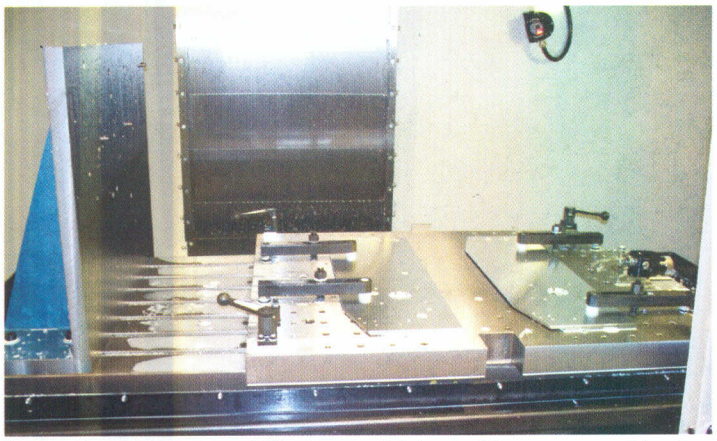
How to guarantee machining accuracy

In today's world, many component parts need to be manufactured with supreme accuracy. The aerospace industry, Formula One and precision engineering are obvious fields that require tolerances equivalent to a hair's breadth over many metres. But cars, consumer goods, electronic devices, medical equipment and many other products are now made to tolerances almost as demanding. This requires workholding, fixturing and location parts that conform to high tolerances. The production of these parts must be accurate and repeatable – and often produced at bewildering speeds.

In addition to these technical requirements, there are frequently commercial pressures for low costs, reduced lead-times, changed orders and design variants. Then there may be tightening quality requirements



for say, improving traceability or reducing defects.

Engineers at WDS say they have perfected a procedure for guaranteeing that clients can produce accurate parts, time and time again. In the first stage they work with customers through the specification stages to produce technical drawings of fixtures. These are machined from cast iron and finished to an accuracy of 5 µm to the metre using ISO9001 registered tooling. Prior to delivery, the parts are tested in-house using properly calibrated measuring equipment and supplied with a certificate of conformity. Cast iron has some key advantages: it minimises size distortion caused by fluctuating temperatures, and is a deadening material, which cuts vibration during machining.

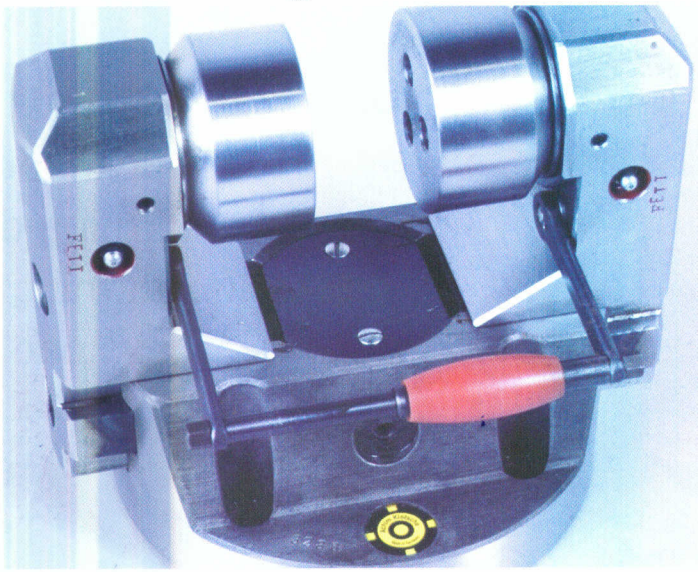
Workholding parts such as cubes, end-plates and risers are not only high value, they are also extremely cumbersome to manoeuvre and require a fair amount of storage space. Where production cells are responsible for different part runs, exchanging the workholding tools can often result in significant downtime during product run change-overs. However, WDS engineers are able to work with customers to create matrix designs that can hold many different parts. This improves the work flow in most environments and keeps productivity high, as they typically only need to be turned through 90° or 180° to change from one task to the next.

For further information
www.wdsltd.co.uk

Leader indexing chucks help turn a profit

Leader Chuck Systems offers a range of two-jaw, self-centring indexing chucks in diameters from 125 up to 500 mm. Designed for holding valve bodies and similar fittings, the chucks feature interchangeable indexing plates. Usual divisions are four 90° movements with an indexing accuracy of ±2 seconds of arc, but divisions of any incremental angle can be specified.

"It is not a new concept," states managing director Mark Jones, "but indexing chucks offer significant advantages for difficult-to-hold components which would require multiple or staged fixing that could introduce errors. Historically, they have been popular in the production of volume automotive and valve industries for components such as trunnions, couplings and universal joint spiders, valve bodies and multi-way connectors. Component accuracy is derived from the indexing accuracy of the chuck



as all the machining is effectively related to the first datum setting."

Over the years, the range of components making use of the indexing chuck has become increasingly diverse, as designers and production engineers become aware of the benefits. The chucks, which can be manually or power clamped, can be removed from a typical turning centre in under 10 minutes. The cost of the investment is not prohibitive either, with manual indexing chucks starting at £5000.

Produced from high tensile forged steel, a standard range of Leader indexing chucks is available. However, a depth of workholding knowledge and experience will benefit the manufacturing process positively. This is where Leader can help the customer make significant efficiency gains, as Mr Jones points out: "There are a number of prime considerations for selecting the correct size of chuck; and it is impossible to select the chuck without considering the tooling required – the access it needs to complete the necessary machining."

Another benefit is that Leader indexing chucks offer a simultaneous clamping drive that centres the workpiece as accurately as a standard power jaw chuck of the same size, says the company.

For further information
www.leaderchuck.com