Alignment Supplies, Inc.

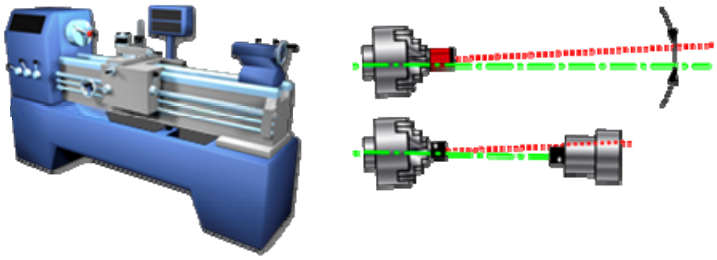
National Distributor For EASY-LASER®

Spindle Pointing Direction with Easy-Laser®

By Paul Berberian

Round Holes and Correct Angles

It is important to measure and correct the pointing direction of spindles in machines like lathes, drill presses, boring machine, automatic drills, milling machines, etc. Precision machining depends on this accuracy. Precise alignment can produce less waste, higher quality and less downtime.



Principle of Measuring Spindle Direction

When measuring spindle direction, the Easy-Laser® D146 spindle laser can be used. When we measure the direction a machine spindle points relative to the machine bed, a spindle pointing in the opposite direction or a bearing journal, the laser transmitter is mounted at or near the centre of the spindle. When the spindle is rotated half a turn (180°), the centre of rotation of the laser beam is calculated where the detector is mounted. This centre of rotation is then stored in the display unit. Now move the detector a set distance to the next measuring point and calculate the center of rotation for the laser beam again. The difference in the measurement values for the center of rotation at detector positions 1 and 2 is the angular error between the spindle's center of rotation and the machine bed.

Spindle Direction for Boring Machines and Milling Machines

Measuring the pointing direction in a boring machine or a milling machine can be carried out using either the table as the reference or the table's movement / the machine bed as the reference. By doing this, we are also able to see if the table is parallel with the machine bed.

Alignment Supplies, Inc.

National Distributor For EASY-LASER®

Alignment of Secondary Spindle

Another application is alignment of the secondary spindle with main spindle. Here it is beneficial to use both measuring units (combined laser / detector) of the Easy-Laser® system D525.

Machine Geometry

In order to meet quality requirements and minimize the number of waste workpieces, the checking and alignment of machine tools is essential. The most important thing to check is the geometry of the machine; not even a precisely calibrated linear motion can compensate for a crooked movement or uneven surface. The correct machine geometry is the basis for being able to produce parts that remain within the tolerances.

Our geometry measurement systems can handle most tasks in this field, despite the fact that there is considerable variation as regards to machine design: boring machines, vertical, horizontal, and portal milling machines, lathes, vertical lathes, drilling machines, automatic drills, water cutting machines, presses, etc.

Check flatness, straightness, squareness, parallelism and spindle direction. All of these can be measured with Easy-Laser®, with a resolution of 0.001 mm or .05 thou, with a maximum measuring distance of up to 40 m. The results are presented both digitally and graphically, and can be transferred to a PC for documentation and further analysis.

Paul Berberian is the National Sales Manager for Alignment Supplies, Inc. Contact Paul at 419.708.5177 or email at pberberian@alignmentsupplies.com.