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Straightness and squareness optical set-ups using fixed turning mirror and LS350 beam steerer

When performing certain straightness and squareness measurements it is now possible to use a combination of beam steerer and fixed turning mirror instead of an adjustable turning mirror. This allows customers who already have a Renishaw XL-80 or ML10 with a straightness shutter, and a LS350 beam steerer to measure:

- vertical axes straightness - with the addition of a large retro-reflector, fixed turning mirror and the latest version of the straightness base
- vertical-to-horizontal squareness - with the addition of a large retro-reflector, fixed turning mirror and an optical square with it's extended bracket

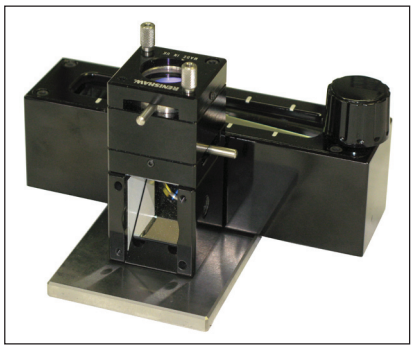
The advantages of this modified set-up are:

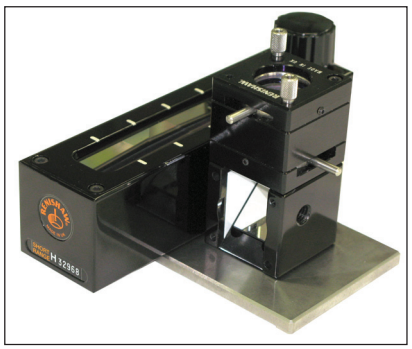
- use of the beam steerer eliminates backlash errors encountered with the adjusters on the adjustable turning mirror
- both the fixed turning mirror and beam steerer are more versatile optics, capable of being used when taking a variety of other measurements
- fine alignment adjustment of the laser beam is simplified
- less likely to 'break' measurement beam during optic adjustment

Vertical axis straightness measurement set-ups

Information and set-up configurations for performing straightness measurements with a straightness accessory kit containing an adjustable turning mirror are shown in the laser system manual, located on the Laser System Support Disk. Where this accessory kit is used to perform measurements to calibrate a machines' vertical axis, it is now possible to replace the adjustable turning mirror with a LS350 beam steerer mounted on a fixed turning mirror.

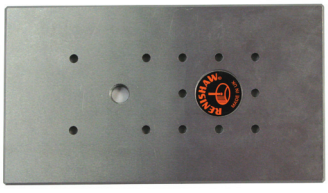
Set-ups using fixed turning mirror and beam steerer





The latest version of the straightness base (shown opposite) is required to perform measurements using the fixed turning mirror and beam steerer.

A-8003-0576 Stand assembly



Note: When performing certain measurements using a fixed turning mirror and beam steerer, it is possible that machine movement restrictions will be encountered in the Z-axis. By mounting the beam steerer in front of the fixed turning mirror any such restrictions can be overcome.

Application note

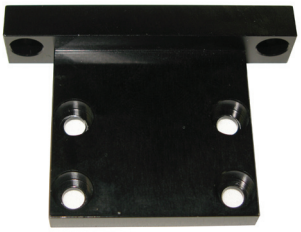
Vertical-to-horizontal squareness measurement set-ups

Where an adjustable turning mirror is used in conjunction with an optical square to measure the vertical-to-horizontal squareness of an axis, it is possible to replace the adjustable turning mirror with a LS350 beam steerer mounted on a fixed turning mirror.

Set-ups using fixed turning mirror and beam steerer

Note: the latest version of the optical square bracket (shown opposite) is required to perform measurements using the fixed turning mirror and beam steerer.

M-8003-1680 Squareness optic bracket



Parts list:

1. Stand assembly A-8003-0576
2. Squareness optic bracket M-8003-1680
3. LS350 Laser steering optic A-8003-3072
4. Fixed 90° turning mirror A-8003-1325

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About Renishaw

Renishaw is an established world leader in engineering technologies, with a strong history of innovation in product development and manufacturing. Since its formation in 1973, the company has supplied leading-edge products that increase process productivity, improve product quality and deliver cost-effective automation solutions.

A worldwide network of subsidiary companies and distributors provides exceptional service and support for its customers.

Products include:

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- **Styli for CMM and machine tool probe applications.**

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