

## Profile™ Revolutionizes Steel Rule Die Production

**S**INCE THE 1970s, dieboard fabrication for packaging applications has been limited to two production methods: manual jigsaw operations augmented by standard woodworking tools and automated laser cutting. The manual method requires highly skilled craftsmen and is very labor-intensive, while the automated method requires very expensive and complex equipment few shops can afford. Both processes are inconsistent in terms of the quality they provide.

The Gerber Profile™, a revolutionary die tool production system from Gerber Innovations, South Windsor, Conn., minimizes these problems by generating high quality, precision steel rule die tools simply, quickly and affordably. The first of its kind in the world, the system offers several differentiating features: digital rotary machining technology; the ability to generate complete die tool sets – dieboard, counter plate, strippers and blankers – on one piece of equipment; and a two-layer dieboard structure incorporating a parallel wall kerf configuration that greatly improves rule holding capability.

Gerber's system consists of a three-axis CNC milling machine with an automatic tool changer that allows the user to access up to 10 cutters at one time; powerful CAM software; a vacuum hold-down table; a free-standing vacuum press for bonding dieboards; and a variety of specialized cutters and supplies. The high-speed system draws on the accuracy and simplicity of rotary machining, using a range of innovative conical-shaped carbide bits specifically engineered to withstand the extreme forces of the machining process required to cut the appropriate rule-holding slots into the dieboard base material. Depending on application requirements, users can choose any of three spindle configurations: three horsepower (hp), 40,000 revolutions per minute (rpm) provides maximum feed rate when cutting two-point slots; 10 hp, 24,000 rpm is ideal for continuous heavy cuts; seven hp, 24,000 rpm is available for cost-conscious facilities.

The Gerber Profile is driven by user-friendly DieWorks™ manufacturing software. DieWorks controls all aspects of board machining: feed rate, spindle speed, roughing and finishing passes, depth control, plunge rate and tool change functions, et al. This open architecture software accepts DXF, DDES2 and other common CAD files, and can drive multiple Gerber Profiles simultaneously. The Auto Process feature allows quick and easy generation of tool paths for recurring layer/cutting requirements. DieWorks also provides unprecedented precision in narrow slot cutting via its patent-pending automatic cutter deflection compensation feature.

Dieboard production begins with the Gerber Profile's vacuum table, which uses a 10 hp pump, rather than clamps, to hold board material securely on the router bed. This ensures quick setup and higher productivity. The digitally-controlled cutting head travels at speeds of up to 600 inches per minute (ipm), cutting two-point slots at 70 ipm with a positioning accuracy of plus or minus .0005 inches per foot. Unlike a laser, the larger the kerf, the faster the throughput.

The Gerber Profile cuts mirror-image upper and lower layers for each dieboard, machining them in perfect registration. Gerber's high-performance BlueBond™ adhesive is then applied to one board. The two layers are pinned together in precise alignment and placed into the vacuum press – which produces a very flat board with exceptional layer-to-layer strength in less than 10 minutes.

A cross section of the bonded dieboard reveals the Y-shaped kerf cuts on each layer, which meet to form straight parallel walls at the outside edges of the dieboard. The parallel walls secure the steel rule tightly and squarely at the top and bottom of the board with two



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large areas of rule hold equal to three times the kerf width. This increases the tool's strength and durability dramatically. Because a milling process is used instead of the burning process of a laser, there is no excessive heat to drive moisture out of the board or create an ash layer in the kerf. As a result, no shrinking or distortion occurs, the rule is held more securely, and the board can be reknifed more often with minimal degradation. This unique and innovative approach has prompted Gerber to trademark the output from the Profile system; Gerber RPM™ Dieboards (RPM, in this case, stands for rotary precision machining).

In addition to its state of the art approach to dieboard manufacturing, the Gerber Profile generates male and female blankers and strippers, chamfering opposing board sides in perfect registration. It also produces precise counter plates with ease.

The Gerber Profile is a breakthrough die tool production system that is multi-functional, easy to use, versatile, accurate, virtually maintenance free and, at a cost of around \$100,000, very affordable. As such, it is ideal for any size die shop seeking to automate a variety of tasks; larger die shops interested in dedicated applications such as stripper/blanker production, machining redundancy, or counter plate production; or converters wishing to bring die tooling capabilities in house.

For more information, visit [www.gerberinnovations.com](http://www.gerberinnovations.com).  
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