

# METAL FORMING

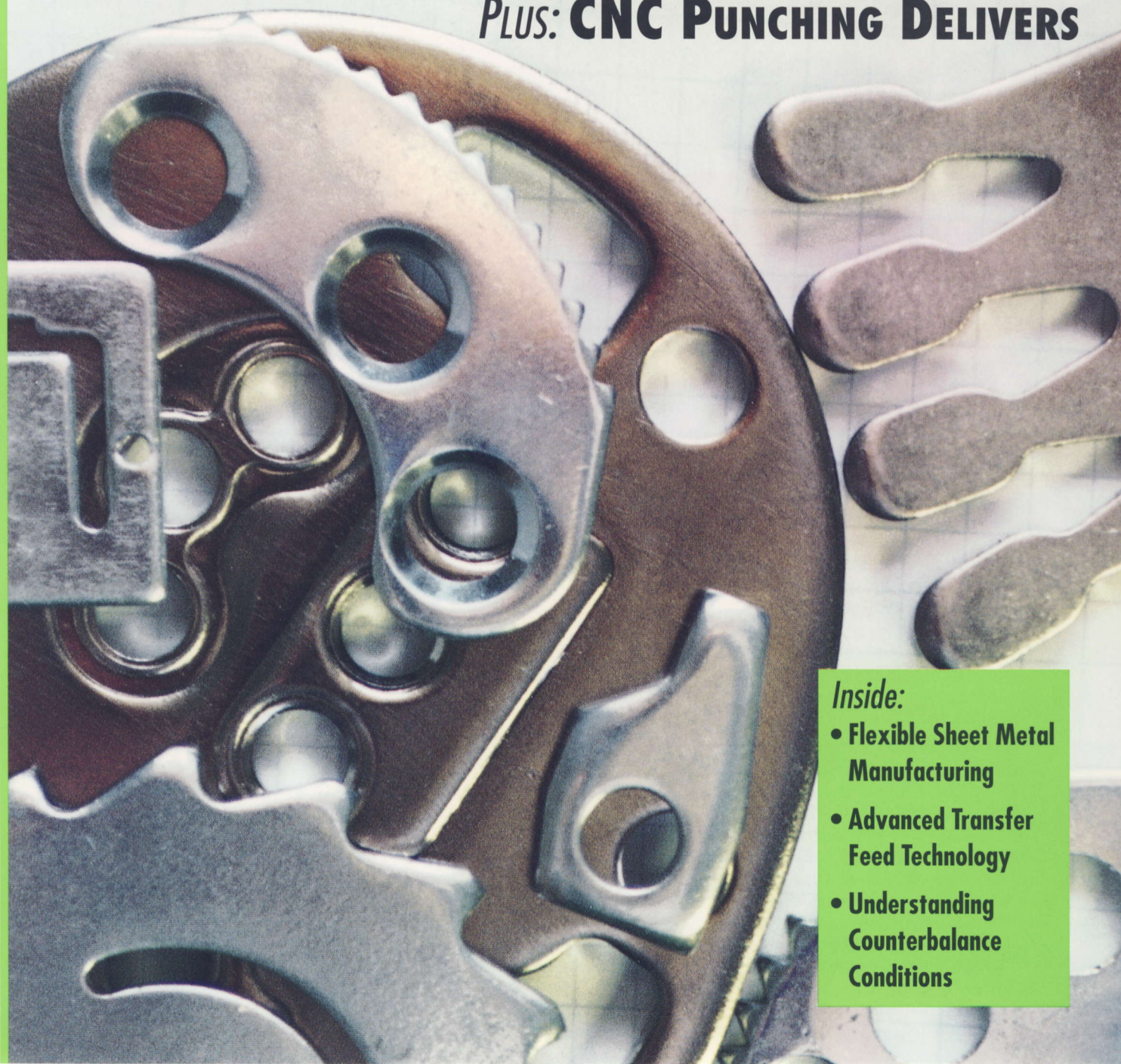
Serving Those Who Add Value to Sheet Metal

June 1997

**30**  
Years  
1967 - 1997

## PRINT TOLERANCES OUT OF THE DIE

*PLUS:* **CNC PUNCHING DELIVERS**



### *Inside:*

- Flexible Sheet Metal Manufacturing
- Advanced Transfer Feed Technology
- Understanding Counterbalance Conditions



Research and development has resulted in significant improvements in quality, accuracy and costs associated with the patented Gripflow® process. Secondary operations such as drilling, reaming, countersinking, counterboring, milling, shaving, broaching and straightening often are eliminated because this precision stamping technology makes...

# Print Tolerances Available Out of the Die



By Terry Walker, Sales Manager  
EBway Corporation  
Fort Lauderdale, FL

*The distance from the edge of a blanked part to the edge of a hole is called the "web." The rule in conventional stamping is that the web should be 100 to 150 percent of the metal thickness. The small stamping in the center of the photo is made of 0.080 in. thick AISI 1010 steel. The web is 0.023 in.—29 percent of the metal thickness.*

In 1961, Minnie Punch & Die Co. founder Edward D. Bennett invented a low-cost stamping tool called the Minnie Die. This unique technology was licensed and manufactured by many tool and die companies throughout the United States. Within 10 years, Minnie dies were patented, licensed and manufactured in more than 35 countries.

In 1971, Bennett developed a new tooling system for conventional

stamping called "grip blanking." Grip blanking dies were more durable than Minnie dies and had the advantage of stamping thicker materials with longer production runs. It was with the development of this technology that the name of the company changed to EBway Corporation.

In 1977, EBway moved to Fort Lauderdale, FL, and purchased its first pair of wire electrical discharge machines (wire-EDM) for cutting the

punch and die details of its tooling. EBway also made these machines available to other mold and die shops by being the first in Florida to offer a wire-EDM subcontract service.

Wire-EDM was the missing piece in the finalization of an idea that Ed Bennett had been tooling with for years. He finally came up with the way to make smooth-edge stampings that exceeded the quality and accuracy of conventional stampings.



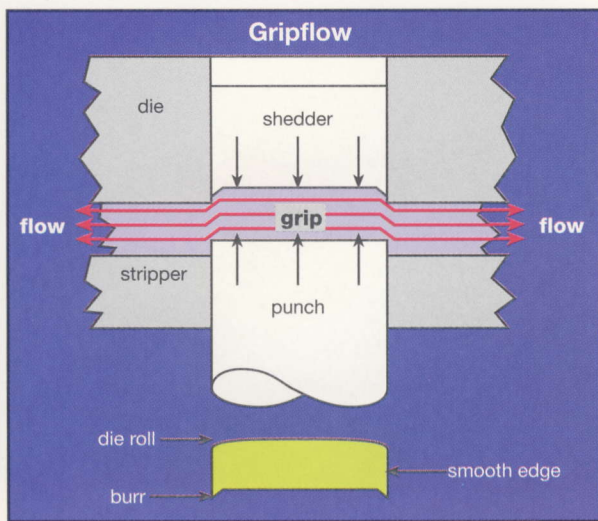


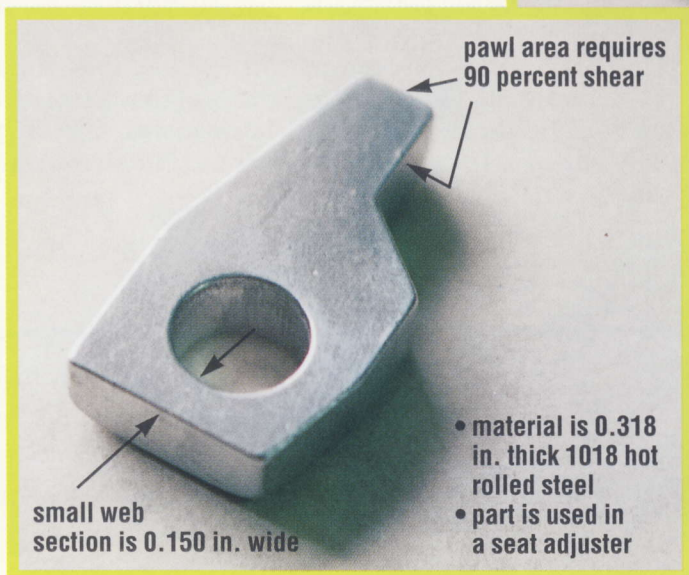
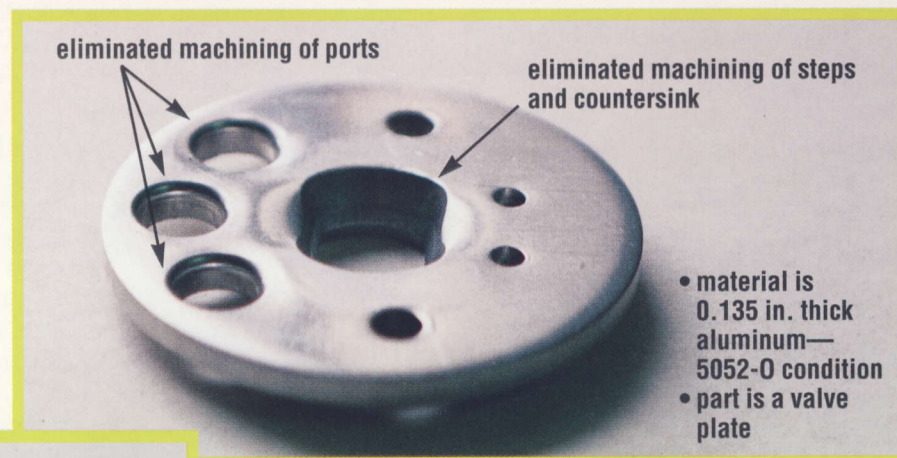
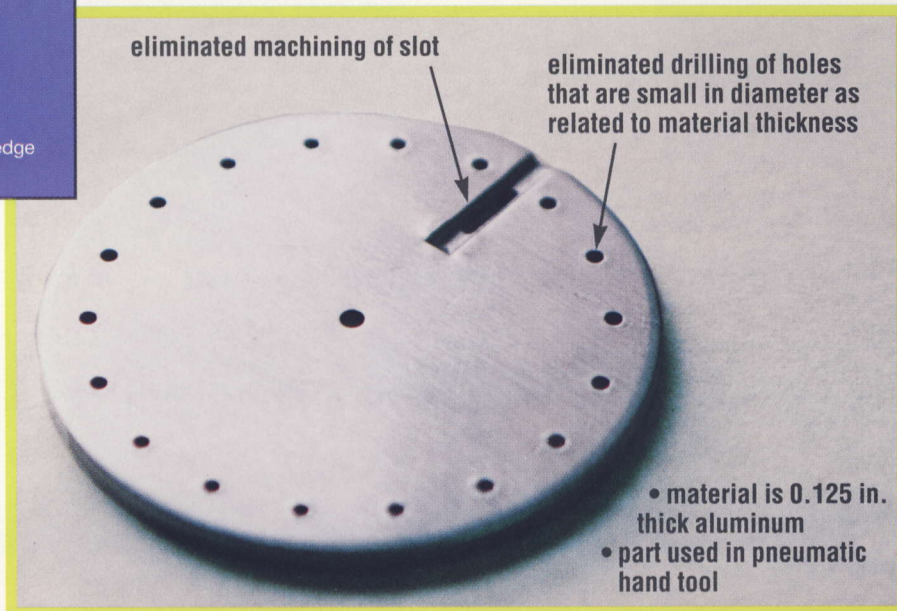
Fig. 1—Gripflow combines cutting and metal flow to produce smooth, vertical accurate sides throughout part thickness.

He called this novel technology "Gripflow."

### The Challenge

The fineblanking process is popular because it offers precision stampings with smooth straight edges, but it is not without some problems. Fineblanking requires a complicated and expensive triple-action press. Moreover, fineblanking presses may require 40 percent more tonnage for a given stamping because they use an impingement ring to hold the scrap material. This impingement ring also requires extra material around the part contour, forcing parts to be nested farther apart.

Conventional stamping bends the actual part at the start of the blanking operation. Due to this bending



and the amount of clearance between the punch and die there is no smooth, fully continuous edge. Approximately 30 percent of the material thickness is sheared while the remaining 70 percent tears (die-break). Typical edge-

surface finish is 125 to 150 RMS.

With the Gripflow process, smooth-edge stamped parts can be produced economically. The key to success lies in a unique combination of patented tooling concepts and press. The foundation of the tool is a single-action compound die. Punch and die elements have clearances of less than half a percent of the piece part material thickness. An impingement ring (V-ring) is not necessary with Gripflow tooling because the part is gripped, not the scrap, allowing the scrap to flow laterally away



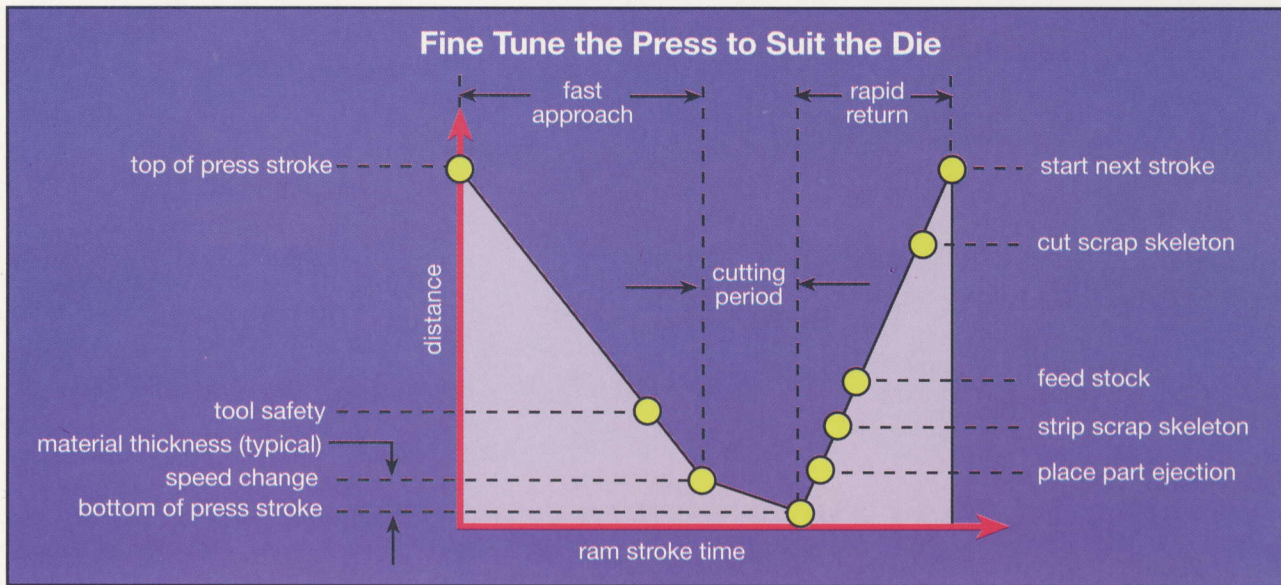
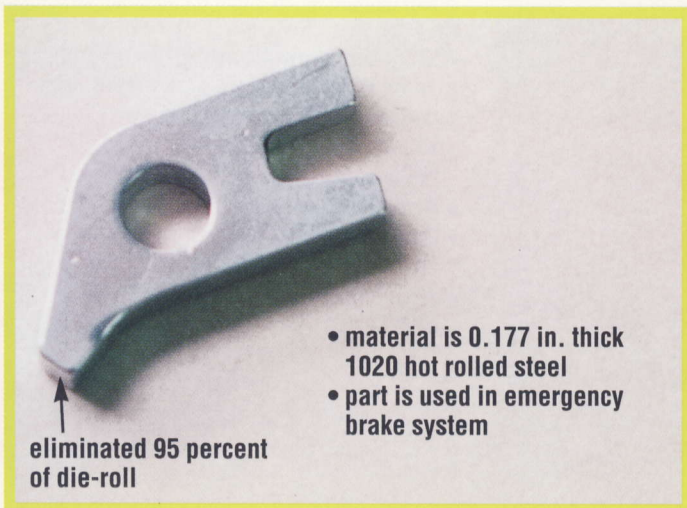


Fig. 2—Programmable logic controller unit simplifies setup and enables regulation of the ram force, direction, speed, release force and the duration of pressure dwell to fit a particular job.



(see Fig. 1). Hence, the name Gripflow. Close nesting of parts is achieved with Gripflow due to no impingement ring requirements thus, better material utilization which directly reflects upon the part's piece price.

Gripflow combines cutting and metal

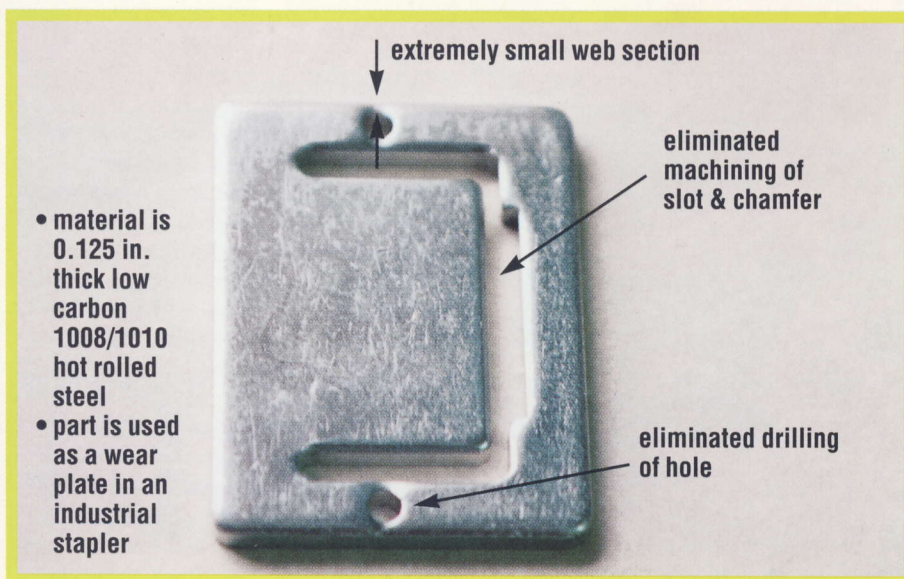
flow to produce smooth (no tear), vertical accurate sides throughout the entire part thickness. Accuracies are routinely held to 0.001 in. and certain dimensions can be held to 0.0005 in. Typical surface finish is 16 to 32 RMS. Significantly, almost no difference can be measured between the first and the millionth part out of the tool.

EBway designs and manufactures Gripflow tooling to produce a stamping to its customer's part print. Metalforming and dimensional tolerances are addressed in the state-of-the-art design department. Craftsmen in the toolroom use the latest CNC machining centers and CNC wire-EDM machines to produce the Gripflow tooling.

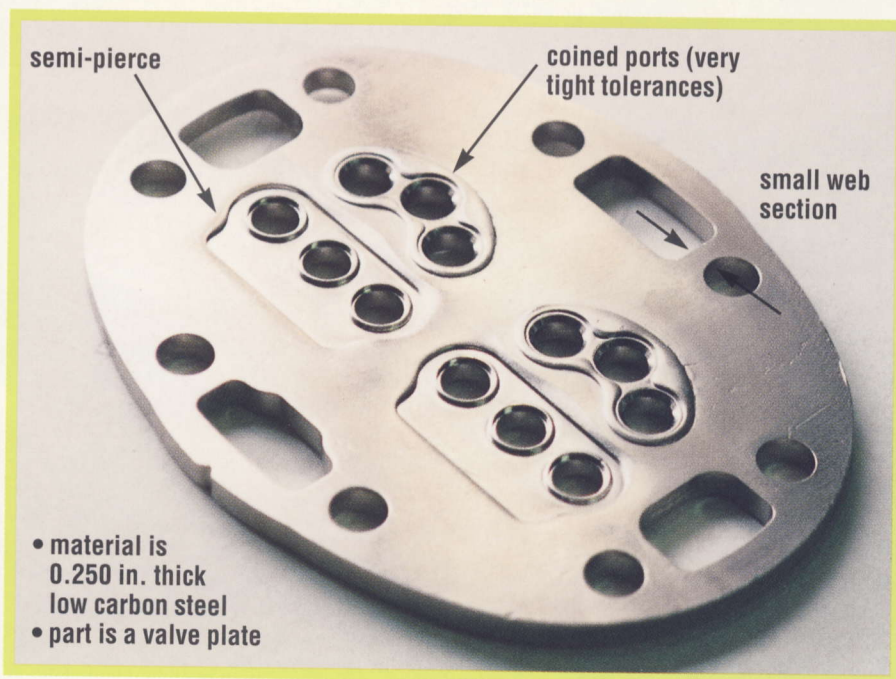
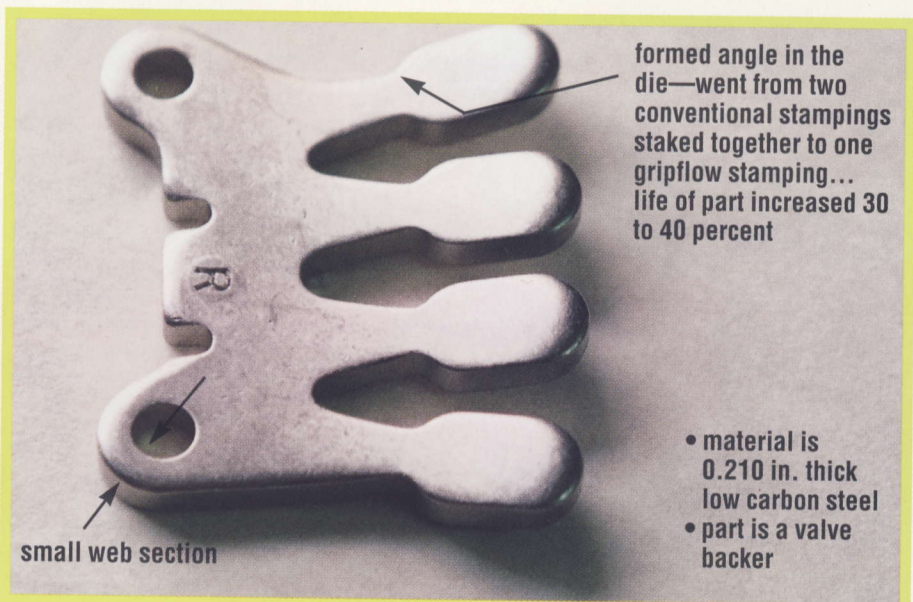
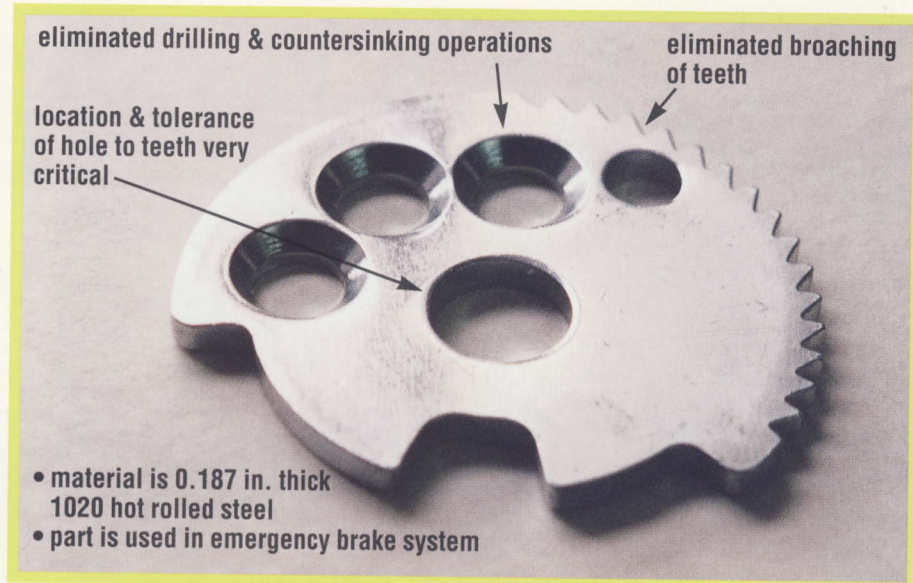
In the stamping department, long and short production runs are made on press equipment ranging from 50- to 400-ton capacity.

## The Gripflow Press

The Gripflow press has the unique feature of running both Gripflow tooling and conventional dies. This means that it can be used for traditional stamping jobs when there are no Gripflow stamping jobs to run. Gripflow presses are available from 50 tons up to 800 tons and can be installed on a standard concrete floor. They do not require special foundations or expensive facility modifications such as pits. When in







the Gripflow mode, the press has no shock or vibration because Gripflow works on the yield point of the material. There is no noticeable material snap-through. The normal loud stamping noises of conventional stamping are eliminated with this operation.

A programmable logic controller (PLC) unit simplifies setup and allows the operator to independently regulate the ram force, ram approach speed, ram working speed, stroke length (ram upper and lower limits), duration of bottom dwell time and press accessories (feed, parts ejector, scrap chopper, etc.). Simply put, you can tune the press to suit the die (see Fig. 2). An RS 232C communications port enables a host computer to download job parameters or to monitor the press and production data.

The ram of the press is capable of a rapid approach then switching to a slower working speed just prior to contacting the material to be stamped. This ram cycle procedure results in improved part quality, longer tool life, increased productivity and most important, smooth-edge stampings to print tolerances. The ram cycle also incorporates a sequential tool safety system that allows the press operator to manage more than one press at the same time. For instance, if there is a mis-feed, or a part not ejected from the tool, or a malfunction with the scrap chopper, etc. then, the press will automatically stop and give a fault signal that will identify the problem.

Large press beds enable more stations within the die for either progressive dies or multiple-out dies. For example, if production is very high for a part then a two-out or three-out die will be used. The progressive Gripflow tooling offers the greatest potential for imaginative applications. In many instances one Gripflow station may replace three to four conventional stations making the Gripflow tooling a cost-effective alternative and producing a better quality part.

**MF**



## “Challenge Us”



**Edward D. Bennett**  
President, EBway Corp.

“Our high-tech capabilities allow us to give more personal attention to customer’s challenges.

EBway’s manufacturing and engineering groups will study your parts and prints in order to develop a fair and competitive quotation.”



**Our entire facility is open to you – we are geared for low to high production volumes – in order to take advantage of GRIPflow® Stamping Technology and enable you to buy better quality parts for less money, we suggest that you send us your part prints for evaluation and quotation.**



### **Come and visit us!**

Hundreds of visitors tour the EBway facility each year. Our creative atmosphere and state-of-the-art manufacturing equipment makes possible the high quality standards that our engineering, production and administration personnel are able to achieve. Your visit to our company will be a perfect opportunity to compare your needs with our capabilities.

### **The next step is yours!**

Take advantage of the technology, quality, accuracy and cost reductions that EBway Corporation and the GRIPflow® Stamping Process offers you. Big orders or small orders, send us your part prints for evaluation and quotation. See how EBway’s quality, service and pricing enable us to outperform the rest.

### **Our company is conveniently located**

in Northwest Fort Lauderdale, Florida, only 12 miles (20 minutes) from the Fort Lauderdale/Hollywood International Airport; and only one mile from the private Fort Lauderdale Executive Airport.



**EBway Corporation**  
6750 N.W. 21 Avenue  
Fort Lauderdale, FL 33309-1499  
U.S.A.

**Tel:** 954-971-4911

**Fax:** 954-971-5516

**E-Mail:** [ebway@worldnet.att.net](mailto:ebway@worldnet.att.net)

<http://www.ebway.thomasregister.com>