

# Testing requirements for ISO 10791-6

To complete ISO 10791-6 testing some additional hardware (not included in a QC20-W kit) is required. Some is essential for all machines and some is only required to measure the full range of axes on specific machines.

## Hardware essential for all machines

1. It is critical that the Ballbar toolcup is centralised in the spindle prior to testing. Although ISO 10791-6 does not specify a centricity value, Renishaw recommends centring the tip of the toolcup to within 0.01mm. The quoted Ballbar accuracy specification is only maintained for Ballbar Trace testing if the toolcup tip is perfectly aligned with the spindle centreline.

A method for moving the toolcup tip onto the spindle centreline is therefore essential. This can be achieved with a variety of hardware schemes.

Renishaw supply an off the shelf centring solution made up of the following components:

- Spindle centring device (part number: S-8BBR-0052)
- Relevant OMP40 probe shank for your machine

*More information on the relevant probe shank can be found at <http://resources.renishaw.com/en/details/data-sheet-taper-shanks-for-machine-tool-probes--14040>*

An alternative example centring device is provided in the ISO 10791-6 standard.

**TIP:** It is possible to measure the centricity of the toolcup to the spindle centreline by clocking. However, it is very easily to measure centricity accurately using the ballbar and the following process:

i. Setup a standard XY ballbar test (with the toolcup and centre pivot 100mm apart - in a 'feed in' position);



ii. Take the ballbar out of the setup and start a dummy Ballbar Trace test;

iii. Put the ballbar back into the setup, which feeds in the ballbar and starts the test;

iv. Rotate the spindle through 360 degrees;

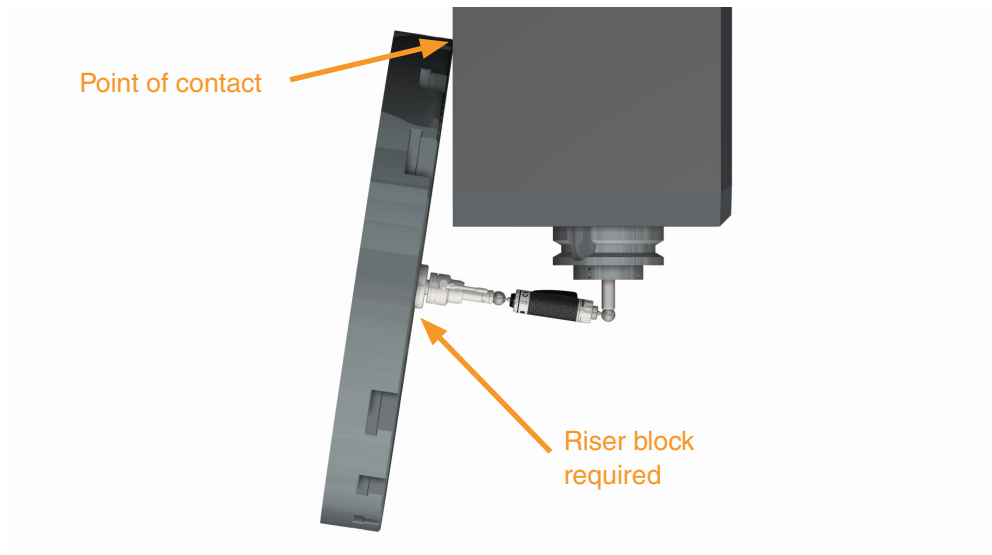


v. Analyse the data, remembering the centricity error is half of the max + min deviation.

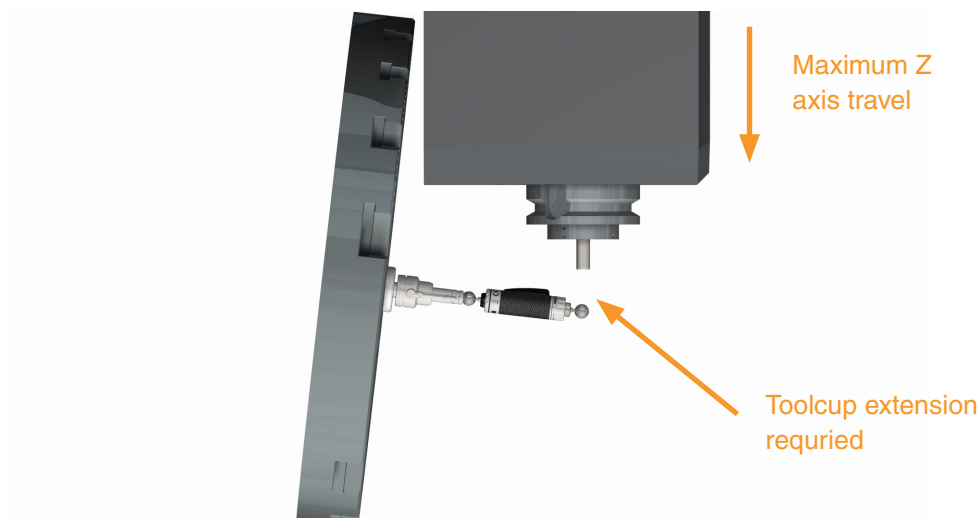
## Additional hardware required for some machines

In order to complete all of the ISO 10791-6 tests over the full axis ranges some machines require height extensions. Some examples are provided below:

1. Centre pivot riser block – To avoid collision with the spindle when rotating the A / B axis to the extreme of their operating range. By increasing the height of the centre pivot the problem is resolved.



2. Toolcup extension bar – Some machines do not have enough Z axis travel when the A / B axis has been rotated to the extreme of its operating range. This can be compensated for by extending the length of the toolcup.



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