

## **CUSTOM & STANDARD TOOLING & FIXTURES**

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**PAS manufactures a wide variety of custom and standard tooling for all of your assembly requirements.**



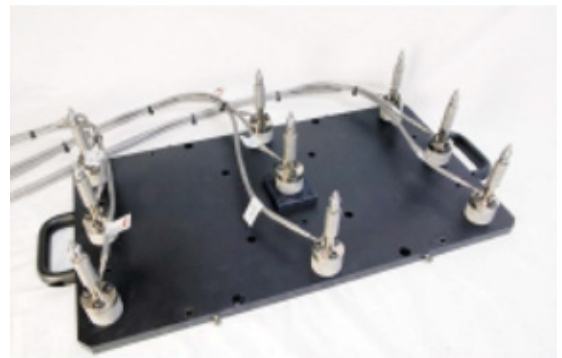
## STAKING / WELDING / INSERTION TIPS

A tip is a economical replaceable part commonly known as an interchangeable device that is tightened onto another component such as a tapped horn, heated probe or heated tip block. Tips for ultrasonic horns are generally made from titanium and typically designed to perform a specific function such as: staking or spot welding. Knurled, flat and overweight tips are also available. Tips for heat based applications are made from highly conductive, yet durable materials and are also designed to perform specific functions such as: staking, swaging, insertion, sealing, date-coding and hot knife de-gating.



## THERMAL TOOLING

Tooling for staking, swaging, insertion, sealing, date coding and hot knife de-gating is commonly mounted to the upper portion of a press and heat is provided by probe or platen assemblies. Heaters, with thermocouples, provide maintained heat to the tooling. Tips are commonly mounted to a probe or platen and are precision machined to produce the desired operation on your application. PAS utilizes the latest in technology and first rate materials to produce the highest quality products available. PAS manufactures tooling, and supplies replacement components for all makes and models of machines. If you have a custom-built machine, call for more information.



## ULTRASONIC HORNS

A horn is an acoustic tool, usually titanium, aluminum or hardened steel, that transfers vibratory energy from the ultrasonic welder directly to the parts being assembled. PAS manufactures quality horns in 15 kHz, 20 kHz, 30 kHz and 40 kHz, all precision machined from high-grade alloys. PAS provides a complete line of standard horns including: Half & full wave, exponential & catenoidal, bar, block, rectangular, round (High-Gain, solid, hollow and slotted). As well as custom horns, knurled and serrated faced, vacuum, nodal plunger, contoured and composite.



## CONVERTERS

A converter receives high-frequency electrical energy from the power supply and converts it into mechanical vibratory energy at ultrasonic frequencies. PAS provides new and pre-owned converters. PAS also repairs damaged converters of almost every make and model available. Frequencies include 15 kHz, 20 kHz, 30 kHz, and 40 kHz.

## BOOSTERS

A booster can either increase, or decrease the amount of amplitude at the face of a horn. PAS provides booster horns in several different magnification ratios, and are available in aluminum or titanium (new or pre-owned). Frequencies include 15 kHz, 20 kHz, 30 kHz, and 40kHz.

## FIXTURES

A fixture supports and aligns the parts to be assembled. Generally, it is fabricated from aluminum or steel, and sometimes is lined with poured cast urethane/epoxy or other resilient materials. PAS manufactures fixtures from simple machined shapes, to complex CNC contour milled shapes. Additional pneumatic or manual part clamping/ejection, and vacuum/expansion mechanisms can be integrated into the lower tooling.

## VIBRATION WELDING

Tooling for vibration welding includes an upper “tuned” drive head, and lower fixture. Strong, lightweight tooling is crucial for this process. PAS provides custom engineered rugged components to ensure quality welds. Precision machining is critical to ensure your part is properly located and supported. Call us for quotes on all makes and models.

## SPIN WELDING

Tooling for spin welding typically includes upper tooling or a “chuck” with keyed features to drive one half of the assembly against a fixtured or secured mating part. PAS provides custom drive heads, and fixtures for simple designed parts, to complex parts requiring vacuum and expandable features to lock and drive your part.

## HOTPLATE WELDING

Tooling for hotplate welding is commonly designed to lock in both parts to be assembled. Applications where near contact heating is a must, demands precision holding and support. PAS provides custom tooling for simple designed parts, to complex parts requiring pneumatic clamping and movable supports to lock and locate your part.

## COATINGS AND PLATING

Increase the life of your tooling with the addition of platings or coatings. Several different options are available including: chrome plating, teflon hard coating, anodizing, black oxide, carbide, chemical films, copper, nickel, and more.

## OPTIONAL ACCESSORIES

Several accessories are available to increase productivity and achieve higher part quality PAS offers the following available options: film feeders and film, slide tables, hydraulic dampers, leveling bases, amplitude gauges, sound enclosures, machine stands, converter vises, torque wrenches, horn studs, step studs, and mylar washers.

