

Updated 30 May 2007

The following come into effect for Senior Championships and Games (Jumping) from 1/1/2007 and for all other international Jumping events from 1/1/2009.

1. REQUIREMENTS FOR DISPLAY IN JUDGE'S BOX AND ON SCOREBOARDS

The following must be visible in the Judge's box:

- The 45 second countdown (if it reaches zero, the running time starts).
- The net time (net time is the difference between the competitor's start time and the competitor's finish time).
- The time allowed.
- Time penalties for exceeding the time allowed.
- Time correction (**6** seconds for obstacle demolished following a refusal). The **6** second penalty is to be added immediately to the time when the clock is restarted and the rider resumes his round.
- Faults incurred on obstacles (Table A).
- Faults converted into seconds and added immediately to the net time (Table C).
- The total time.

The following minimum data must be displayed on the scoreboard:

For CSI1*, CSI2*, CSIO1*, CSIO2* & CSIO 3*: numeric display min. 9 digits

- 45 second countdown
- Net time
- Faults
- Running number of horse

For CSI3*: alphanumeric display minimum 20 digits

- All of the above, plus:
- Name of horse
- Name of rider
- Nationality

For CSI4* and CSI5*: alphanumeric display minimum 20 digits

- All of the above, plus:
- Current ranking
- Score and time to beat
- Possibility to display the current top five placing

For CSIO4*/CSIO5*/Games/Championships: alphanumeric display min. 20 digits

- All of the above, plus specific requirements for Nations Cup
- Names and scores of entire teams
- Clear indication of which score is to be dropped for 1st and 2nd rounds
- When a rider enters the ring, the results of the other team members are to be displayed. It is optional to display the result of each team.

When a two round competition:

- Round 2: Display of Penalties occurred in the 1st round
- Round 2: Time 1st round if this is the time for placing
- Round 2: Total time (time 1st and 2nd round) if this is the time for placing
- Round 2: Total penalties from both rounds.

Type of System Authorised

- The connection of the timer to the photocells can be wireless. The timer is connected to the downstream processing system by wire.
- For Games and Championships and other events it is optional to have photocells be connected by wire to a synchronised time-of-day timer.
- For CSI 4* and CSIO 4* events and of a higher category a split-timing system is obligatory.

2. GUIDELINES FOR OCS

An FEI "Timing Manual", a specific information bulletin issued from time to time as a supplement to the FEI rules on timing, will include set-up diagrams and all details on timing that might not be fully described in the rules due to the intense technical nature of the descriptions.

2.1 Technical Installations: Communications & Cabling

In all competitions, it is highly recommended that there be multiple hard-wire connections between the start and finish photocells and the timing systems.

2.2 Timing Equipment

For all events in the FEI Calendar, electronic timers, photocells and wireless transmission systems homologated by the FEI must be used. A list of these approved devices will be published. Events using timing equipment other than those on the homologated FEI list will not be considered for FEI evaluation. Specifications and procedures for timing are more fully described in a separate FEI Timing Booklet.

2.2.1 Electronic Timing

For Olympic Games, and World Championships, two synchronised electronically isolated timing systems operating in time-of-day must be used. One system will be designated system A (main system), the other system B (back up system) prior to the beginning of the event. The photocells for the respective systems at the start and finish must be arrayed identically and be placed as close together as physically possible, and in any case no more than 0,5 m apart.

All time of day times must be immediately and automatically sequentially recorded on printed strips to at least the 1/1000th (0.001) precision on dedicated directly attached or integrated printers. Both systems must furnish time data to allow for the calculation of net times by the mathematical comparison of each competitor's start time to finish time. The recorded times are truncated to 1/100th second after calculation of the run time. The

final result for each rider's round is expressed to 1/100th (0.01) precision.

All times used for the final result must be from system A. If there is a failure of system A, a calculated net time from system B must be used following the same procedure as set out above. It is not permitted to substitute time-of-day times from system B for use with system A for the purpose of net time calculations.

For all events, system A must be connected to its respective A photocell contact. System B must be separately connected to another electronically isolated B photocell contact.

Refer to the FEI Timing Booklet for more details regarding cabling and complete wiring descriptions, diagrams and start and finish line installations.

All timing equipment and technical installation should be set up or protected in such a way that danger to the competitors is avoided where possible.

Synchronization of the timing systems must occur within 60 minutes prior to the commencement of each event.

Synchronization of all systems must be maintained every day throughout each event. Timers may not be resynchronized during any competition.

Timers may be resynchronized between competitions.

For all other Games and Championships the same systems approach is highly recommended.

Photocells

For Olympic Games and World Championships there must be two photocell system(s) homologated by the FEI, installed at the start and finish line. At each location, one is connected to system A. The other is connected to system B. Procedures and regulations for photocells and wireless impulse transmission systems are found in the FEI Timing Booklet.

2.2.2 Hand Timing

Manual (hand) timing, completely separate and independent of the electronic timing, must be used for all competitions listed in the FEI Calendar. Stopwatches or hand operated battery powered timers that are installed at both the start and the finish and capable of expressing times to at least 1/100th (0.01) precision qualify as proper hand timing devices. They must be synchronized prior to the start of each event, preferably with the same time-of-day as system A and system B. Printed records, either automatic or hand-written, of recorded hand times must be immediately available at the start and at the finish. Net times on course are derived from the mathematical comparison of start and finish times. The above

paragraph will be added to the Memorandum for International Jumping Events.

2.2.3 Presentation of times

Organizers shall provide appropriate facilities for continuous presentation of all registered times of all competitors.

2.2.4 Timing without Cable for all FEI events.

Refer to the FEI Timing Booklet for a detailed discussion of how this is possible using homologated wireless impulse radio or data transmission or Time-of-Day comparison techniques.

2.3 Timing

2.3.1 Timing at the sensors

With electronic timing, the time is taken when a horse crosses the start or finish line and triggers the beam between the photocells. Time has to be taken on the breast of the horse. If the rider pushes the horse's head first there will be no correction. With hand timing the time will be taken as above. The height of the sensors must be identical at the start and finish lines.

If a time base is used in conjunction with the photocell, either integrated or separate, then it must be set in time of day and be synchronised with the main timer before the start of each competition.

2.3.2 Timing Failure Protocol

In the case of a failure of the main electronic timing system (system A), the results of the electronic back-up system (system B) will be valid as per art. 2.2.1. For Olympic Games and World Championships synchronized electronic timing systems with printers, directly connected to the start and finish photocells is obligatory. In case of a failure in the lines of the timing system between start and finish, this back-up system will allow the correct calculation of the times to 1/100ths of a second. In the case that calculated net times from either system A or system B are not available for a competitor, the calculated net manual time as per art. 2.3.2.1 will be considered valid.

2.3.2.1 Hand Timing Corrections

Utilization of times taken by hand times may be used in the official results after a correction has been calculated.

Calculation of the correction:

Calculate the difference between the times taken by hand and the electronic times of the 5 competitors starting before the missing time and the 5 starting after or if necessary the 10 nearest competitors. The sum of the 10 time difference is divided by 10 to give the correction which must be applied to the hand time of the competitor without an electronic time.

2.3.3 Print-out of time

The official timing strips from the printer will be given to the Foreign Judge for review. They will be kept by the Event Organizer until the official approval of the event or resolution of any appeal dealing with timing or event results. At events where a complete back up system is required this also applies.

A technical timing report form as prescribed by the FEI must accompany the event results and must be reviewed and signed by the FJ as his approval of the event. All printed records from system A, system B and hand timing must be retained by the OC for a period of three months after the competition or until resolution of any appeal dealing with timing or event results.

2.3.4 Time correction

When the official printing timer allows manual input or correction of a time, some type of indication (star, asterisk or other) concerning any effected change must be printed on all relevant timing documentation.

3. CRITERIA FOR APPROVAL OF TIMING SYSTEMS

3.1 Timers

3.1.1 The timer must have an internal (integrated) or directly attached external printer. The start and finish times in time of day must be printed directly and immediately through the timer's printer and stored in the timer's memory. It must be possible to download or reprint this data at a later stage. Printing only through a computer is not allowed.

3.1.2 The timer must be able to operate in Time-of-Day. The output of the time must always have the same precision (e.g. printer, display, interface).

3.1.3 This printer must print at least in a chronological order the time of day.

3.1.4 For each printed time of day there must be an indication of the timing channel (start/finish/Judge button).

3.1.5 If it is possible to correct the time in the timer, the printer must mark such a corrected time with a special character (asterisk) indicating that manual intervention has been applied by the operator.

3.1.6 The timer must work without power supply from the mains for at least four hours at 0°C. It is compulsory to have a back-up generator (or batteries) at Games and Championships.

3.1.7 The timer and printer must work at ambient temperatures from 0° to 60°C.

3.1.8 The time of day mode must be possible in hours, minutes, seconds and 1/1000th second, or better.

3.1.9 The timer must measure up to the 1/1000th second in time of day mode.

3.1.10 Timer accuracy must be below +/- 10 PPM at a device temperature from 0° to 60°C.

3.1.11 The aging of the quartz must be below +/- 3.0 PPM per year.

3.1.12 With adjusted quartz frequency the time drift must be less than +/- 1.0 PPM at a constant temperature of 20°C.

3.1.13 The delay of impulses as treated by each timer channel input may not exceed 1/100th second. The delay of impulses between and for all channels must be constant with a precision better than 1/1000th second.

The timer must have a minimum of four independent channels: a start channel, a stop channel, a channel for multi-timing purposes and the judge's interference button (manual start/stop).

3.1.14 It must be possible to synchronise the main and backup timers to the same time of day.

3.1.15 The timer must meet the standards of the IEC (International Electronic Commission). This means the timer must function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

3.2 Photocells

The technical concept of the photocell is not restricted by the FEI, although it must be assured that the photocell cannot be influenced by external light sources, such as the sun and its reflections, or radio systems (EMI) used in proximity. The photocell must meet the standards for electronic devices in the country that it is sold.

3.2.1 Accuracy

Sensing Time - The time delay from the instant the photocell is triggered to the moment an output impulse is generated may not exceed 0.01 sec. The time delay must be a fixed rate and equal for all photocells in use. The precision must be better than 0.001 sec.

When a valid photocell impulse is generated there must be a subsequent adjustable "lock-out" period that prevents the generation of further impulses by the same horse. The impulse lock-out period of the photocell must be adjustable from 0.01 second to 2 seconds.

3.2.2 Operating Distance

The photocell must work over a minimal distance of 20m (between the photocell and the reflector or between the separate transmitter

and receptor). The maximum size of the reflector (if used) is 100 mm (in all directions).

3.2.3 Triggering Object

An 8 mm object moving with a speed of 10 km/h must not trigger the photocell (measured at a distance of 2 m from lens of the receiver).

A 100 mm object moving with a speed of 60 km/h must trigger the photocell (measured at a distance of 2 m from lens of the receiver).

3.2.4 Temperature Range: – 10° C to 60° C

3.2.5 Power Supply

If the photocell is supplied power from the timing device (within the same cable as the impulses) it needs no external power supply. If a battery is used as the power supply (external or internal) the Photocell must work for four (4) hours at 0 °C.

3.2.6 Homologation of photocells

Photocells sent to the testing laboratory for homologation must be equipped on the emitter with two outputs (banana type or other) which when short-circuited will immediately stop emission of the infra-red beam (directly cut the current to the LED that creates the signal) in order to make precise tests. The aim of the test is to measure the delay between the moment the infra-red beam is cut and the moment the impulse is generated by the photocell receptor.

3.3 Wireless Transmission Systems

The FEI recognizes the importance of wireless impulse transmission systems in the arenas of FEI Jumping events and encourages their use to facilitate the ease of set-up and functionality of modern jumping. It should be noted however that any wireless system is more prone to failure than a hardwired connection from the timer to the photocells.

The wireless radio device must meet the standards for electronic devices in the country that it is sold.

The timekeepers must verify before the start of the event that the wireless transmission is not disturbed by any other radio waves from radios, TVs, wireless devices, remote controls etc used in proximity.

3.3.1 Accuracy

Sensing Time - The time delay from the instant the radio device is triggered to the moment an output impulse is generated by the receiver device may not exceed 1 (one) second. The time delay must be the same for all radio channels in use within an accuracy of 0.001. The delay of impulses must be constant; the range must be less than 0.001 second.

3.3.2 Operating Distance

The radio device must work over a minimal distance of 200m in open terrain.

3.3.3 Temperature Range: -10 to 60 °C

3.3.4 Power Supply:

Must work for four (4) hours at 0 °C

3.4 Downstream Processing System

3.4.1 Correction of the time must be possible

3.4.2 The truncation to 1/100th second must be made after the calculation of the run time. The digits of the run time after the 1/100th second are discarded.

3.4.3 Minutes are to be converted into seconds before the total time is displayed.

3.4.4 The type of competition (Table A or C) is to be programmed into the system.

3.4.5 For Table C competitions, faults are to be converted into seconds and added to the running time. The time limit (2 minutes for courses less than 600m; 3 min for courses more than 600m) is to be programmed into the system.

3.4.6 For Table A competitions, the program needs to calculate penalties for faults and for exceeding the time allowed.

3.4.7 The time correction of four seconds for rebuilding an obstacle must be added to the running time as soon as the clock is restarted.

3.4.8 The program needs to allow for the introduction of special competitions.

1 January 2007