

ECHO Class Rules 2021

10th January 2021

ECHO Part 1. Fundamentals

These rules are intended for use when ever a series is scored using ECHO handicapping. To apply they must be listed in the Rules section of an events Notice of Race.

Terms

Shall Compliance with this clause is required. A failure to do so is grounds for protest or redress.

Should Compliance with this clause recommended. A failure to do so is not grounds for protest or redress.

May Compliance with this clause is advised. Failure to do so is not ground for protest or redress.

ECHO 1. Class Authority

The *Class Association*, *Class Authority* and *Class Rules Authority* for ECHO is the Irish Cruiser Racing Association.

The *Certification Authority* is Irish Sailing.

ECHO 2. Fundamental Principle of Seamanship

The safety of a boat governed by these rules and its entire management including insurance shall be the sole responsibility of the Person in Charge who must ensure that the boat is fully found, thoroughly seaworthy, and operated by a crew sufficient in number and experience who are physically fit to face bad weather.

The Person in Charge must be satisfied as to the soundness of hull, spars, sails, rigging and all gear. The Person in Charge must ensure that all safety equipment is properly maintained and suitably stowed. The crew must be familiar with the use and position of such safety equipment. The person in charge accepts that the responsibility for a boat's decision to participate in a race or to continue racing is theirs and theirs alone. Neither these regulations nor any action of the OA in any way limits or reduces the exclusive responsibility of the owner or the person in charge.

The wearing of personal flotation devices is a statutory requirement in Ireland for anyone on board a boat under 7 meters in length and by anyone under the age of 16 on the deck of a boat and is strongly recommended on all boats at all times.

Competitors participate entirely at their own risk. The Class Association, Class Authority, Class Rules Authority and Certification Authority; their officers, servants and agents accept no responsibility or liability in respect of loss of life, personal injury or loss of or damage to property sustained in conjunction with or prior to, during or after the event.

The ultimate decision on whether or not to race remains the sole and inescapable responsibility of the Person in Charge, See RRS 3, Decision to Race.

ECHO 3. Rules

The following rules apply:

- Part 1 and 2 for these rules
- When another Class Rule also applies to any boat in a series: Part 3 of these rules.
- The World Sailing Equipment Rules of Sailing (ERS).
- The named sections of the World Sailing Offshore Special Regulations (OSR).
- The World Sailing Racing Rules of Sailing (RRS).

The Organizing Authority must comply with Part 4 in order for boats to be scored based on these rules.

ECHO 4. Eligibility and Insurance

A boat shall have a valid ECHO Certificate for the year of the first race notified in the *Notice of Race*.

Each boat owner shall have their boat adequately insured against any risk, including civil liability to third parties and to ensure that such insurance remains valid for the entirety of the event.

ECHO Part 2. Calculations

ECHO 5. Accuracy

Timings are date/times to the nearest second with reference to UTC or with an offset to UTC.

Times are decimal fractions of a second to 3 places.

Handicaps are decimal fractions to 3 places.

Weightings are decimal fractions to 3 places.

Values shall be derived by arithmetic rounding.

ECHO 6. Elapsed and Corrected Times

The *Elapsed Time* and *Corrected Time* shall be calculated as follows.

Inputs

F[r,b] is the *Timing* of the finish of boat b in race r.

S[r] is the *Timing* of the starting signal for race r.

W[r] is the *Weighting* to be applied in calculating a new *Handicap* after race r.

H[r,b] is the *Handicap* to be applied for boat b for race r.

Derived values

E[r,b] is the *Elapsed Time* for boat b in race r.

$$E[r,b] = F[r,b] - S[r]$$

C[r,b] is the *Corrected Time* for boat b in race r.

$$C[r,b] = E[r,b] \times H[r,b]$$

ECHO 7. Progressive Handicaps

A boats *Handicap* for a following race shall be calculated as follows.

Inputs

E[r,b] is the *Elapsed Time* of boat b in race r.

B[r] is the set of boats that *finished* race r and excluding any the *ECHO Handicapper* may wish to leave out of the *Handicap* calculation.

W[r] is the *Weighting* to be given to the boats performance in a race when calculating a progression of a boats *Handicap*.

H[r,b] is the *Handicap* to be applied for boat b for race r.

U[r] is a yes/no, should *Handicaps* be updated after this race?

Derived values

b[r] is the base performance coefficient for race r

$$b[r] = (\text{sum of } H[r,b] \text{ for all } b \text{ in } B[r]) / (\text{sum of } (1 / E[r,b]) \text{ for all } b \text{ in } B[r])$$

p[r,b] is the *Handicap* that reflects the performance of boat b in race r.

If b is in B[r] then $p[r,b] = b[r] / E[r,b]$, otherwise $p[1,b] = H[1,b]$, otherwise $p[r,b] = p[r-1,b]$

P[r+1,b] is a progression of boats *Handicap*. $P[1,b] = H[1,b]$

$$P[r+1,b] = (P[r,b] * (1 - W[r])) + (p[r,b] * W[r])$$

If U[r] is yes then $H[r+1,b] = P[r+1,b]$, otherwise $H[r+1,b] = H[r,b]$

ECHO Part 3. When Dual Scored

The following rules apply when another Class Rule also applies to any boat in a series. They may be changed via the Notice of Race.

ECHO 8. Crew

ECHO 8.1 Numbers

There shall be no limit to the number of crew.

ECHO 8.2 Weight

There shall be no limit to the weight of crew.

ECHO 8.3 Classification

There shall be no Group 3 sailors on board when racing.

A boat shall not receive a series score using these rules if this rule is not complied with during any race in the series.

ECHO 9. Hull

ECHO 9.1 Lifelines

Life lines shall comply with the OSR 3.14. This changes RRS 49.2.

ECHO 9.2 Bowsprits

Boats with retractable bowsprits shall sail with the bowsprit fully retracted when not in the process of setting, flying, or taking down the spinnaker. When approaching a windward mark without the spinnaker set, the bowsprit shall not be extended until the bow of the boat is within 2 of its hull lengths of the mark.

The NoR should state: A boat that may have broken ECHO 9.2 Bowsprits may take a One-Turn Penalty under RRS 44.2. This changes RRS 44.1.

ECHO 9.3 Bilge Pumps

A working manual bilge pump shall be installed.

ECHO 10. Portable Equipment

ECHO 10.1 Mandatory

The following shall be on board and in working condition:

- A handheld waterproof marine VHF radio
- A second marine VHF, which may also be a handheld VHF
- A first aid kit and manual
- Two orange smoke flares
- An effective means to quickly disconnect or sever the standing rigging from the boat

ECHO Part 4. Organization

ECHO 11. ECHO Handicapper

The *ECHO Handicapper* shall be a member of the Race Committee, free to independently carry out their responsibilities with respect to these rules.

For events recognized by the *Class Authority* as National or Regional Championships the *ECHO Handicapper* shall be appointed by the *Class Authority*; otherwise the *ECHO Handicapper* shall be appointed by the *Organizing Authority*.

ECHO 12. Parameters and Initial Handicaps

The following shall be assigned by the *ECHO Handicapper*.

- The initial *Handicap* for each boat: $H[1,b]$
- The *Weightings* to be applied when calculating progressive *Handicaps*: $W[r]$
- The races after which *Handicaps* are updated: $U[r]$

ECHO 12.1 Communication of Parameters and Initial Handicaps

The values of W and U may be included in the *Notice of Race*.

The values of W and U should be included in the *Sailing Instructions*.

If the values of W and U are not included in the *Notice of Race* or *Sailing Instructions* they shall be displayed on the Official Notice Board prior to the first race.

The initial *Handicap* for each boat should be displayed on the Official Notice Board prior to the first race.

ECHO 13. Taking Timings

With in the last 24hrs the devices used to take timing should all be synchronized to one of:

- GPS Time.
- NTP.

ECHO 14. Communication of Final Results and Handicaps

The final results and *Handicaps* of a series should be received by the *Class Authority* or their agents with in 1 week of the time limit established under RRS 90.3.

Appendix A. Getting an ECHO Certificate

The ECHO handicap is administered by Irish Sailing.

An annual ECHO Certificate can be purchased from www.sailing.ie under My Irish Sailing.

By purchasing an ECHO Certificate you become a member of the Irish Cruiser Racing Association. The funds from ECHO Certificates fund the work of the association.

Appendix B. Sources of Initial Handicap

Irish Sailing maintains a database of Standard ECHO. Standard ECHO handicaps are updated annual based on actual performance. Irish Sailing ensures that all boats with an ECHO cert have a Standard ECHO.

An alternative source of initial handicaps for local racing is a recent series featuring the boats to be handicapped.

Appendix C. Implementations

A definitive implementation of the ECHO calculation is contained in the EXCEL spreadsheet "ECHO Handicap calculation v0.4"

The ECHO Handicap system is implemented by the following results software:

- Sailwave
- Halsailing
- Sail 100