



## Submission specifications

The present submission specifications are applicable to any organization wishing to obtain the chronometer certificate for watch movements or watches meeting the official criteria of Swiss made and marketed under a trademark registered in Switzerland.

### Information

For any information in relation to the COSC or these submission specifications, please contact :

Management of the COSC  
Avenue Léopold-Robert 65  
CP 298  
2301 La Chaux-de-Fonds  
Tel. 032/913 80 78  
e-mail - [info@cosc.swiss](mailto:info@cosc.swiss)

which will be able, if necessary, to direct the request to one of the Official Control Offices (BO), namely :

- COSC - BO Biel,  
SCS 0063 / STS 0626  
Route de Soleure 136, 2504 Biel/Bienne  
Tel 031/636 70 50  
Fax 031/636 70 51  
e-mail: [bobi@cosc.swiss](mailto:bobi@cosc.swiss)
- COSC - BO Le Locle,  
SCS 0063 / STS 0626  
Rue des Billodes 18, 2400 Le Locle  
Tel 032/933 85 60  
Fax 032/933 85 69  
e-mail: [bolo@cosc.swiss](mailto:bolo@cosc.swiss)
- COSC - BO Saint-Imier,  
SCS 0063 / STS 0626  
Rue Dr Schwab 32 A, 2610 Saint-Imier  
Tel 032/942 30 20  
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OFFICIAL SWISS CHRONOMETER CONTROL  
C O S C

**Submission specifications**

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**III. REFERENCE DOCUMENTS**

[R1]	Fiche d'identification de calibre Mouvement à oscillateur balancier-spiral	FM-AD-Fiche_d'identification_de_calibre_balancier-spiral
[R2]	Fiche d'identification de calibre Mouvement à oscillateur quartz	FM-AD-Fiche_d'identification_de_calibre_quartz
[R3]	Bordereau de dépôt	FM-AD-Bordereau_de_dépôt
[R4]	Spécification et utilisation du dispositif CarQua	IT-EA-Spécification_et_utilisation_du_dispositif_CarQua
[R5]	Fiche d'identification de tête de montre	FM-AD-Fiche_d'identification_de_tete_de_montre

**Any exception to these submission specifications must be the subject of a concession granted by the COSC.**

A deadline to be defined at the time of acceptance by the COSC applies to specific requests requiring a development approved by the Board of Directors, which will determine the economic impact.



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## I. COSC DATA

### I.1 General

The tests to which the time instruments submitted for the purpose of obtaining the title of chronometer in the Official Control Office (BO) are subjected consist of checking their daytime operation under conditions and according to requirements defined by control regulations which are :

- For the wrist chronometer with a balance-spring oscillator hereinafter referred to as "mechanical", standard ISO 3159 - 2009 (type I)
- for the pocket chronometer with a balance-spring oscillator, the internal COSC Type II prescription
- for fixed position time devices with a balance-spring oscillator, the COSC internal prescription type III
- for wrist chronometers with a quartz oscillator, hereinafter referred to as "quartz", the internal COSC prescription type IV

These documents provide all the information relating to the programme of tests, the selection criteria and the limits of precision set.

The "General Conditions" regulate the activities of the COSC.

#### I.1.1 Validation submission :

In order to ensure compliance with these specifications, a preliminary submission of 5 to 10 pieces must be made

at the laboratory in Biel for:

1. any new dial, calibre or time instrument, whether mechanical or quartz.
2. any modification of objects such as dial, hand, cap, stem or crown

at the laboratory in Saint-Imier for:

1. any new watch head
2. any modification to the external parts of the watch head

Pre-submission: from 5 to 10 pieces, meeting the conditions specified in the General Conditions and Submission Specifications, suitable for verification by test measurements. These pre-submissions must be similar to subsequent submissions made for the certification of pieces.

A change in calibre identification that does not involve any other element than identification must be the subject of a new calibre identification sheet to be sent to the COSC.

Only movements or time instruments that can be processed according to the measurement methods accredited by the SAS can obtain the STS (Swiss Testing Service) test report for the COSC to issue the chronometer certificate. These methods can be viewed on the website [www.sas.ch](http://www.sas.ch), accreditation number STS 0626.



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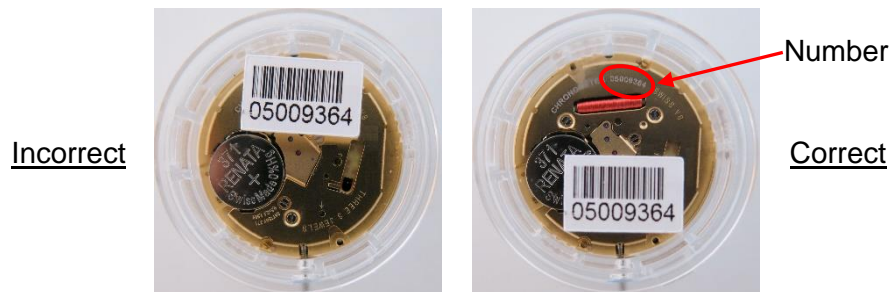
**I.1.2 Conditions of submission:**

The movements of submitted time instruments must be numbered. The movement number (hereafter number) must be legibly and conspicuously marked on the plate or ébauche forming part of the movement, with the exception of the oscillating weight.

Assembled time instruments (watch heads or time devices in a fixed position) that have been submitted must be numbered. The number of the time instrument must be legibly and conspicuously marked on the watchcase or device.

When a watch head is deposited, a QR code (complying with the ISO 18004:2015 standard) must be affixed to the watch back, in the centre of the watch, and must have a maximum dimension of 15x15mm and a minimum dimension of 10x10mm. This code must not prevent the serial number engraved on the case from being read.

The same applicant for the same caliber or watched model must only use the number once. The number indelibly marked on the movement or on the watch head must be legible from the outside and may be duplicated on a label placed on the back of the calotte in the event of the submission of movements, without impairing the legibility of the marked number; it must be placed, in parallel, in the half-moon opposite the number and in dimensions not exceeding this surface. In this case, the 2 numbers will be parallel and legible in the same direction.



In the case of movements with oscillating weight, the applicant must ensure that it is blocked and it does not impede the legibility of the movement number.

The submission conditions relating to the additional devices specified in Art. 12 of the General Conditions are set out below. Any indications displayed by the additional devices must not interfere with the reading by vision (see I.3).

**Article 12**            *Additional devices*

*As defined by the COSC, an additional device is considered to be any mechanism in direct or indirect engagement with the kinematic chain from the energy source to the oscillator of the piece to be certified.*

*This article applies to watches or time instruments with mechanical or hybrid movements.*

- a. *An additional device is therefore defined as an assembly consuming energy permanently or temporarily and liable to disturb the distribution of energy to the oscillator synchronising the seconds display defined in the submission specifications of the Swiss Official Chronometer Testing Office.*



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*All additional devices must be installed, engaged and functional when submitting movements for certification. All additional devices must be explicitly and exhaustively described on the calibre identification sheet filled in under the full responsibility of the trademark owner.*

*Automatic winding mechanisms are not considered additional devices.*

- b. In case of non-compliance found during the measurements, no certificate will be issued. All the pieces of the series will then be declared to have failed. A warning letter will be sent to the owner of the concerned trademark.*
- c. Sample checks may be required by the COSC or the Official Control Office (BO) that carried out the measurements, when the pieces are returned, as well as in case of doubt about the pieces found on the market.*

*The brand owner must be able to provide proof of the conformity of the nested movements related to the calibre identification sheet submitted to COSC.*

- d. The trademark owner has full responsibility for compliance with the above requirements.*
- e. The functions of additional devices are not checked during chronometric certification measurements, only their influence on the operation of the time base to be certified will be verified.*

All movements must be submitted with stem and winding crown.  
Movements of types I to III must be submitted without winding.

Time instruments must be equipped with a seconds display. If this does not provide the accuracy required by the test prescription, the time instrument must provide a signal that enables the status to be detected by the test procedures used at the COSC. This exemption must be agreed in advance with the COSC.

The seconds hand must be legible whatever its position. A temporary overlap by the minute and hour hands is permitted.

Movements with special features such as indirect seconds, accelerated seconds, non-uniform movement of the seconds will be declared to the COSC with a calibre identification sheet or its annexes.

Hourly instruments (specialities, tourbillons, etc.) which do not comply with the specifications mentioned in articles I.2 to I.5 must be the subject of a prior agreement with the COSC.

All Type IV digital display movements of the same series must display the same time within  $\pm 30$  minutes. The difference between the local time and the time displayed by the movements will be specified by the concerned Official Control Office (BO) for each calibre, with the calibre identification sheet. All movements of the same calibre must have identical segment location.

For chronograph calibres, the second counter hand and the second hand must be installed. The second counter hand must be resettable to zero and must not obstruct the measuring area.



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**I.1.3 Title and documents issued :**

Title obtained and documents issued: see General Conditions.

The display of particulars on the individual A4 sheets and 3 parts certificate is limited to 3 lines of 40 characters maximum each. Any change in the particulars must be the subject of a new size identification sheet.

**I.1.4 Current prices :**

See the price list for services according to the appendix to the General Conditions.

**I.1.5 Insurance :**

See General Terms and Conditions.

**I.1.6 Delivery time :**

For submissions agreed between the COSC and the applicant, the delivery time is equal or less than the number of days of proofs plus 5 days, starting from the 1st business day following the submission for hourly instruments submitted from Monday 07:00 to Friday 12:00.

The processing of parts that have not been the subject of submission forecasts will be carried out in such a way as to guarantee a throughput time as close as possible to the above-mentioned deadlines.



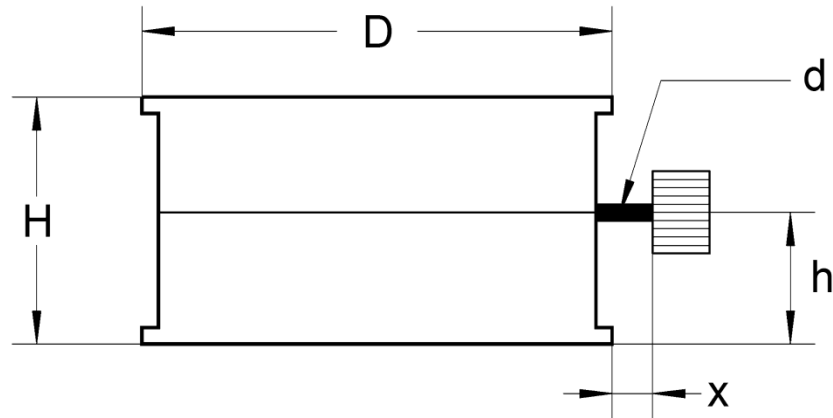
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**I.2 Calotte specifications (high dial)**

Any change in the dimensions of the calotte must be agreed in advance with the COSC.



D	H	h	dmax	x (1)
27.30 ±300	10.00 < H < 13.00	3.70 < h < 7.65	1.00	2.10 ±150
33.10 ±100	12.00 < H < 15.00	4.90 < h < 9.70	1.30	2.95 ±150
38.55 ±100	12.00 < H < 15.00	4.95 < h < 9.70	1.50	2.95 ±150
42.00 ±100	12.00 < H < 15.00	4.05 < h < 9.65	1.50	2.85 ±150
44.60 ±100	14.50 < H < 17.50	3.60 < h < 9.90	*	1.00 ±150
48.90 ±100	13.50 < H < 16.50	4.75 < h < 10.00	*	2.75 ±450

Dimensions in mm, tolerances in  $\mu\text{m}$ , \* contact the COSC management,  
(1): for gender IV, derogations on x can be granted; please consult us beforehand.

General information:

- the movement number must be legible from the outside, the bottom of the calotte must be free of any optical disturbance over an area ideally extending 1 mm, but at least 0.3 mm  $\pm 0.05$  mm around the movement number
- both sides must be flat, optically unobtrusive, transparent, uncoloured and scratch-free
- the controls for the functions of the additional devices must be accessible from the outside and completely unobstructed
- **D** is given for the bottom of the calotte. Please consult us beforehand if you wish to use rings with a diameter greater than D
- **h** must be the same for the same size within the prescribed tolerances.
- the calottes must be identical in the same series
- the cover and the bottom of the calotte must not be able to be opened (holding without adhesive, ...)
- the movements are inserted correctly, without frolics in the calottes
- for the calottes of  $\varnothing 27.30 - 33.10 - 38.55 - 42.00$  the positioning of the movement (the anti-rotation) is carried out by the winding stem, while for the caps of  $\varnothing 44.60$  and  $48.90$  the positioning (the anti-rotation) is carried out by the calotte. Please consult us beforehand for these ones.



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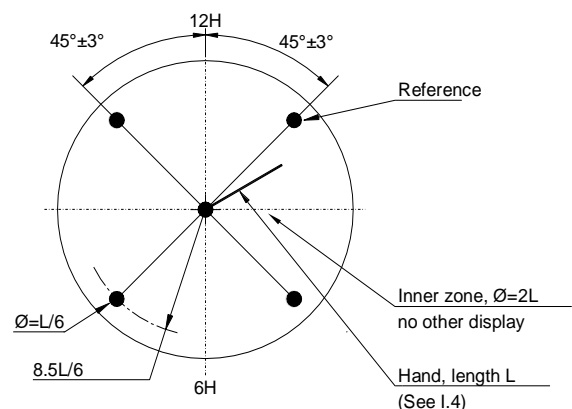
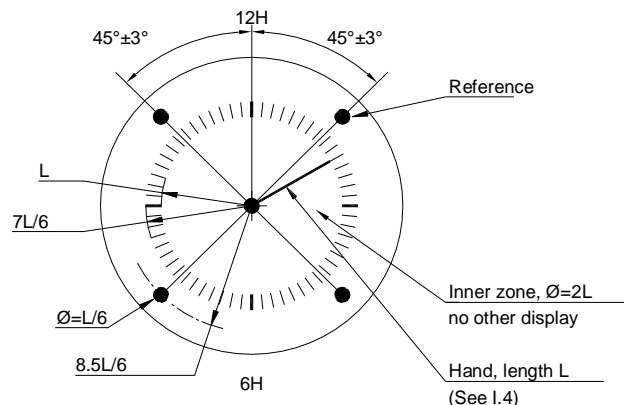
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**I.3 Dial specifications**

The dial can be placed **with** or **without** graduation.  
The dials and all their useful geometries must be identical in the same series.

General information

- background colour: matt white
- colour graduation: matt black
- uniform background and graduation colour throughout the series
- the pair of models (diametrically opposed) can be placed at  $45^\circ$  over or under 12H, as desired. Please consult us beforehand for any other case
- a crown of  $L/6$  wide around each model must be free of contrast variation
- an area of  $\varnothing = 2L$  around each model must be free of similar model(s)
- the minute and hour hands are not installed.
- the watch hand, the graduation and the circular models must always be completely visible (pay attention to the calotte supports)
- the entire watch hand passage area must be free of contrast variations
- the proportions between the watch hand, the models and the graduation must be respected
- the hole where the watch hand axis passes through or a saving on the dial around this hole will have a maximum diameter equal to  $L/2$



Dimensions are in mm, general tolerances  $\pm 100 \mu\text{m}$ , concentricity tolerance hand-axis  $\pm 100 \mu\text{m}$





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**I.4 Hand specifications**

The hands must be identical in the same series.

General information	
<ul style="list-style-type: none"> <li>hand colour: matt black</li> <li>hand with straight and parallel edges</li> <li>length L : <math>3.0 \leq L \leq 12.0</math></li> <li>width H : <math>\text{si } 3 \leq L &lt; 6 \Rightarrow 0.15 \leq H \leq 0.20</math> <math>\text{if } 6 \leq L \leq 12 \Rightarrow 0.15 \leq H \leq 0.30</math></li> <li>following the length L, the hand tip may have a geometry of some length <math>e \leq L/6</math></li> <li>a hand tail is not accepted, except for type IV with the following dimensions: <math>l \leq 1/3</math> of L; its geometry is not imposed</li> </ul>	

Dimensions in mm, general tolerances  $\pm 100 \mu\text{m}$

**I.5 Crown specifications**

The crowns must be identical in the same series.

General information	
<ul style="list-style-type: none"> <li>material: hard, non-friable material that does not generate dust or delamination</li> <li>greater flexibility on dimensions is allowed for type IV; please consult us beforehand.</li> </ul>	

Dimensions in mm, tolerances in  $\mu\text{m}$ , general tolerances  $\pm 100 \mu\text{m}$

The actual position of the crown versus the normal time reading position of the finished watch, the 12 o'clock position according to ISO 3158, must be announced on the identification sheet [R1] when registering the calibre.

If this position is not orthogonal, the applicant is asked to choose the orthogonal position closest to the actual position of the crown. If the actual position is  $45^\circ$ ,  $135^\circ$ ,  $225^\circ$  or  $315^\circ$ , the applicant is free to mark the orthogonal position just before or just after the actual crown position.

For tests according to ISO 3159, the COSC ensures that the crown is correctly positioned according to the position of the crown announced by the applicant.



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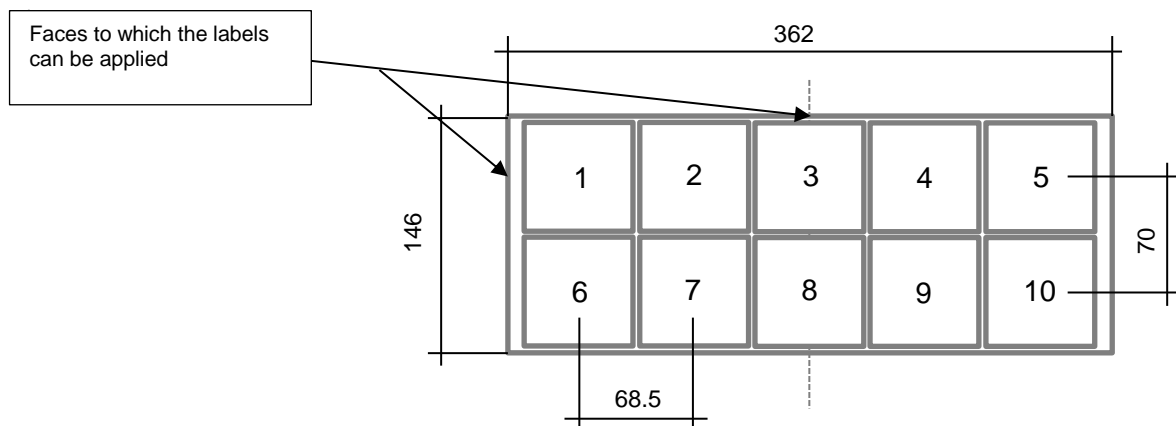
**I.6 Containers for Watch heads**

The containers used to deposit the parts will be used throughout the certification process. They must comply with the following dimensions and functions:

**Tray dimensions**

Containers must have external dimensions of 146x362mm.  
The height must be less than 36mm.

The 10 compartments must be divided into 2 rows of 5 columns.  
The centers of the 2 rows should be 70mm apart.  
The centers of the 5 columns should be 68.5mm apart.  
The compartments 3 and 8 are centered on the length.



The edges of the trays must not have any protuberances.

The trays must allow 2 labels to be applied, centered on the rear edge and the edge of the right side. A flat surface measuring 80x20mm is required (see figure above).

Centered on each compartment, a 30mm hole in the bottom will allow QR codes to be read (see chapter below).

**Loading the trays**

The trays should be loaded from left to right and top to bottom. The first compartment is the one on the top left, the second the one on the next right and so on (see numbering in figure above). The trays in a series must be 100% full. Only the last tray may be incomplete.

**Batch - grouping of trays**

Trays will be grouped together in batches. A batch is a stack of 5 trays.  
If the series submitted does not have a number of trays that is a multiple of 5, empty trays must be sent so as to always obtain complete batches (5 trays).  
During the tests, these batches of 5 must be placed in the 5 watch positions, which means that they must fit naturally in these positions (CH/FH/3H/6H/9H). The applicant must supply a system for holding the 5 clocks securely in position. This holding system must be easy to use and must not interfere with the positioning of the batches in the COSC climatic chambers.  
An intermediate or upper cover is authorized. This must be easy to remove to allow the state to be taken.



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**Identification of watch heads**

The identification number announced for each watch head will be checked when the parts are received in the laboratories. In order to speed up this control, a label with the QR code containing the engraved identification number must be affixed to the back of the watch. This must not prevent direct reading of the engraved number.

The code must be of the QR Code or QR Micro type in accordance with ISO/IEC 18004:2015 or Datamatrix in accordance with ISO/IEC 16022. We recommend using an encoding with redundancy to ensure good legibility.

This code must be between 10x10mm minimum and 15x15mm maximum.

This code will be read when the pieces are checked in. Each piece must correspond to the engraved number announced, in the order communicated at the time of deposit. The order in which the trays are filled is explained in the dedicated chapter. A random manual check between the engraved number and the coded number will be carried out. In the event of a mismatch, the series will not be accepted and will be returned to the depositor.

A deposit without a QR code is still possible, but the cost of manually checking the identification numbers will then be applied to the series.

**Watch heads with manual winding**

In the case of watchheads without an automatic winding, the tray and holding calotte assembly must allow the stem to be wound by providing access to the crown. These watches will be wound by a motorised winding device, or on request by manual winding, at an additional cost to the depositor.



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## II. CUSTOMER DATA

### COSC Definitions

- Client: Company using COSC services
- Brand: Identification of the finished product marketed
- Debtor: Company to whom the invoice is addressed
- Applicant: Company that submits the pieces in the COSC's Official Control Offices (BO)
- Series: Group of 1 to a maximum of 500 identical pieces, identified by a unique number. Each series is the subject of a collective sheet.
- Batch: Operational processing unit of up to 100 pieces belonging to a series.
- Portal: Secured IT platform for customers allowing the registration and monitoring of series, the registration of new calibres, the downloading of results and qualitative statistics. Access to the portal is free of charge and will be subject to a request to the COSC management or the official control offices.

The submitted series must be accompanied and characterised by a submission slip, drawn up for each series. The submission slip can be printed in PDF format on the portal. Submission slips can be obtained from the management or from the official COSC control offices.

### II.1 Mechanical watch

When pieces of a new calibre are submitted in an Official Control Office (BO) for the first time, the calibre must first be announced and marked on the portal or by the identification sheet [R1] or [R5]. This form can be obtained from the management or from the official COSC control offices.

### II.2 Quartz watch

When pieces of a new calibre are submitted in an Official Control Office (BO) for the first time, the calibre must first be announced and marked on the portal or by the identification sheet [R2]. This form can be obtained from the management or from the official COSC control offices. The submitted movements must be equipped with an oscillator powered by a voltage regulator.

#### II.2.1 Specifications of quartz oscillator and analogue display movements

The inductive signal corresponding to the displacement of the seconds hand must be capable of being picked up in such a way that the measurement uncertainty corresponds to the measurement method chosen by the COSC and indicated in the collective certificate.

Capture tests may be carried out at the COSC or at the applicant's premises using a device and the adjustment and use procedure [R4] which may be made available free of charge by the COSC. The system is designed to capture the positive edge of the first pulse that exceeds a certain adjustable threshold.

The following influences are considered to be intrinsic instabilities of the time instrument:

- inhibition relative to the adjustment of the gait,
- inhibition relative to temperature compensation,
- motor impulse control technique.

These influences are to be quantified by the applicant and may influence the success rate in the tests.



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**II.2.2 Specifications of quartz oscillator and LCD display movements**

The time instrument must be able to offer a mode that allows flashing of the reference segment used for status measurement. This flashing must be synchronised with the passage of the second (frequency of approximately 1 Hz) and have a duty cycle between 0.5 and 0.8.

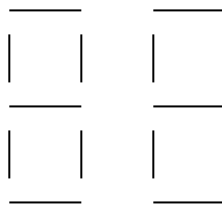
Today, our vision systems consider the extinction of the segment (descending flank) as the instant of the passage of the second.

The switchover time of an LCD segment measured on the falling edge is defined as the time from 90% to 10% of the total grayscale range (255). In summary, the usable range for state measurement is defined as 204 grey levels.

The switchover time of the reference segment used for the measurement must be between 17 and 68 ms.

The minimum width of the reference segment, second segments and tens of second segments is 0.3 mm.

Tens and units of seconds are displayed in two 7-segment segments as shown below:



If one considers on the one hand the area equal to  $H \cdot L$  inscribing the reference segment and the two times 7 segments of the units and seconds and on the other hand the height  $h$  of a vertical segment, a reference pattern should be inscribed in an area equal to approximately  $(H+h) \cdot (L+h)$ . The shape and dimension of this model are not imposed but must be validated according to Chapter I.1.6, subject to Art. 9 of the General Conditions.

The following influences are considered to be intrinsic to the time instrument :

- segment switching time outside the range specified above,
- changeover time variation depending on the segment supply voltage,
- ripple of the light intensity relative to the multiplexing of the segments,
- inhibition relative to the adjustment of the gait,
- inhibition relative to temperature compensation,
- variation of the switchover time depending on the occupancy of the microprocessor.

These influences are to be quantified by the applicant and may influence the success rate in the tests.