



## **Protocol for the construction of measuring jig for time trial bicycles**

### **Description of the measuring jig**

Organisers of cycling events and competitions recognize by UCI that include a time trial are required to provide the UCI Commissaires with a measuring jig for bicycles. This may be constructed by the organiser, taking into account the information given below. Alternatively the jig may be ordered from an accessory manufacturer or supplied by the National Federation or one of the organiser's service providers such as the technical assistance or neutral service.

The measuring jig supplied to the commissaire to check bicycles can be constructed using different methods. However, it is crucial that four essential points are observed:

- 1 The gauge must be capable of standing in a vertical position without external assistance (e.g. from a wall, safety barrier, etc.), even in windy conditions. It must also be able to support the weight of a bicycle without falling over or distorting.
- 2 The device must be portable and allow the bicycle to be placed upon it accurately, using the centre of the bottom bracket as a reference point, without any external encumbrance.
- 3 The device must comprise a support (base, rail, plate, etc.) that allows the bicycle to be oriented in the same plane as the measurements to be made.
- 4 The gauge must allow the following dimensions to be checked:
  - A the 50 mm distance between the tip of the saddle and the centre of the bottom bracket axle, with measurement marks displayed every centimetre as a minimum (Article 1.3.013),
  - B the distance from the centre of the bottom bracket axle to the extremity of the handlebars; which must not exceed 750 mm (Article 1.3.023),
  - C the distance between the centre of the bottom bracket axle and the centre of the front wheel axle, which must be between 540 and 650 mm (Article 1.3.016),
  - D the distance between the centre of the bottom bracket axle and the centre of the rear wheel axle, which must be between 350 and 500 mm (Article 1.3.016).

Figure 1 illustrates the measurements of the bicycle that the measuring jig must be able to assess, as defined in point 4.

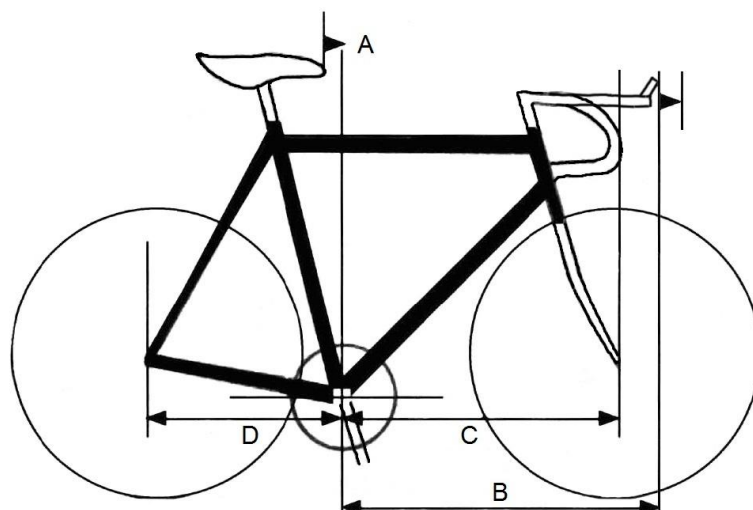


Figure 1: Illustration of the measurements of a bicycle, as described by point 4

### Construction of a measuring jig

Figure 2 can be used as a model for the design of a panel to be mounted on the jig. In this example, the bicycle wheels are placed in guide rails on the ground and the bottom bracket axle is lined up with the gauge. The panel can be fixed in different ways provided that the dimensions described by point 4 above can be checked by the commissaire. The information printed on the panel must be clearly visible and indelible or protected by a transparent plastic film.

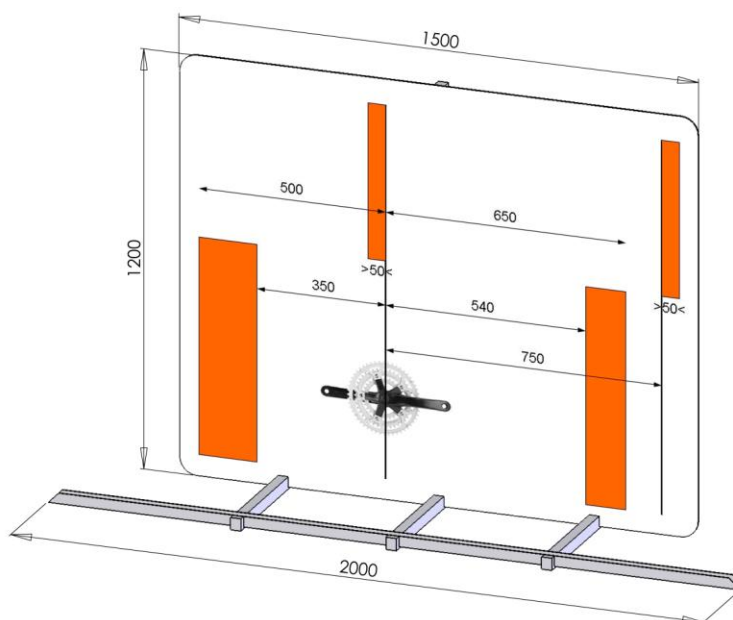
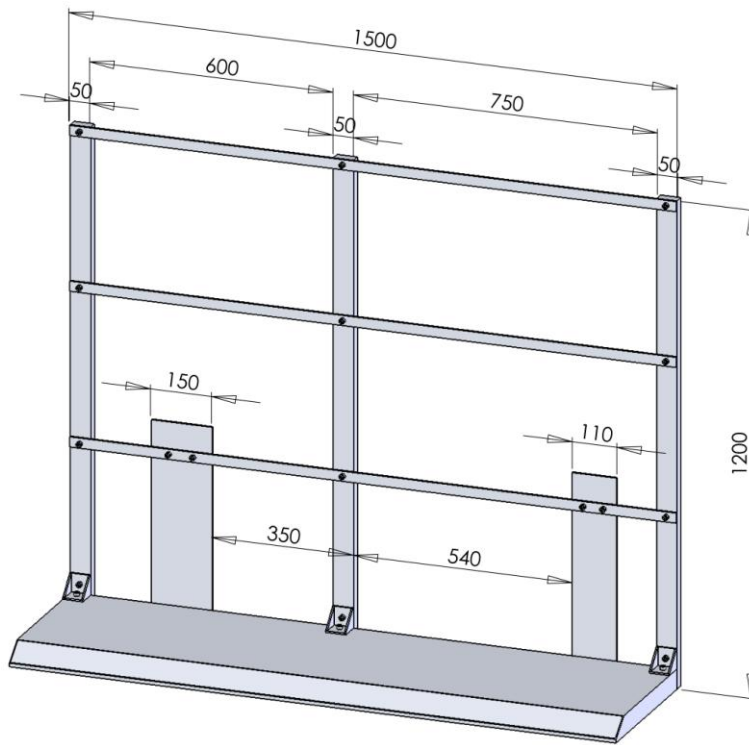


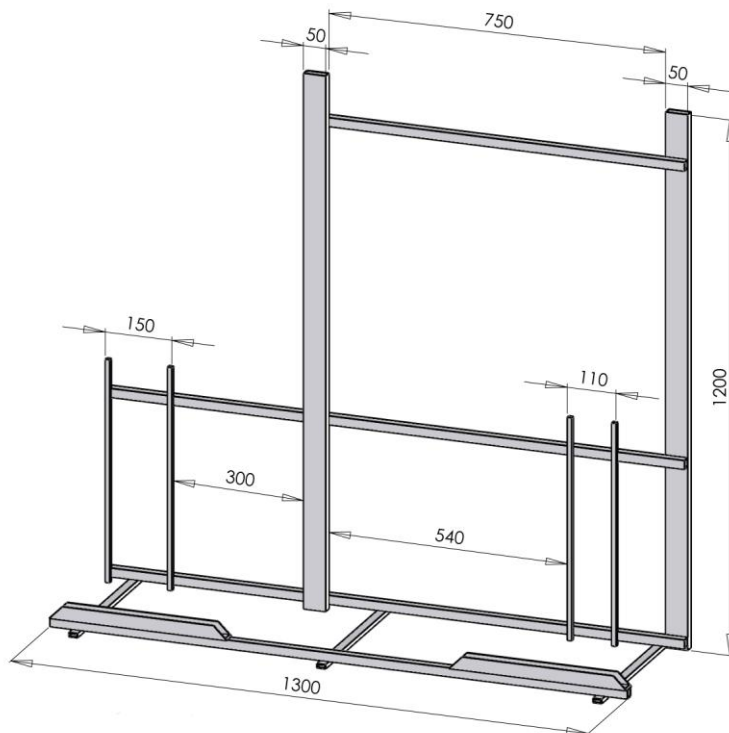
Figure 2: Example of a panel mounted on a measuring jig with a guide rail

It is also possible to use the assembly shown in Figure 3 as a model. The bicycle dimensions are checked by comparing them to the width of the bars and plates that make up the device. However, the construction must be extremely accurate and also rigid in order to avoid any movement or distortion of the elements.



**Figure 3: Example of a structure assembled on a base**

Figure 4 shows an example of a dimension-checking gauge that has been simplified as much as possible and assembled using structural hollow sections. With this structure, care must be taken to ensure that the assembly is sufficiently rigid and that the dimensions have been strictly observed.



**Figure 4: Example of a simplified structure assembled using structural hollow sections**



Whatever type of assembly is used, the support for the bicycle (guide rail, base, plate, etc.) must be an integral part of the measuring jig so that the bicycle is properly aligned in the same plane as the device during the inspection.

Any organiser wanting to assemble the measuring jig, but who encounters difficulties, can request more detailed information on the assembly dimensions from the UCI Sport and Technical Department.

### **Verification of the conformity of a measurement jig by a commissaire**

The relevant commissaire conducts a check before all time trial events to make sure that the measurement jig is displaying the correct dimensions. The commissaire checks that the assembly conforms to all the distances indicated in Figures 2 and 3 to an accuracy of 1 mm.

A folding rule is used to measure dimensions over 120 mm, while dimensions below 120 mm are measured using a vernier caliper. These measurements must be made at the highest and lowest points of the dimension-checking gauge.

The commissaire also ensures that the measuring jig will stand upright without any external assistance and that measurement marks are visible at least every centimetre for checking the withdrawn position of the saddle and the advanced position of the handlebars.