nödvändigt vid nationell tävling), följt av*

klubbnummer, första delen tilldelas av förbundet, andra delen av klubben. Ex: S 99-88.

- (4) The race and spare model must show an identical registration numbers.
- (5) Boat-upper deck XYZ = Nationality
H 3 = National Registration Number
- (6) **Drawing 1: Boat registration number**



3.4.5. Registration of competitors and models

- (1) Each competitor is required to register their models including any spare models and their radio control equipment, within the registration time announced.
- (2) Together with models, the competitor must show the confirmation of their registration issued by the organisers. Group confirmation should be shown by the team leader.
- (3) Qualified judges should be appointed by the organisers to carry out the registration. These have to be confirmed by the jury of race officials.
- (4) The registration must be arranged by the organisers so that can be completed within the set period, ensuring the planned start of the race and minimum disruption to competitors. According to the number of registered competitors and models, marked registration areas for various classes should be arranged.
- (5) The organisers must appoint sufficient qualified assistants.
- (6) The competitors must show their model for registration in the condition, in which it will be used in the race.
- (7) The following items must be included in the registration list:
Surname-Cristian name of the competitor and their nationallity.
Class.
Registration number.

Specification of the radio equipment (frequency, modulation, working frequency, spare crystals).

- (8) A marking on an appropriate place on the hull (shield, sticker, stamp, or similar) must have affixed to each registered model.

The marking should not leave permanent stains on the outside of the model. *Gäller ej nationellt.*

3.4.6. Issuing of starting permits, issuing start and competitors passed

- (1) After registration, the chief judge (at World and Continental Championships the jury) must announce the start permission.
- (2) This must be done by public announcement giving the names of competitors and classes entered. Reasons for refusal must be given.
- (3) The competition or the championship can only start one hour after the announcement of the starting permits. *Gäller ej nationellt.*
- (4) The competitor passes are to be issued by the organiser on the basis of the entries and should be handed to the competitor at the time of registration. *Gäller ej nationellt.*
- (5) The competitor must ensure that the entries on the competitor pass are correct. The organisers must be notified of any changes. *Gäller ej nationellt.*
- (6) The Organiser i.e. the Duty Officer must issue the starting permits and ensure that these are readily available at the starting point. *Gäller ej nationellt.*

3.4.7. Surrender of competitor passes and Assessment of Running Order

- (1) Prior to the race the competitor must hand in starting permit to the start official, failing which the competitor loses their permission to start that race. *Gäller ej nationellt.*
- (2) The start sequence of the competitors at a starting point must be assessed prior to first the race or lap per class under jurisdiction of the start position leader or otherwise appoint the available crystals. In the event additional races take place, the starting sequence must be reversed. *Gäller ej nationellt.*
- (3) The competition leaders or jury can decide which frequencies are to be used at a certain starting point.
- (4) If the competitor in the same event, competes in various model classes. There is no possibility (right) to request a change of the starting time and/or a change of starting sequence.

3.4.8. Calling time (Time Allowed to Get Ready)

- (1) The calling time is one minute. Within this time the start leader must call the competitor three times by to show at the starting point.

- (2) If the competitor does not show up with his/her model within the calling time, the competitor loses his/her right to start for this race or lap.
- (3) The competitor must be 60 min before his start to be in the competition area. (if races fall out the competition can go on). *Gäller ej nationellt.*

3.4.9. Preparation times (at the Starting Point)

- (1) The finish of the preparation time must be announced verbally and possibly also optically.

3.4.10. Interruption – suspensions of the competition

- (1) An interruption of the complete event can only be announced by the Chief Judge.
- (2) An interruption of the competition at its starting position is decided by the start position official.
- (3) If a competition is suspended only the heats they are suspended have the right to be rerun.

3.4.11. Re-run of a race

- (1) There is no right to a re-run if the model is damaged during a race or if the propeller is caught by a foreign object like weeds, piece of wood etc.

3.4.12. Unfair behavior

- (1) In cases of unfair behavior, interference (shout) with other competitors, judges, spectators, not following the rules, or exceptionally inconsiderate behavior of a competitor or mechanic it will be punished by disqualification (red card). The model has to be taken out of the water. There is no possibility of an appeal against the decision.

3.4.13. Scoring and Announcement of the results

- (1) All results of a competitor should immediately be announced or displayed at the starting area. The verbal announcement must be made in the English language (this is the working language in the Section FSR).

The verbal announcement is regarded as a provisional result. *Vid nationell tävling räcker det med svenska.*

- (2) The results are to be recorded in the result list. After the completion of the event the results must be checked and made public within two hours. This is a preliminary result list.

- (3) The jury can confirm the final results one hour after issuing the preliminary results. *Tidigast 30 minuter efter att den preliminära resultatlistan offentliggjorts kan den fastställas av tävlingsledningen*
- (4) After confirmation of the results by the competitor officials i.e. jury, it is not longer possible to protest against the results.
- (5) Competitors with a zero result will be recorded at the end of the result list in alphabetical order.

3.4.14. Checking of the first three placed models during World and Continal Championships

- (1) At World and Continal Championships the first three placed models must be checked that they conform to the construction regulations and the engines are measured for their true capacity. *Vid nationella tävlingar kan motorkontroll/mätning ske under pågående tävling om särskild anledning föreligger. Arrangören har även rätt att när som helst begära stickprovs kontroll av slumpvis utvald båt. Mätmetoder enligt 3.4.14 (5) samt för klass FSR O-26 Zenoah .*
- (2) In the FSR-V-H-O classes, with exception of the 27cc-35cc classes, preliminary checks after the heats can be done to assess the exact capacity of the engines.
- (3) In the FSR – 27cc-35cc classes the measurement of the cylinder capacity of the first three placed models is done on the basis of the constuction particulars after the completion of the finals.
- (4) With internal combustion engines the measurement of the capacity must be done when the engine is cold. A tolerance of + 1% is allowed.
- (5) Cylinder capacity measurements are done as follows:

The measurement of the cylinder is done with a depth indicator through the glow/spark plug hole. Only after this, the engine will be opened. The measurement of the bore is done with an inside measurement indicator in the region between the upper level of the exhaust opening and the the top dead centre. Two measurements must be taken (approx. 90 degrees opposite each other) and the results averaged.

Calibrators for the measurement instruments must be kept at the competition site.

The checking of the capacity measurements is done from tables or computer print outs. During the qualification heats in the FSR-classes the start leader can select three models for capacity checks. The measurement will be taken after the heat when the engines have cooled down.

Exceeding the allowed capacity means disqualification from that heat. After completion of finals the models placed 1 to 4 will put a side. If not cylinder capacity discrepancies are found for the first three placed models, further checks are not necessary. *Om tillåten cylindervolym överskrids vid mätning eller otillåten modifiering (klass FSR O-26 Zenoah) sker diskvalifikation för hela tävlingen*

- (6) The competitors must make their model available to the appointed judge. The competitors have to open the engine, failure to do so will result in disqualification.
- (7) In the event that the measurement results are not in accordance with the regulations, the respective model will be disqualified. In that case the placing of the following models will improve and they will have to be inspected.

3.4.15. Awarding of titles at World and Continental Championships *Gäller ej nationellt*

- (1) For juniors the World Championship title will be awarded, if a minimum of 6 competitors from 3 different countries have raced in the respective class.
- (2) For seniors the world Championships title will be awarded, if a minimum of 10 competitors from 5 different countries have raced in their respective class.
- (3) In case a World Championship for a certain class is held with less competitors than described in paragraph (1) and (2), no titles and medals will be awarded in those classes. The achievements of the competitors will be acknowledged by special certificates.

3.4.16. Award Ceremonies at World and Continental Championships *Gäller ej nationellt*

- (1) At World Championships the first three placed competitors in each class of juniors and seniors receive a gold, silver or bronze medal and a certificate, which are provided by NAVIGA.
- (2) At Continental Championships the first three placed competitors in each class of juniors and seniors received a gold, silver or bronze medal and a certificate.
- (3) In addition to the first three placed at World Championships each competitor receives a Certificate of attendance.
- (4) In addition to the title, medals and certificates, an honorary award can be given for special achievements.
- (5) The title, medals, certificates and honorary awards must be presented in a public ceremony.
- (6) All competitors and officials must attend the prize giving ceremony. A competitor who without a founded excuse does not attend the ceremony, loses the right to title, medals, certificates and honorary award. The decision in respect of excuses rest with the competition officials i.e. the jury.

3.4.17. Result list

- (1) The organiser of a NAVIGA event must, after the completion of the event (ceremony), give at least 3 complete result list to each of the participating countries. *Gäller ej nationellt*

- (2) For special regulations regarding the contents of the result list refer to sections 8.7. for FSR-V and 9.7. for FSR-H and 10.7. for FSR-O.

3.5. NAVIGA- Protest Policy

3.5.1. Principal rules

- (1) A protest can only be lodged, if a competitor is convinced that their race result has been affected by a decision, act or omission made by the members of the competition management, the organiser or by unfair acts of other competitor or teams.
- (2) Protest against the judges-jury, or combined protest are excluded.
- (3) The final results, placing, the awarding of titles, medals and honorary awards can only take place after all lodged protest have been resolved.
- (4) The decision of the jury is final. Appeals are not accepted.

3.5.2. Lodging of protests

- (1) Each protest must be verbally reported to the starting official immediately upon observation of the alleged discrepancy. Within one hour after completion of the race in which the incident occurred, the protest must be lodged in writing to the competition management e.g. the Jury in the English language. *Svenska vid nationell tävling.*
- (2) The lodging of a protest does not exclude the competitor from further participation in the competition. If the competitor withdraws from further competition on grounds of a lodged protest, they will be disqualified from the whole event. In this case their lodged protest will be rejected.
- (3) If after a verbally lodged protest measures are being taken to correct the situation a written protest will not be necessary. The competitor must be advised prior to the acceptance of the written protest and the protest fee.
- (4) The written protest must contain the following:

Grounds of protest (respective rules, regulations, acts and where to find them) time, place including a precise description of the incident, the reason for the protest, possibly including drawings and other evidence. Statement and names of witnesses, who have been involved in the incident and are willing to truthfully answer questions regarding the protest. Statement, with which start official and at what time, the protest was verbally lodged.

- (5) The protest must be signed by the competitor and the team leader of the respective country. *Endast tävlandes underskrift vid nationell tävling.*
- (6) The protest fee must be paid when the written protest is lodged, or the protest will be null and void.

3.5.3. Handling of protest

(1) The jury has to consider an officially lodged protest, from which the protest fee has been paid and give a decision. During the protest negotiation the team leader of the country whose competitor lodged a protest has no voting rights.

(2) If during a protest a competitor is accused to have breached the rules, the jury has to carry out the protest procedure against the accused competitor.

(3) The competitor who has lodged the protest and the person against whom the protest negotiations are conducted, have the right to attend the hearing without voting rights. For the protest negotiations the jury can call further witnesses involved in the incident who must give a truthful account.

(4) The decision given by the competition management on the outcome of the protest must be announced to the competitors by means of a public notice in the English language.

Nationellt svenska

(5) If the protest is successful the protest fee has to be returned to the competitor. If the protest fails, the protest fee will remain with the organiser.

3.6. General rules regarding construction for category FSR

(1) For competitions in category FSR models are of free design. The model however must be owned by the competitor. *Nationellt behöver inte modellen ägas av den tävlande.*

(2) The overall length of the model in the FSR category, must not exceed 2500 mm.

(3) The steering of the model must be through radio control.

(4) One or more internal combustion engines can be used. However their total cylinder capacity must not exceed the respective class.

4. General Rules regarding the set up of competition course or heat

(1) The competitions in the category FSR are performed on two different courses.

For the FSR-V category see drawing 3

For the FSR-H category see drawing 4

For the FSR-O category see drawing 5

(2) The competition courses are to be placed, preferably in calm sheltered from wind, waters.

5. General Rules regarding start and termination of a race or heat

(1) During the competition the competitor is free to move within the clearly marked area allocated by the organizer on the starting pontoon.

- (2) After completion of the race or heat the model must be taken out of the water immediatly and radio control switched off. *Efter slutsignalen skall det påbörjade varvet fullföljas. Därefter skall båten tas in till bryggan snarast möjligt, men banan ska fortfarande följas för att inte störa andra tävlande som ej fullföljt sitt sista varv.*

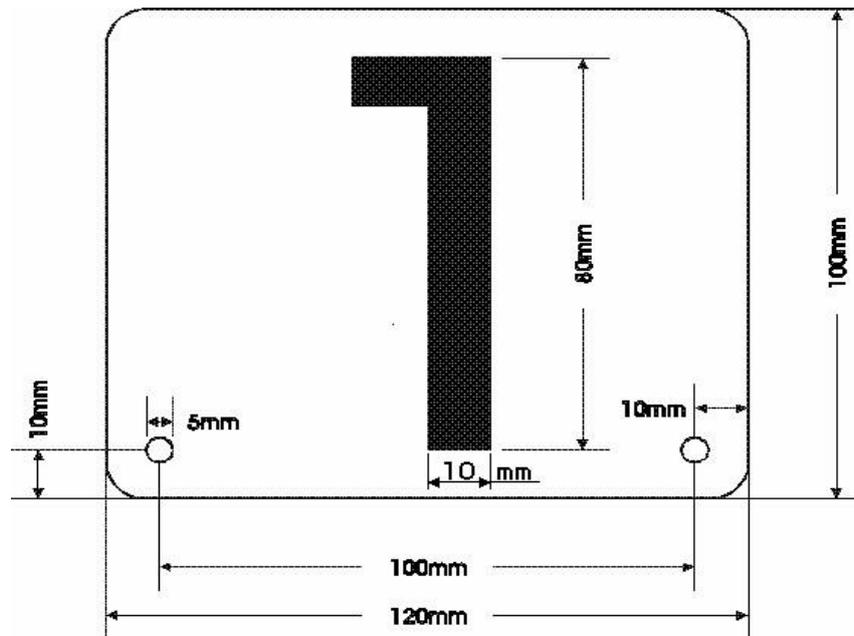
6. Competiton requirements in FSR category

6.1. General constructions rules and regulations

- (1) The hull has no construction rules, however it must be in form and shape look like a mono hull. *FSR-O skall båten likna en offshorebåt. Flerskrovsbåtar är tillåtna.*
- (2) The engine must have full throttle control, a switch of button is not allowed. The size of the tank is not restricted. Fuel can to be supplied by the competitor.
- (3) Every model must have on the deck a longitudinal mount for attaching number plate wich can be provided by the organisation. The number plate must be made out of flexible and durable material, wich does not cause damage to the model when run over. The plate must be white and the numbers from 1 to 12 must be black. The number plate must be attached to the model with two connections.
The number plate for FSR-V must be mounted on the right hand side.
The number plate for FSR-H-O must be mounted on the left hand side.
It is allowed the use the own number plate if they are according to the rules. *Nationellt skall den tävlande tillhandahålla egna nummerskyltar.*
- (4) The dimension of number plates for classes FSR-V-H-O are as follows (see drawing 2):

Height	100 mm
Width	120 mm
The corners of the shield	Thickness approx. 2 mm <u>must be rounded off</u>
Distance between the holes	100 mm
Distance of hole from the bottom of plate	10 mm
Diameter of hole	5 mm

Drawing 2: Number plate



6.2. Manning level of the Start Pontoon

(1) The manning level of the positions in the FSR group is as follows:

1 chief pontoon judge. *Bryggdomare, med mer än fyra deltagare i ett heat skall det vara två bryggdomare 1 och 2 vilka konfererar med varandra, och bryggdomare 1 meddelar varvräkningen om eventuella varjusteringar. Ingen av bryggdomarna får tävla i den klass där han/hon är bryggdomare. Bryggdomare skall ha gul väst.*

2 assistant pontoon judges (to support the chief pontoon judge and observe the race).

3 1 official measuring the noise level.

Förbandslåda skall finnas vid tävlingsplatsen (tillhandahålls av arrangören). Eldsläckare skall finnas vid tävlingsplatsen (tillhandahålls av arrangören). Uppsamlingskärl för begagnade batterier och begagnat bränsle skall finnas vid tävlingsplatsen (tillhandahålls av arrangören).

7. APPENDIX 1: (Guide to measure and setting up a FSR-V course)

- (6) The preparation time for the FSR-V classes is 3.5 minutes. During this time the competitor is allowed 3.5 minutes to warm up and tune the engines. During this time the model can be placed in the water but must not be released.
- (7) After the preparation time all models must be on the pontoon with the engines switched off. Then within a short time the start position official can start the race.
- (8) The race will begin with an acoustic signal given by the start official. After the signal the engines can be started and the models launched.
- (9) During the race you are allowed to pick up your boat by your self (assistant) the boat must come in with a running engine, and on his own start position place on the pontoon.
The competitor (assistant) may leave the start position to rescue the model (if the rescue boat bring in the boat) or to fetch spare materials. However while driving the competitor must not leave the start position. It is not allowed to remove the transmitter from the start position.
- (10) All bouys must be negotiated in accordance with the course. Touching the bouys is allowed. Only those laps negotiated in accordance with the course are counted. Driving across the top of the buoy the lap will not be count.
- (11) If a buoy is passed on the wrong side, it is allowed to recircle the buoy without interfering with other competitors. If you do not recircle the buoy the lap will not be counted.
- (12) If a boat is in the buoy, the compititor must swich of the engine, if the competitor do not swich of the engine a red card will be follow.
- (13) During the race each competitors laps must be displayed on a score board.

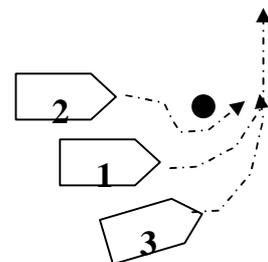
8.3. Rules for overtaking

- (1) A slower boat can be overtaken on either side. During the overtaking manoeuvre the slower boat must not change course or get the way of the overtaking boat. The overtaking boat can return to the racing line when no less then three boat lengths ahead.
- (2) The faster boat is not allowed to interfere with the slower model during the overtaking manoeuvre.
- (3) The boat on the race line which is less than 5 boat lengths from a buoy has right of way. A manoeuvre to force a boat to pass on the side of a buoy in order to overtake is not permitted.

Example No.1

Boat no. 1 has right of way and boats 2 and 3 try to overtake.

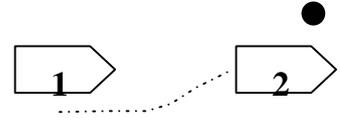
Boat no. 3 cuts the racing line for boat no. 1 wich results in a lap penalty for boat no. 3.



Boat no. 1 tries to force its way on the inside, in order not to hit the buoy it will have to turn right and will cut across boat no. 2 racing line. This results in a penalty for boat no. 2.

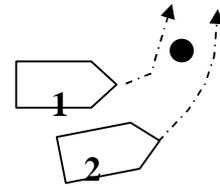
Example No. 2

Boat no. 2 overtakes correctly, well clear of boat no. 1. It is at least 3 boat lengths ahead of boat no. 1 before it returns to the racing line.



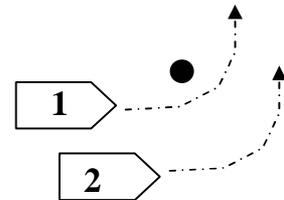
Example No. 3

Boat no. 2 cuts boat no. 1 racing line. This forces boat no. 1 to pass the buoy on the inside to avoid a collision. This results in a 1 lap penalty for boat no. 2.



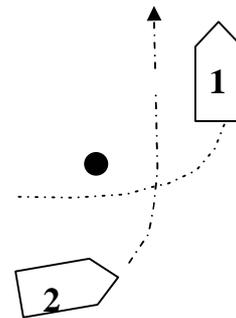
Example No. 4

Boat no. 2 correctly leaves the inside racing line clear.



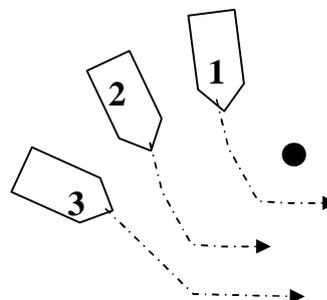
Example No. 5

Boat no. 1 leaves the inside racing line because it turns too wide. It allows boat no.2 to overtake by making a tighter turn. At position X boat no.2 has right of way.



Example No. 6

Boat no. 1 has the racing line closest to the buoy and right of way. Boats no. 2 and no. 3 must maintain their distance from buoy around the turn to avoid a penalty.



8.4. Penalties in FSR-V classes

- (1) The first occurrence of not following the rules described in paragraphs (1)-(2)-(3) **8.3.**, where no other boat has stopped as a result of an incident a warning (yellow card) will be given.
- (2) The second occurrence of not following the rules described in paragraphs (1)-(2)-(3) **8.3.**, or a more serious incident, or running over a stopped boat will be punished with one lap deduction (yellow card with number 1).
- (3) The third occurrence of not following the rules described in paragraphs (1)-(2)-(3) **8.3.**, or exceptional serious incident, or causing another boat to stop will be punished by a two laps deduction (yellow card with number 2).
- (4) If a model touches a rescue boat the competitor is disqualified from that heat. The model has to be taken out of the water immediately.
- (5) If other models are involved in endangering, touching or collision with rescue boat, the start position official can in their own discretion penalise the other competitors as well.
- (6) If a model is passing the rescue boat or the pontoon inside 3 metres with fast speed he will get a Stop and Go penalty yellow safety card. The judge must be verbally and visually given this penalty. After this the competitor has to finish his lap to take out the model, switch of the

engine (this must be done before he/she take the boat out of the water). After this he/she can start again and follow the race. If the competitor get the safety card for the third time (he/she) in the same head the boat must be bring in and can not take further part in that head.

(7) There is no possibility of an appeal against the decision. The start position official must record the penalty and the start number of the competitor.

8.5. Basic rules in the FSR-V classes

- (1) If during a race a boat stops, it can be retrieved by the rescue boat, causing minimum disruption to the other boats. The lap on which the boat stopped is not counted.
- (2) Boats returned by the rescue boat must resume the course from the starting position. After the new start the laps will be added to those previously achieved.
- (3) FSR-V boats can be repaired and refuelled during a heat. Only laps completed during the heat will be counted.
- (4) If a boat loses the number plate during the race it is allowed to complete the commenced lap. Any laps completed after this lap without a number plate will not be counted.
- (5) A race can be stopped by the start position official due to exceptional circumstances (e.g. sheered off buoys). Rules for stopping a Race.
- (6) The start position official gives an acoustic signal the same as the end of a race. At the same time as the signal is given the clock which measures the duration of the race is stopped. After the start position official has given the signal, the models have to complete the commenced lap and this lap will be counted.
- (7) The time, from when the signal was given, until the models pass the finish line, must be recorded. The models have to be taken from the water and the engines stopped.
- (8) Competitors and assistants have to step back from the models. Repairs are not permitted. During the interruption in the race models can be rescued.
- (9) After resolving the cause for the interruption, the start position official will give a start signal following the same procedure as at the beginning of the race.
- (10) The time keeping will continue with the start signal.

- (11) If the race is stopped within the first three minutes it will be annulled and restarted from the beginning.
- (12) If heats had to be stopped, all the laps and times have to be added together.
- (13) The end of the race is indicated by an acoustic signal. All models must after the signal complete the commended lap and this lap will be counted. After the final signal the lap counters will be record the time of delay for every model passing the finishing line. This time will be recorded with the number of laps.

8.6. Scoring in FSR-V classes

- (1) The competition result is decided on the number of valid laps and the delay time after deduction of penalty laps.
- (2) If there are 12 or less competitors entered for a particular class only two heats from 30 minutes have to run. The best score from the two heats will count to decide the places.
- (3) The places will be decided on the numbers of laps achieved. When there is more than one competitor with the same number of laps, the competitor with the shorter time or delay time will be placed higher.
- (4) In the event that a final race takes place in accordance with paragraph (3) **8.2.** the placing are as follows:
 - a) The finalists are placed according to the finishing position in the final.
 - b) placing of the remaining competitors will be in sequential order of the number of laps and delay time achieved in their best qualifying heat.

8.7. Composition of Result List in the FSR-V classes

The following items should be recorded in the result list of a competitor in the FSR-V class:

Type, place and date of the event

Sequence of placing in accordance with paragraph **8.6.**

Class

Surname, Christian name and country registration number of the competitor

Noise level result

Number of valid laps (in brackets any laps deducted) from the best heat

The delay time from the best heat

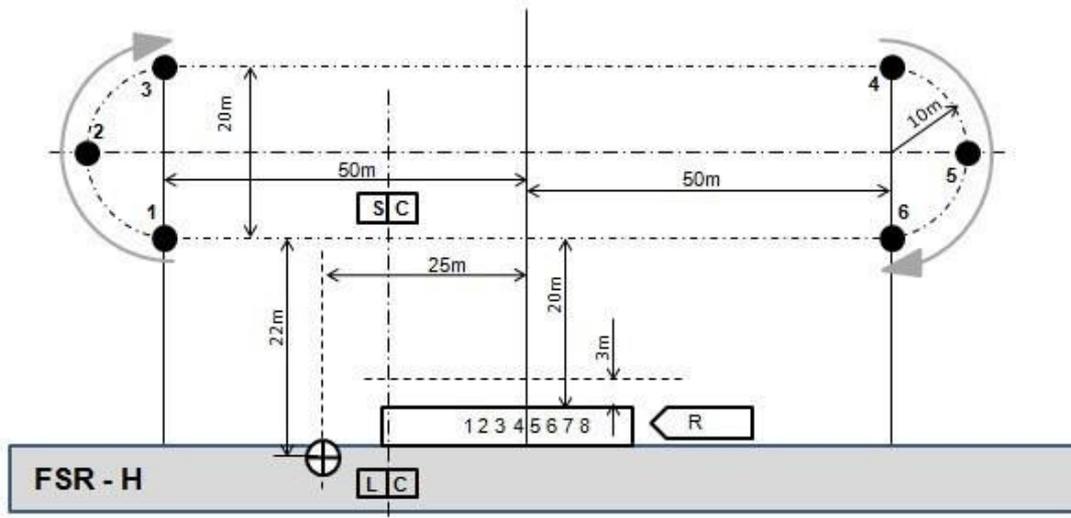
Name and registration number of the judge

Signatures of the chiefjudge

9. FSR-H COMPETITION COURSE AND DURATION OF THE RACE

(1) The competition will be held on a course as show in drawing 4. The competition course has to be placed so that the base line runs parallel to the starting pontoon and the centre line is at a right angle from between start positions 4 and 5 to the centre buoy.

9.1. Drawing 4: Competition course FSR-H

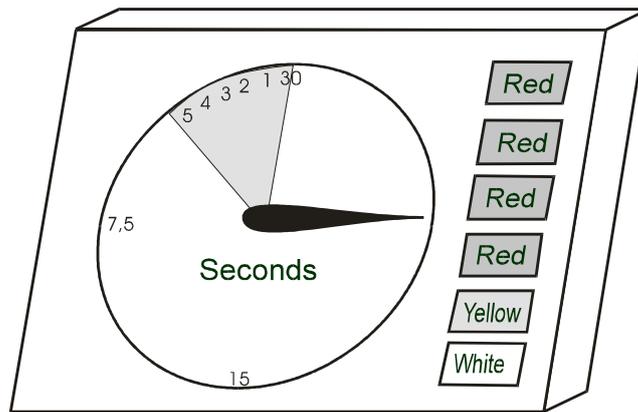


- 1-----8 = Start positions
- LC = Start and finish line - lap counting
- RB = Rescue boat
- SC = Start clock
- ⊗ = Measuring noise level

9.2. Start clock for FSR-H classes

(1) The start clock is designed for FSR-H races with special optical and accoustical information and signals which the competitors use to prepare for the start of the heat.

Drawing 6:



(2) The start clock must comply with the following:

1 turn of the hand must be 30 seconds with a precision of approx. 1 second. The face of the clock must show the following points: 15 seconds, 7.5 seconds, 5,4,3,2,1, seconds.

The 5 seconds segment must be shown in a contrast color.

There must be 4 red lights which are all switched on at the beginning of preparation time.

The lights will be switched off individually at 30 second interval.

After the last red light has gone off a yellow light will come on which indicates the 30 second time when no boats can be launched. At the end of this 30 seconds a white light and a acoustic signal will indicate the start of the heat.

The clock hand must reach the “12 o’ clock” position at exactly the same time as the light and acoustic signal indicate the start of the race.

The face of the clock must be white or orange, the hand must be black.

The diameter of the face of the clock must be between 750 and 1000 mm.

The start clock must be able to float so that can be positioned within the competition course.

9.3. Procedures for races in the FSR-H classes

(1) The course is sailed clockwise. Starting time for the heat has to be shown on a start clock. (see drawing 6)

(2) The models have to achieve the following number of laps within 4 minutes:

FSR-H 3.5cc = 6 laps

FSR-H 7.5cc = 6 laps

FSR-H 15cc = 6 laps

FSR-H 27cc = 6 laps

(3) The H classes are running 2 heats on a day and the follow order will be on this manner 3.5 J, 3.5 S, 7.5 S, 15 S, 27 S.

- (4) A heat shall be so composed that the competitors will be mixed in the heats as much as possible. Also the place on the pontoon shall be randomly.
- (5) A heat must have a minimum of 4 competitors and maximum of 8 competitors. Each competitor must run at least 4 heats. If there are more than 8 competitors entered in a class, a final must be run in accordance with paragraph (4).
- (6) 8 competitors with the highest scores from the heats qualify for the final. For the final at least 4 heats must be run. The best placed competitor will occupy start position 1, the second best placed start position 2, the third best placed start position 3, the fourth best placed start position 4 etc. until the eighth placed, who will occupy start position 8.
- (7) Before the start of each heat a radio check has to be carried out to prevent interference. There for all transmitters and receivers must be switched on. When it has been confirmed that there is no radio interference it is not longer possible to protest (8.2. (5) page 24).
- (8) Each race consists of three independent phases:
Preparation time (Pite time) 2 minutes
Control time (Milling time) 30 seconds
Course time (Race time) 4 minutes
- (9) During preparation time engines are started, and the boats launched. If a competitor starts an engine after the preparation time, this race will not count. Races can not be repeated. Preparation time must not be delayed or cancelled, unless in exceptional circumstances. At the judges discretion (e.g. problems on the race course). Models can be adjusted during the preparation time, however the competitor is not allowed to leave the start position.
- (10) At the start of control time no further boats can be launched.
- (11) The competitor must drive the boats around the course or the special lay-by zone allocated by the competition management, so that all competitors can cross the start line at the end of control time. Boats must drive the course in the clockwise direction.
- (12) During the last 15 seconds of the control time in order to ensure the safety of all the boats, the models must keep in a straight line after passing buoy No. 6. Zigzagging across the course, course changes in excess of 45 degrees in order to avoid crossing the start line early etc., are not allowed and are penalised with one extra lap.
- (13) The end of the control time indicates the start of the race time, regardless of where the boats are on the course.
- (14) Models crossing the startline immediately before the end of the control time have a false start and must there for complete an extra lap.

- (15) Durend the preparation time, control time, racing, missing a bouy and there fore cutting the course is penalised by one extra lap.
- (16) The competitor whose boat crosses the line first after completing the required number of laps and taking into account any penalties (additional laps) is the winner.
- (17) In the event that no boat completes the required laps within the 4 minutes run time, the race is discounted.A repetition of the race is not permitted.
- (18) Boats, which have not completed the required number of laps, recieve 25 points.
- (19) After a competitor has completed the required number of laps they must remove the boat from the water. The start position official must order to quit the race course.
- (20) If the start position official considers that there are boats on the race course which will not able to complete the race in the racing time remaining, they can request them to take their boats out of the water. The point given will be the same as in case when the race is not completed (25) points.
- (21) Re-run of race (heat). If a race in FSR-H classes has to re-run because it was interrupted, only the boats still running at the point the race is stopped should have the right to restart. The boats wich have stopped during the orginal race get 25 points.
- (22) Heats must be organised so that no one competitor will have to take part in two consecutive races.
- (23) Each race must be run in accordance with the rules specified in section **9.4**.

9.4. Basic rules and penalties in the FSR-H classes

- (1) Falling to comply with the following rules could result in a disqualification from one heat or entire competition.

9.4.1. Left turns

- (1) Excessive left turns on the course are not permitted, except when giving way or to avoid collision.

- (2) Penalised by one extra lap will be in the following cases:

Left turn in excess of 45 degrees, when a competitor by turning to the left endangers another model.

- (3) Causing damage to another boat, during and after the heat which will prevent it from being used in the competition will result in a disqualification from that heat.

9.4.2. Right of way

- (1) Reliable turning and steering techniques as well as sporting fairness are provisions for the proper sailing/use of the race course.
- (2) The normal racing line is the line closest to the outline of the course. Boats on the racing line have right of way.
- (3) A boat on a normal racing line has the right to maintain its course.
- (4) A boat overtaking the boat ahead, which is on the same racing line must be at least 3 boat lengths ahead before it has the right to way.
- (5) Penalised by one extra lap will be in the following cases:

Not following the rules specifying the right of way

Preventing another boat from overtaking by a zigzagging, S-turns, etc.

9.4.3. Negotiating/passing the buoys

- (1) Each buoy on the race course must be negotiated on the outside. An exception can only be made by the start position official, if it would benefit the race situation or in order to avoid a collision. Driving across the top of the buoy will not be counted.
 - (2) If a boat is in the buoy, the competitor must switch of the engine, if the competitor do not switch of the engine a red card will be follow.
 - (3) Buoy penalties are given by the assistant pontoon judges. It is not possible to protest their decision.
 - (4) If a competitor cannot steer their boat properly they will recieved a warning. If their driving has not improved, they will be disqualified from this head.
- (4) Penalised by one extra lap will be in the following cases:
- a) Passes a buoy on the inside (one penalty lap for each buoy, also in the control time)
 - b) Driving inside of the oval race course
 - c) Cutting or crossing the race course
 - d) Driving through the middle of the race cours
 - e) To fast speed on the pontoon inside 3 metres a yellow safety card
 - f) When the third penalty has been issued (in the same heat) the competitor will be told to bring the boat in and take no further part in that heat.

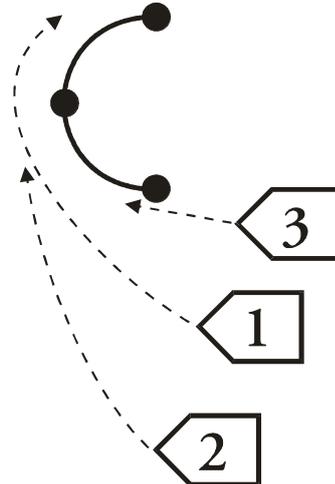
9.5. Rules for overtaking in the FSR-H classes

Overtaking in accordance with paragraph 9.4.2. is allowed on the entire course. The following examples are only guidance for the judges and can not be cited by competitors in a possible protest. In the situations described below serious danger could arise to other boats or spectators. In this case the start position official can order the competitor, causing the danger, to discontinue the race. The competitor will be disqualified for this heat and will receive no points.

Example No. 1

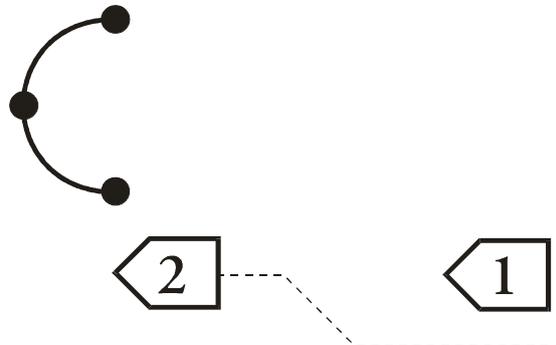
Boat No. 1 has the right of way, and boats No.2 and No.3 try to overtake.

Boat No.2 cuts the racing line for boat No.1, which results in a one extra lap. Boat No. 3 tries to force its way on the inside, in order not to touch the buoy the boat No. 3 will have to turn left and will cut across boat No.1's racing line. This manoeuvre will result in one extra lap.



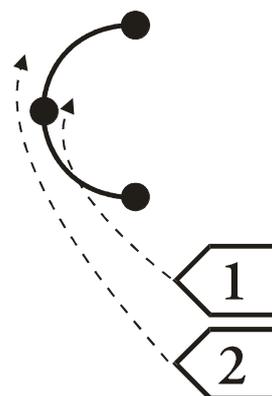
Example No. 2

Boat No.2 overtakes correctly, it is at least 3 boat lengths ahead of boat No.1 before it returns to the racing line.



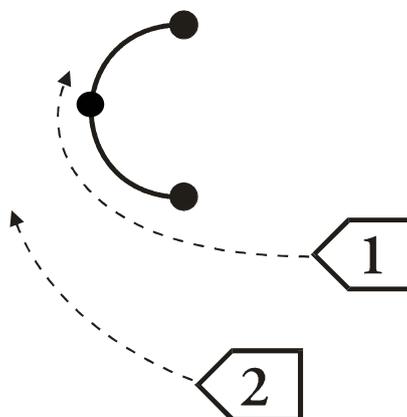
Example No.3

Boat No.2 receives a one lap penalty because it forced boat No.1 to pass the buoy on the inside in order to avoid collision.



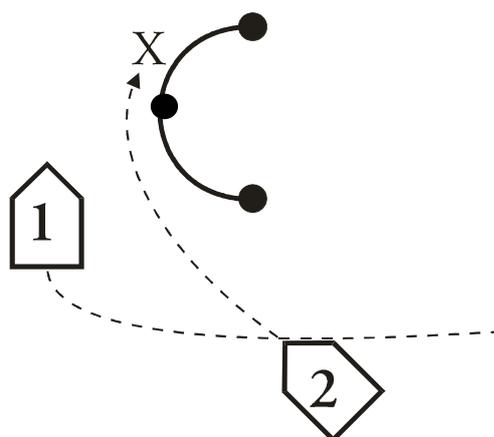
Example No. 4

Boat No.2 correctly leaves the inside racing line clear.



Example No. 5

Boat No.1 leaves the inside racing line clear because it turned wide. It allows boat No.2 to overtake by making a tighter turn. In position X the boat No. 2 has the right of way.



9.6. Calculation of final results in the FSR-H classes

- (1) In FSR-H classes, each competitor receives the following points according to the place achieved:

1. Place	= 400 points
2. Place	= 300 points
3. Place	= 225 points
4. Place	= 169 points
5. Place	= 127 points
6. Place	= 96 points
7. Place	= 72 points
8. Place	= 54 points
Race not completed	= 25 points
Boat did not pass the starting line after the starting signal.	= No points

- (2) In cases of equal points there should be a run off in the following cases:

- a) To select a competitor for the final
- b) In the final, to decide places 1, 2 or 3

The run off will be held after the completion of the heats or after the finals.

- (3) The final result of the competitor is the sum of all points achieved in all heats unless finals are held.

- (4) If a final takes place, the results will be as follows:

- a) All finalists are placed according to the total of points achieved during the final.
- b) The remaining competitors are placed according to the total of points achieved during the qualification heats.

9.7. Composition of result list in the FSR-H classes

The following items should be recorded in the result list of a competitor in the FSR-H class:

Type, place and date of the event

Sequence of placing in accordance with paragraph 9.6.

Class

Surname, Christian name and country registration number of the competitor

Noise level result

Result of each race (points, penalty laps)

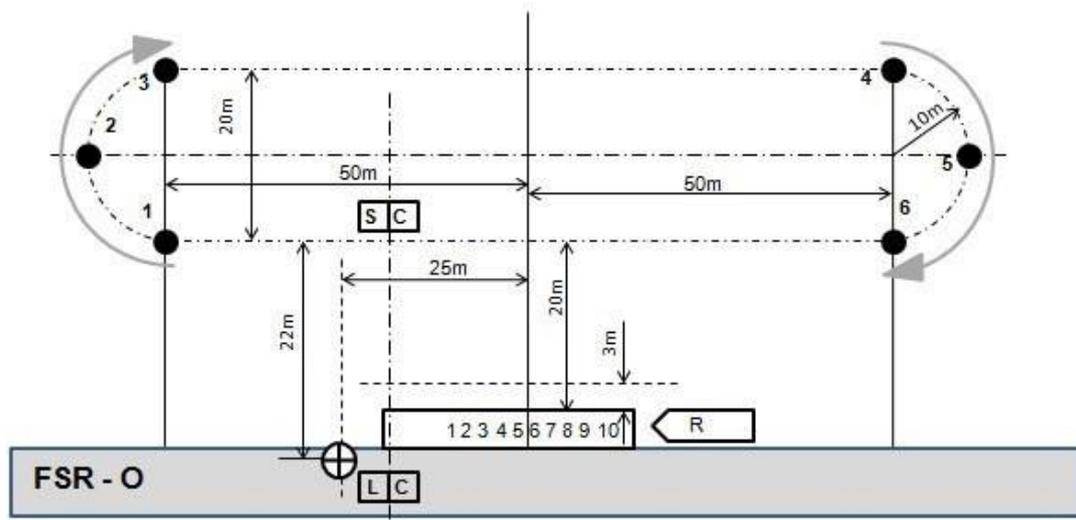
Total points scored

Total penalty laps
 Name and registration number of the judge
 Signature of the chief judge

10. FSR-O COMPETITION COURSE AND DURATION OF THE RACE

- (1) The competition will be held on a course as shown in drawing 5. The competition course has to be placed so that the base line runs parallel to the starting pontoon. *Nationellt bestäms bana och körriktning av arrangören. Detta skall dock tydligt anges i inbjudningen.*

10.1. Drawing 5: Competition course FSR-O



- (2) Lapcounter and finish line have to be on the left hand side of the pontoon.
 1-----10 = Start positions
 LC = Lap counting

RB = Rescue boat

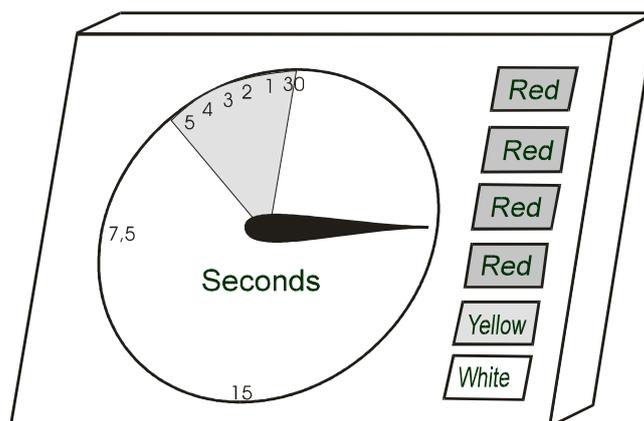
SC =

Start clock

⊗ = Measuring noise level.

- (3) The startclock is designed for FSR-O races with special optical and accoustical information and signals which the competitors use to prepare for the start of the heat.

10.2. Start clock for FSR-O races



- (1) The start clock must be comply with the following:

1 turn of the hand must be 30 seconds with a precision of approx. 1 second.
 The face of the clock must show the following points, 15 seconds, 7.5 seconds, 5, 4, 3, 2, 1, seconds. The 5-second segment must be show in a contrast color.

There must be 4 red lights, which are all switched on at the beginning of preparation time.
 The lights will be switched off individually at 30 second intervals. After the last red light has gone off a yellow light will come on which indicates the 30 seconds control time when boats can be launched. At the end of this 30 seconds a white light and a acoustic signal will indicate the start of the heat. The clock hand must reach the “12 o’clock” position exactly the same time as the light and acoustic signal indicates the start of the race.

The face of the clock must be white or orange, the hand must be black.

The diameter of the face of the clock must be between 750 and 1000 mm. The start clock must be able to float so that it can be positioned within the competition course.

10.3. Procedures for races in the FSR-O classes

- (1) The course is sailed clockwise. Starting time before the heat has to be show on a start clock (see drawing 6:) *Vid nationell Tävling bestämmer arrangören antal heat/dag, tidsschema samt heatordning. Tidschemat ska göras så att alla i samma klass får tävla under så lika förhållanden som möjligt.*
- (2) The Offshore classes are running 2 heats, heat 1 and 2 on a day and the follow order will be on this manner 3.5 J, 3.5 S, 7.5 J, 7.5 S, 15 J, 15 S, 27 S, 35 S, and around again. *Nationellt körs normalt inte finaler. Resultatet beräknas på kvalheaten*
- (3) For heat 3 and 4 the start positions are reversed (the start numbers on the boat are the same as in heat 1 and 2).

- (4) A heat must have a minimum of 4 and maximum of 10 competitors. Each competitor must run at least 4 heats. If there are more than 10 competitors entered in a class, a final must be run. *.Gäller inte om final ej körs*
- (5) 10 competitors with the highest scores from the heats qualify for the final. For the final one heat is to be run. The best placed competitor will be occupy start position 1, the second best placed start position 2, the third best placed start position 3, and so on till place 10.
- (6) Before start of each heat a radio check has to be carried out to prevent interference. There fore all transmitters and receivers must be on. When it has been confirmed that there is no radio interference it is not longer possible to protest. (8.2. (5) page 24).
- (7) Each race consists of three independent phases:
Preparation time (Pit time) 2 minutes
Control time (Milling time) 30 seconds
Course time (Race time) 8 minutes for qualification and 12 minutes for final. *Arrangören bestämmer heatlängden, skall anges i inbjudan*
- (8) During preparation time engines are started, and the boats launched. Races cannot be repeated. Preparation time must not be delayed or cancelled, unless in exeptional circumstances at the judges discretion (e.g.problems on the race course). Models can be adjusted during the preparation time, however the competitor is not allowed to leave the start position.
- (9) During the control time no further boats can be launched. During the course time the competitors are allowed for after start. *Bryggdomaren ger tillstånd till efterstart.*
- (10) The competitor should have 1 minimum milling lap. If the boat not is in the water at the white light the judge will be given the competitor 1 penalty lap. *Gäller inte nationellt. Efterstart är tillåten när bryggdomaren ger klartecken.*
- (11) The competitor must drive their boats around the course or the special lay-bay zone allocated by the competition management,so that all the competitors can cross the start line at the end of control time. *Om tävlingen körs moturs ska detta tydligt anges i inbjudningen.*
- (12) During the last 15 seconds of the control time in order to ensure the safety of all boats, the models must keep in a straight line after passing buoy No. 6. Zigzagging across the course, course changes in excess of 45 degrees in order to avoid crossing the start line early etc., are not allowed and are penalised with one lap deduction.
- (13) The end of the control time indicates the start of the race time, regardless of where the boats are on the course.
- (14) Models crossing the start line immediately before the end of control time have a false start and must there fore complete an extra lap.
- (15) FSR-O boats can be repair and/off refuled during a heat. Only laps completed during the heat will be counted.

- (16) For repairing or refuelled the boat must come in with a running engine, on his own start position on the pontoon.
- (17) During the race time you may leave the start position to pickup fetch or spare materials. However while driving the competitor must not leave the start position. It is not allowed to remove the transmitter from the start position.
- (18) All buoys must be negotiated in accordance with the course. Touching the buoys is allowed, only those laps negotiated in accordance with the course are counted.
- (19) If a buoy is passed on the wrong side, it is allowed to recircle the buoy without interfering with other competitors. If you do not recircle the buoy the lap will not be counted. *Nationellt vid ovalbana är det inte tillåtet att ta om en missad boj. Istället ska föraren fullfölja varvet, ett varv per missad boj dras sedan av från heatresultatet. Vid annan banform än ovalbana kan omtagning av bojar tillåtas om detta är angivet i inbjudan eller meddelas på förarmötet.*
- (20) A slower boat can be overtaken on either side. During the overtaking manoeuvre the slower boat must not change course or get the way of the overtaking boat. The overtaking boat can return to the racing line when no less the three boat lengths ahead. The faster boat is not allowed to interfere with the slower model during the overtake manoeuvre.
- (21) The boat on the race line, which is less than 5 boat lengths from a buoy, has right of way. A manoeuvre to force a boat to pass on the inside of a buoy in order to overtake is not permitted.
- (22) During the race each competitor laps must be displayed on a score board.
- (23) If a boat loses the number plate during the race it is allowed to complete the commenced lap. Any laps completed after this lap without a number plate will not be counted. *Detta gäller även tappad/ej fungerande transponder.*
- (24) A race can be stopped by the start position official due to exceptional circumstances (e.g. sheered off buoys). Rules for stopping race.
- (25) The start position official gives an acoustic signal about the same as the end of a race. At the same time as the signal is given the clock which measures the duration of the race is stopped. After the start position official has given the signal, the models have to complete the commenced lap and this lap will be counted.
- (26) The time, from where the signal was given, until the models pass the finish line, must be recorded. The models have to be taken from the water and the engines stopped.
- (27) Competitors and assistants have to step back from the models. Repairs are not permitted. During the interruption in the race models can be rescued.
- (28) Rescued boats are not allowed to restart.

- (29) After resolving the cause for interruption, the start position official will give a start signal. The time keeping will continue with the start signal.
- (30) If the race is stopped within the first three minutes it will be annulled and restarted from the beginning.
- (31) If a heat had to be stopped, all laps and time have to be added together.
- (32) The end of the race is indicated by an acoustic signal. All models must after the signal complete the commenced lap and this lap will be counted. After the final signal the lap counters will record the time of delay for every model passing the finishing line. This time will be recorded with the number of laps.

10.4. Basic rules and penalties in the FSR-O classes

- (1) Falling to comply with the following rules result in a disqualification from one heat or entire competition.
- (2) In cases of unfair behaviour, interference with other competitors, not following the rules or endangered spectators(e.g. collision with the starting pontoon) to fast within 3 metre from the pontoon a yellow safety card. The start position official can pronounce the following penalties.
- (3) The first occurrence of not following the rules described in paragraphs (19-20-21) **10.3.**where no boat has stopped as a result of the incident a warning (yellow card) will be given.
- (4) The second occurrence of not following the rules described in paragraph (19-20-21) **10.3.**or a more serious incident, or running over a stopped boat will be punished with a one lap deduction (yellow card with number 1).
- (5) The third occurrence of not following the rules described in paragraph(19-20-21) **10.3.**or a exceptionally serious incident, or causing another boat to stop will be punished by a two lap deduction (yellow card with number 2).
- (6) The fourth occurrence of not following the rules described in paragraph (19-20-21) **10.3.**or exceptionally inconsiderate behaviour of a competitor will be punished by disqualification (red card). The model has to be taken out of the water immediately.
- (7) The yellow safety card will be given one penalty lap off. If the competitor get the safety card for the third time (in the same heat) he has to take out his boat and can not take part further on in that heat. The competitor must verbally and visually notified of a penalty. There is no possibility on a appeal against the decision. The start position official must record the penalty, and the start number of the competitor.

10.4.1. Left turns

Gäller vid ovalbana

- (1) Excessive left turns on the course are not permitted, except when giving way or to avoid. Minor steering corrections to the left, or to overtake other boats are allowed.

(2) Penalised by one lap deduction will be in the following cases:

a) Left turn in excess of 45 degrees, when a competitor by turning to the left endangered another model.

(3) Causing damage to another boat, during and after the heat which will prevent it from being used in the competition will result in a disqualification from that heat.

10.4.2. Right of way

(1) Reliable turning and steering techniques as well as sporting fairness are provisions for the proper sailing/use of the race course.

(2) The normal racing line is the line closest to the outline of the course. Boats on the racing line have right of way.

(3) A boat on a normal racing line has the right to maintain its course.

(4) A boat overtaking the boat ahead, which is on the same racing line must at least 3 boat lengths ahead before it has the right of way.

(5) Penalised by one lap deduction will be in the following cases:

a) Not following the rules specifying the right of way preventing another boat from overtaking by zigzagging, S-turns, etc.

10.4.3. Negotiation- Passing the buoys

(1) Each buoy on the race course must be negotiated on the outside. An exception can only be made by the start position official, if it would benefit the race situation or in order to avoid a collision. Driving across the top of the buoy will not be counted.

(2) If a boat is in the buoy, the competitor must switch off the engine, if the competitor does not switch off the engine a red card will be followed.

(3) Buoy penalties are given by the assistant pontoon judges. It is not possible to protest their decision.

(3) If a competitor cannot steer their boat properly they will receive a warning. If their driving has not improved, they will be disqualified from this heat.

(4) Penalised by a one lap deduction will be in the following cases:

Passes a buoy on the inside (the boat has not recircled the buoy)

Driving inside the oval course

Cutting or crossing the race course

To fast speed on the pontoon inside 3 metres, a Yellow safety card will given a one lap deduction. When the third penalty has been issued (in the same heat) the competitor will be bring the boat in and take not further part in that heat.

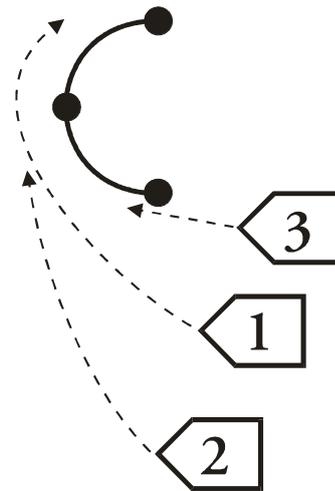
10.5. Rules for overtaking in the FSR-O classes

(1) Overtaking in accordance with paragraph 10.4.2. is allowed on the entire course. The following examples are only quidance for the judges and can not be cited by competitors in a possible protest. In the situations described below serious danger could a rise to the boats or spectators. In this case the start position official can order the competitor, causing the danger, to discontinue the race. The competitor will be disqualified for this heat and will receive no laps.

Examble No. 1

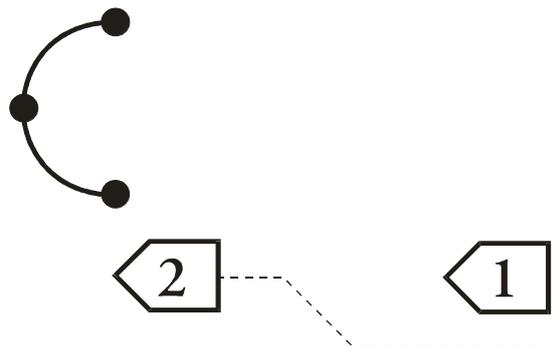
Boat No. 1 has the right of way. and boats No.2 and No.3 try to overtake.

Boat No.2 cuts the racing line for boat No.1, which results in a one lap deduction. Boat No. 3 tries to force its way on the inside, in order not to touch the buoy the boat No. 3 will have to turn left and will cut across boat No.1's racing line. This manoeuvre will result in a one lap deduction.



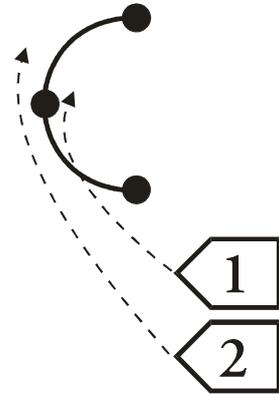
Example No. 2

Boat No.2 overtakes correctly, it is at least 3 boat lengths ahead of boat No. 1 before it returns to the racing line.



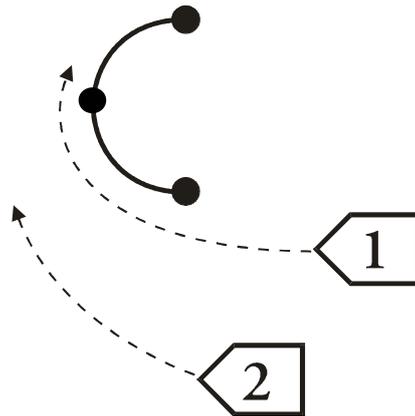
Example No. 3

Boat No.2 receives a one lap deduction because it forced boat No.1 to pass the buoy on the inside in order to avoid collision.



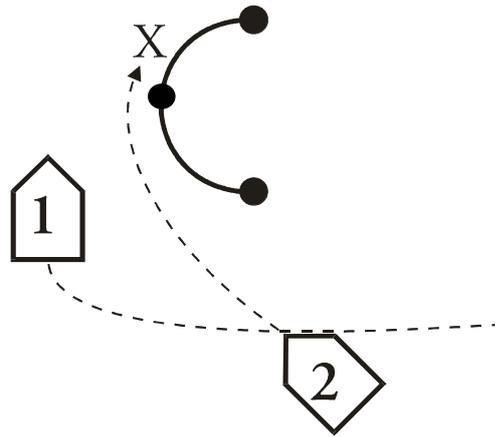
Example No. 4

Boat No.2 correctly leaves the inside racing line clear.



Example No. 5

Boat No.1 leaves the inside racing line clear because it turned wide. It allows boat No.2 to overtake by making a tighter turn. In position X the boat No. 2 has the right of way.



10.6. Scoring in FSR-O classes

- (1) The competition result is decided on the numbers of valid laps and the delay time after deduction of penalty laps.
- (2) The best three of four heats will be counted together for qualification score. *Nationellt beslutar arrangören antal heat. Vanligen körs fem heat varav fyra räknas.*
- (3) If there are 10 or fewer competitors entered for a particular class only qualification has to be run. This will be the finally result.
- (4) The place will be decided on the number of laps achieved. When there is more than one competitor with the same number of laps, the competitor with the shorter delay time will be placed higher.
- (5) In the event that a final race take place in accordance with paragraph (2 – 3) **10.3.**, the places are as follows: *Om final ej körs placeras alla deltagare efter resultatet i kvalheaten.*
 - a) The finalist are placed according to their finishing position in the final.
 - b) Placing of the remaining competitors will be in sequential order the number of laps and delay time achieved in their qualifying heat.

10.7. Composition of result list in the FSR-O classes

The following items should be recorded in the result list of a competitor in the FSR-O class:

Type, place and date of the event

Sequence of placing in accordance with paragraph **10.3.**

Class

Surname, Christian name, country and registration number of the competitor

Number of valid laps (in brackets any lap deducted) from each heat and total
The delay time from each heat and total
Name and registration number of the judge
Signature of the chief judge

Nationella offshoreregler:

97.1 SM reglemente

(1) Svenskt mästerskap genomförs som serietävling med ett antal tävlingar, dessa skall fördelas geografiskt och med olika arrangörer.

(2) Vid SM-deltävling utdelas poäng baserat på både heat-resultat och tävlingsresultat enligt följande: Heatpoäng tilldelas de 4 först placerade i varje heat. Om fler än ett heat körs i en klass tilldelas de 4 första i varje av dessa heat poäng. 1:a plats ger 4 poäng, 2:a plats ger 3 poäng, 3:e plats ger 2 poäng och 4:e plats ger 1 poäng.

För att detta skall bli rättvist skall mixade heat köras, dvs man ska inte möta samma förare i alla heat. (Detta gäller naturligtvis inte om det bara är ett heat.)

Förare vars båt inte uppnått ett mätbart resultat tilldelas inte heatpoäng.

Med mätbart resultat menas att man fullföljt minst ett varv efter starten, dvs. man har passerat startlinjen minst två gånger efter startsignalen.

Tävlingspoäng utdelas efter resultatlistan. Om det förekommer deltagare som inte är med i SM skall dessa räknas bort från resultatlistan innan poäng utdelas.

Placering Poäng Placering Poäng

1 = 21	10 = 9
2 = 19	11 = 8
3 = 17	12 = 7
4 = 15	13 = 6
5 = 14	14 = 5
6 = 13	15 = 4
7 = 12	16 = 3
8 = 11	17 = 2
9 = 10	18 = 1

(3) Samtliga under säsongen erhållna heat- och tävlingspoäng räknas samman i en SM-tabell. Den som vid säsongens slut fått flest poäng har vunnit SM.

Uttagning av landslag

Uttagning av landslag till internationella tävlingar sker av sektionsstyrelsen med majoritets beslut, såvida inte förbundsstyrelsen eller förbundsmötet beslutar annat.

Uttagningen till EM/VM. ska baseras på föregående säsongens SM resultat.

Junior som kör i seniorklass i SM. Vid uttagning av EM eller VM-landslag stryks junior ur listan om han/hon fortfarande är junior under de aktuella mästerskapsåret, och efterföljande deltagare flyttas upp i tabellen.

Dock kan styrelsen, om särskilda skäl föreligger, göra annan uttagning. Sådan avvikelse skall dokumenteras i styrelseprotokoll, Eventuellt missfördelad skall ges information och möjlighet till

överklagande.

Om tidigare resultat ej föreligger skall uttagning ske på sådana villkor att den som visat stort intresse och möjligheter att göra ett gott resultat erhåller uttagning.

Klass FSR-O26 Zenoah.

Offshore Motor Zenoah standard max 25,4 cc Godkända motorer är: G260PUM vattenkyld 25,4 cc G231PUM vattenkyld 22,5 cc Bränsle är fritt (se 3.3.2. Fuel) Tändstift är fritt Manifold och avgassystem är fritt Dock får inte ljudnivån 80 dB/A överskridas 22 Enligt gängse mätmetoder. Motorknuten och motorfästen är fritt. Aluminium plattan (detalj 30)* får ersättas med annat motorfäste. Spole (detalj 53)* får flyttas från sin infästning. Choke spjället (detaljerna 22,25,26,27,28)* får demonteras. Stoppknapp får monteras. Trissa/medbringare (detalj 33)* får bytas mot metall dito. Tratt på förgasare (detalj 57)* får demonteras. *(Detaljerna hämtade ur Zenoah owner's service manual sprängskiss) Alla ingående delar i motorn skall vara standard, och får ej bearbetas eller förändras. Slitna eller defekta delar får utbytas, endast originaldelar får användas Motorns yttre delar får bearbetas i syfte att skapa en mer installationsvänlig motorprofil utan att ändra motorns egenskaper. Alla invändiga delar skall vara standard och original, och får ej bearbetas eller förändras Utvändiga skruvar/muttrar kan bytas mot likvärdiga handelskruvar/muttrar. Motorn får bearbetas utvändigt för att passa olika skrov. Ryckstartanordning får ersättas av alternativ startanordning.

Båt med bensinmotor (klass FSR O 26Z/27/35) skall vara försedd med killswitch som stänger av motorn genom kortslutning av tändspolen vid såväl radiostörning, låg batterispänning eller plötsligt spänningsbortfall.