

# VIBRATION WELDERS

**Experience. Expertise. Equipment.**

Forward Technology provides a complete line of plastic bonding and leak testing equipment for a wide range of industries. For over 30 years, our design and manufacturing expertise has allowed us to effectively provide an innovative solution that is best for your application.

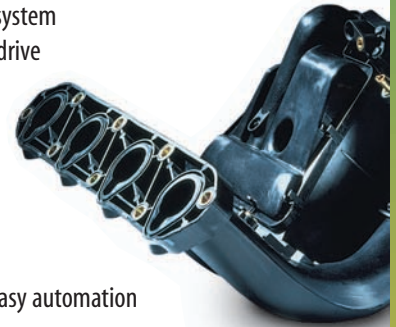


*Our vibration welders are capable of welding large, small, multi-cavity or irregular shaped applications (Model LVW 2046 shown).*



## FEATURES:

- Ten adjustable pressure-time steps per weld cycle
- Advanced amplitude control system
- Patented high output digital drive
- Process verification
- Fully enclosed sound guards
- Part counters
- Variable parameters
- Ergonomic design
- Three welding modes
- Flow-through capability for easy automation



## SPECIAL CAPABILITIES:

- Complete R&D facility
- In-house tooling expertise
- Application review
- Joint design analysis
- Prototype sampling
- Inspection
- Custom solutions



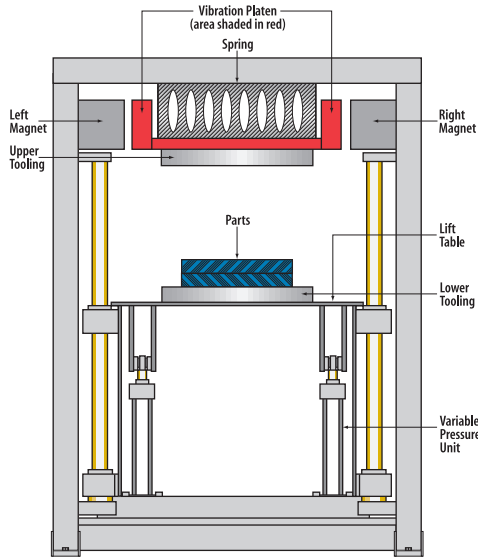
**Several Solutions.  
One Company.**



**FORWARD  
TECHNOLOGY**  
a Crest Group Company

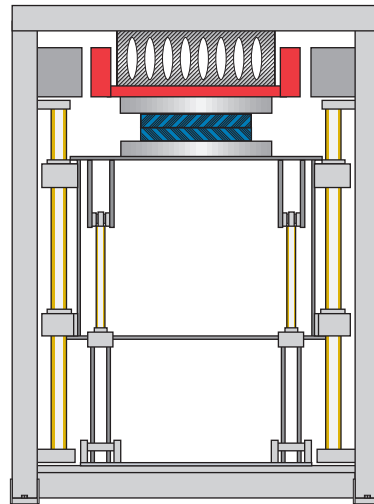
# VIBRATION WELDING PROCESS:

Vibration welding generates frictional heat through linear motion. Friction is achieved through relative motion between two parts, one fixed, the other reciprocating at a controlled amplitude and frequency. Melt occurs at the interface of two plastic parts.



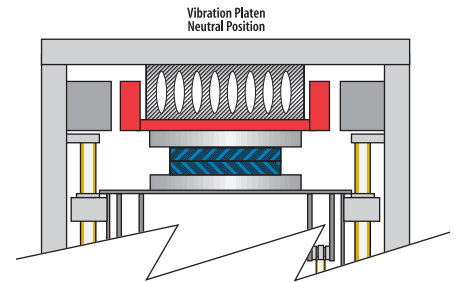
## STEP 1

Operator loads parts.



## STEP 2

Table raises to weld position.



## STEP 3

Electromagnets are alternately energized. This pulls the vibrating platen and the upper tooling fixture alternately left and right, generating a peak to peak displacement up to 0.070 inches.

## ADJUSTABLE WELDING STEPS:

- Each step programmed for a fixed pressure, amplitude and time duration or melt depth
- Greater control and flexibility
- Faster weld cycles
- Maximum weld strength
- Adjustable programming

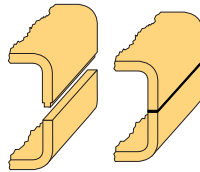
## COMMONLY USED MATERIALS:

- ABS
- Acrylic
- Acetal
- Cellulosics (CA, CAB, CAP)
- Polyamide (PA)
- Polycarbonate (PC)
- Polyethylene (PE)
- Polymethylpentene (TPX)
- Polyphenylene Oxide (PPO)
- Polypropylene (PP)
- Polystyrene, GP
- Polysulfone

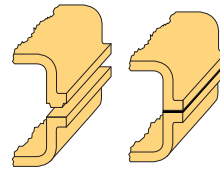
## JOINT DESIGNS:

Joint design varies with each application and depends on factors such as type of plastic to be welded, part geometry and requirements of the weld. We recommend discussing joint designs with one of our application engineers before arriving at your final part design.

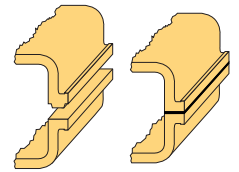
### STRAIGHT BUTT JOINT



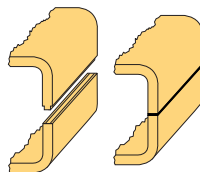
### FLANGED BUTT JOINT



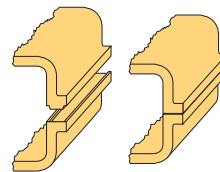
### BUTT JOINT W/ FLANGE RETURN



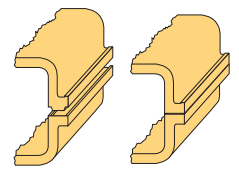
### STRAIGHT TONGUE & GROOVE



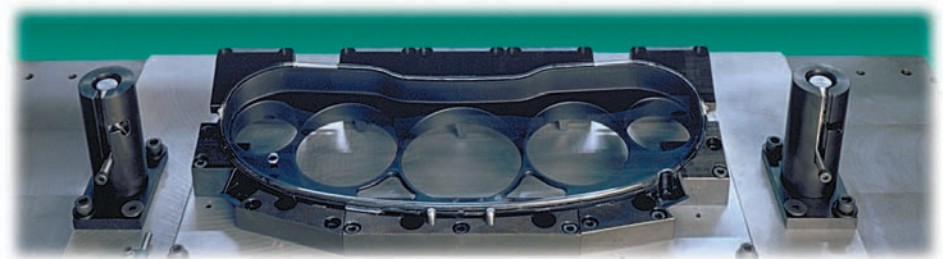
### FLANGE TONGUE & GROOVE



### TONGUE & GROOVE W/ FLANGE RETURN

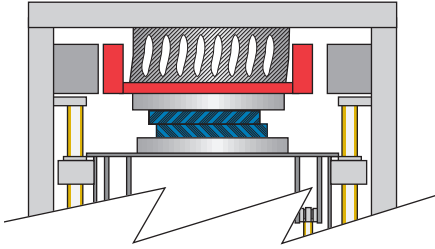


Instrument Panel Tooling

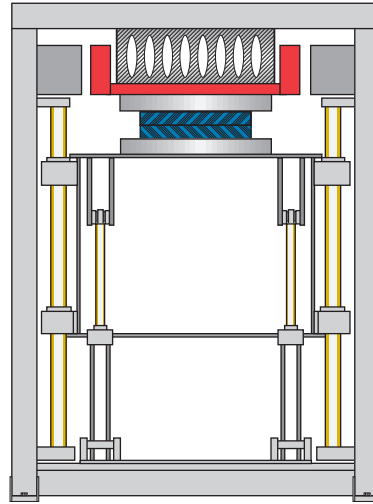
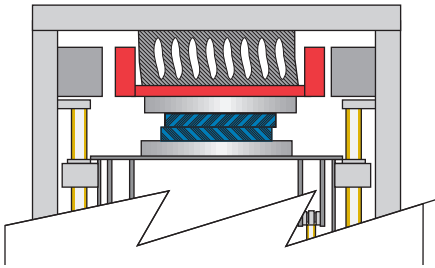




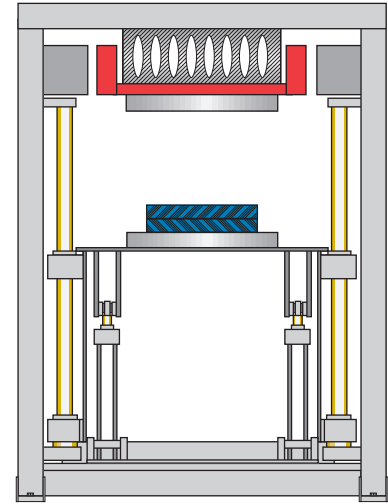
Left Vibrating Platen Position



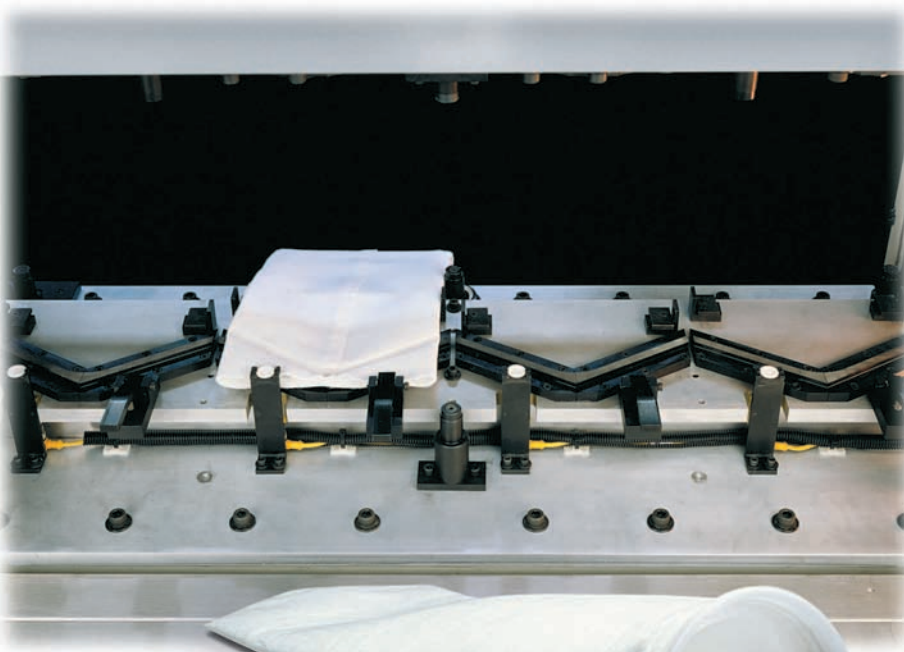
Right Vibrating Platen Position



**STEP 4**  
Cooling/hold cycle.



**STEP 5**  
Table descends and welded parts are unloaded.



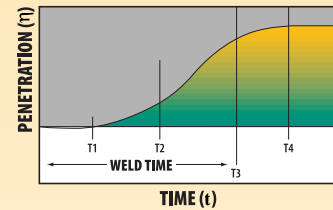
## TOOLING:

- Specially designed in-house for your specific application
- Designed for ease of maintenance, adjustment and maximum life
- Provides accurate mating and alignment

*Filter Tooling/Application*

## KEY WELDING PARAMETERS:

- Frequency
- Time
- Melt-travel distance
- Amplitude
- Pressure



## ADVANTAGES OF VIBRATION WELDING:

- Fast cycle times
- Low tooling costs
- Easily automated
- Energy efficient
- High joint strength
- Compatible with many thermoplastics
- Quick change tooling
- Suitable for dissimilar materials
- High strength, pressure tight hermetic seal
- No fumes or emissions



# Imagine the possibilities...



Industry: Medical  
Description: • Surgical Reservoir

Industry: Automotive  
Description: • Fuel Pump Assembly



AUTOMOTIVE  
AEROSPACE  
APPLIANCE  
MEDICAL  
ELECTRICAL/ELECTRONIC  
RECREATIONAL



Industry: Automotive  
Description: • Exterior Trim  
• Grab Handles



## The applications are endless...



Industry: Automotive  
Description: • Air Intake Manifold  
• Tail Light Assembly  
• Instrument Panel



Forward Technology offers a complete line of assembly equipment:

HOT PLATE WELDERS    ULTRASONIC WELDERS    SPIN WELDERS  
VIBRATION WELDERS    LEAK TESTERS    THERMOSTAKERS  
SPECIAL SYSTEMS



**HOT PLATE, VIBRATION, SPIN WELDING AND LEAK TESTING DIVISION**

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