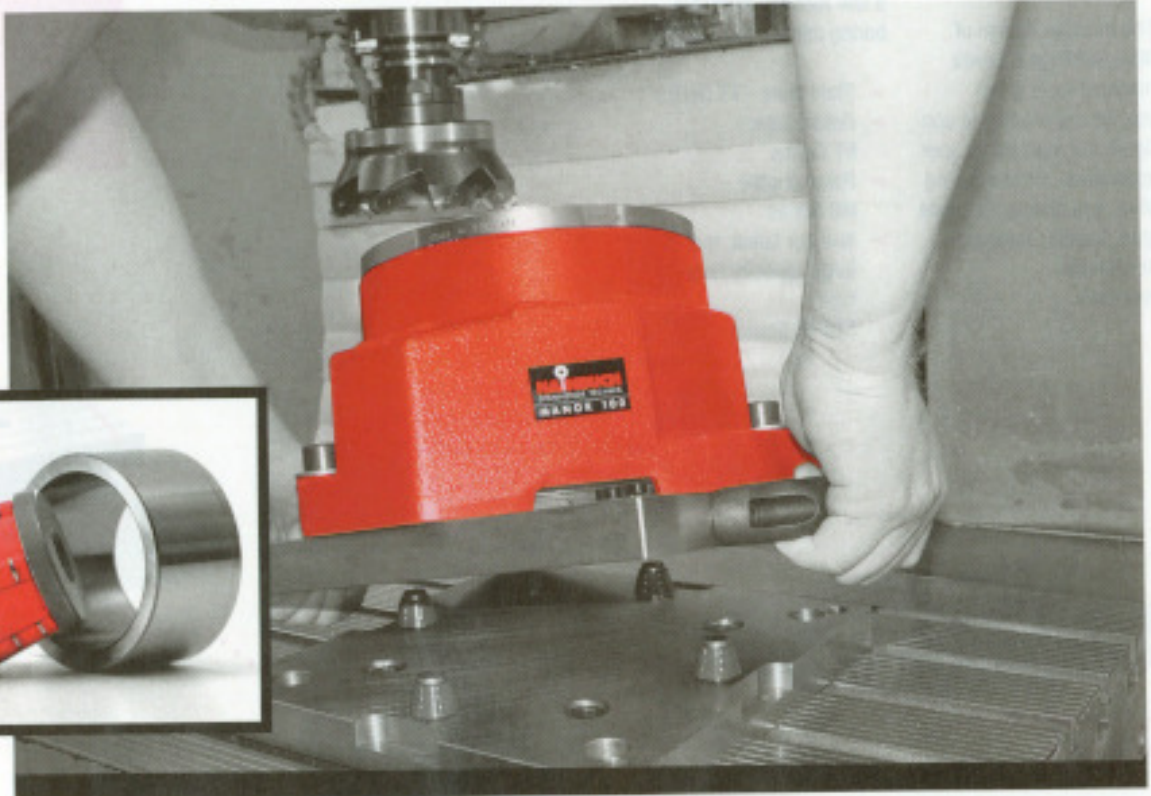


TOOLING & FIXTURING

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TOOLING & WORKHOLDING

Automatic
zero-
positioning
pallet system



INNOVATIONS TO REDUCE SETUP TIME

Reducing setup time for workholding is a critical key to increased productivity. This becomes increasingly important as lead times become shorter due to constricted product life cycles, diminished time-to-market considerations and increasing variety and complexity in components. As a result, shops are looking continuously for workholding

innovations that cut setup and changeover times while being rigid and precise, and deliver increased flexibility, efficiency and accuracy. The best selection of workholding and fixturing devices also can help shops that are trying to cut costs by reducing inventories because they are able to produce parts in volumes that customers want, exactly at the time their customers want them.

As parts become more complex, so do the challenges in choosing the best workholding and fixturing. Manufacturing complex parts successfully and competitively requires fixturing devices that are flexible, modular and variable. Fixture flexibility means the workholding devices must be suitable for various cutting conditions. They also must be adaptable to a wide assortment

of materials, weights, sizes and configurations, whether they are used on a 3-, 4- or 5-axis machining center.

Fixture modularity means the design principle of the fixture allows the clamping devices to move and be repositioned on the fixture faces in different setups, often within the same job run. Variability means the fixture can adapt to the particular characteristics of a given machining center for mounting, access to the cutting theater and shuttling, with little or no modification.

To meet the demand for reducing setup and changeover time, while increasing precision and adaptability, several manufacturers recently introduced creative approaches to workholding and fixturing challenges.

Automatic zero-positioning pallet system

The need for increased precision and rapid setup times has resulted in the development of the Centrex Centering System – an automatic zero-positioning pallet system - by HAINBUCH America Corp. (www.hainbuchamerica.com).

This compact, simple system uses precision steel ball bearings in a rubber ring in conical positioning elements integrated into the pallet system to produce repeatability of less than 0.003 mm, and level contact. The tapered positioning elements prevent tilting.

The four bushings and positioning cones are ready

mounted, allowing the pallets to be fitted to each other with exact repeatability. As a result, changeover times are minimized while the complicated, expensive and close tolerances required for centering tapers are eliminated.

Here is how the system works:

The taper bushing is pressed into the carrier pallet, and the taper mandrel is pressed into the base plate.

If the carrier pallet is positioned onto the base plate, the pallets initially will have no face contact. Under these circumstances the internal and external cones make only indirect point contact through the bearings. If a force is applied to the carrier pallet, the superficial surface of the tapers deforms in its elastic range.

The clearance for the bearings becomes greater, and the taper bushing moves in the direction of the base plate until face contact occurs.

Because the superficial surfaces of the tapers have the same hardness universally, the mandrel always has the tendency to move toward the center of the taper bushing. A mini, zero-position system in HAINBUCH standard pallets allows the changeover of the entire chuck to be performed while retaining process reliability and without alignment.

Users save time, money and space with part-specific equipment. In addition, due to its diversity of applications, this system minimizes setup times and interruptions in production, and individual clamping devices do not need to be adjusted after each changeover. With only two small holes, the Centrex system can be used in any plate connection.