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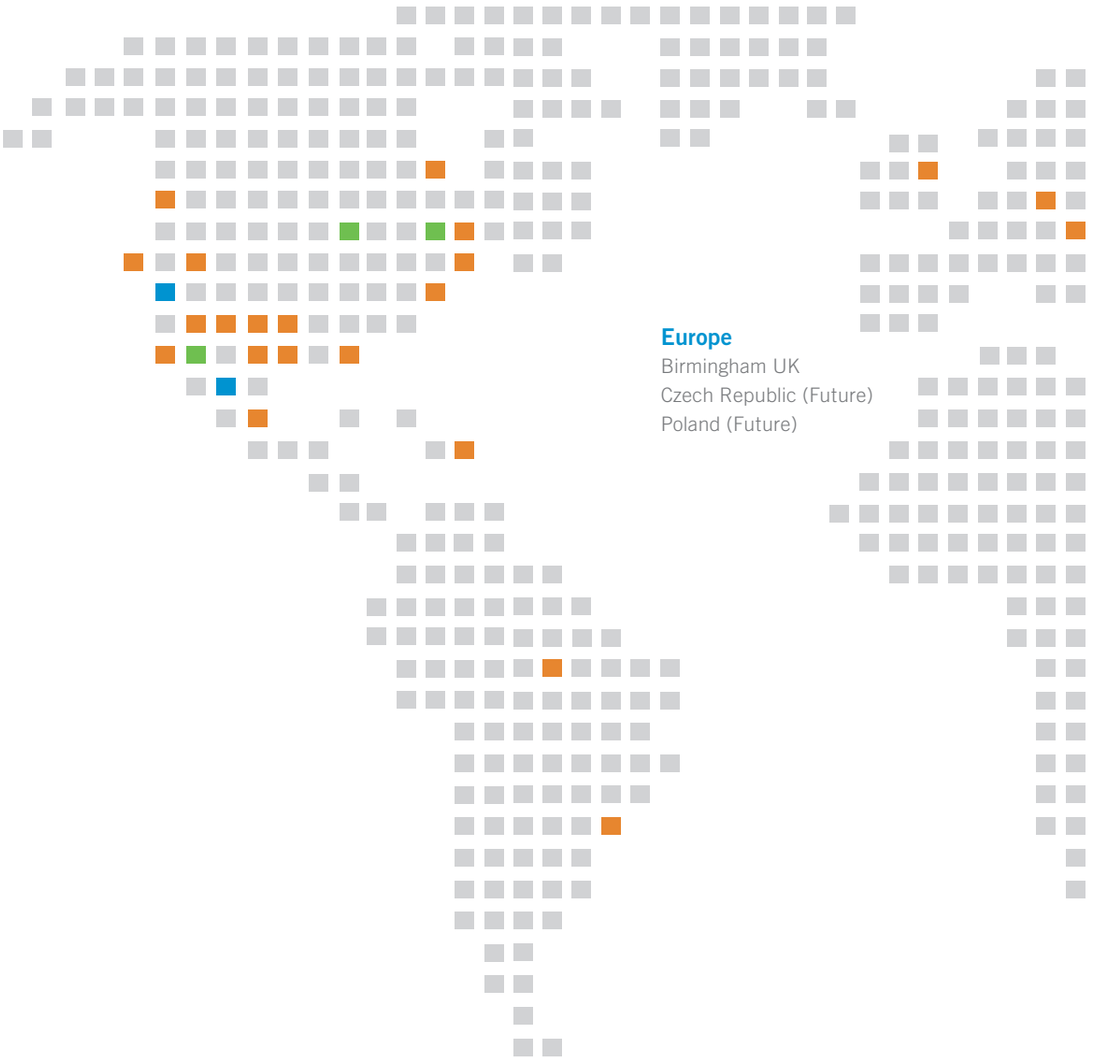
THE NATIONAL MAGAZINE FOR FASTENER DISTRIBUTORS

PENCOM™
PENINSULA COMPONENTS



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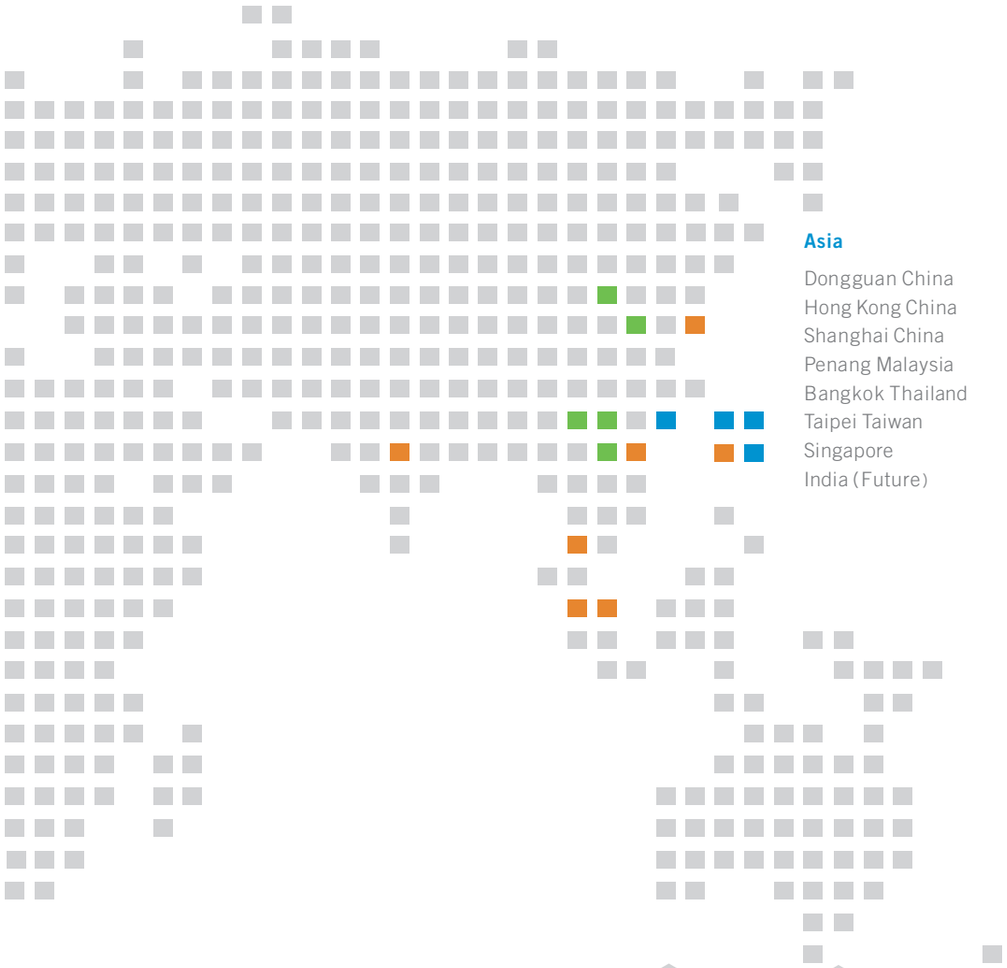
# “Manufactured Globally, Supplied Locally”



**Asia**

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Since its founding in 1982, PENCOM has worked to assist in the design process, knowing that it is here that a customer's components needs are defined. Employing a "Value Engineering" approach, PENCOM's goal was to find or create the least expensive, best functioning design solution. By offering this approach to design problems, PENCOM proved to be a valuable resource to design engineers. PENCOM's extensive knowledge of standard "off the shelf" products allows it to suggest these components first. And when ans application requires a more complex solution, PENCOM would employ its internal design capabilities to create a custom component.

**William Gardiner – President**

**33+** CNC Lathes

**150+** Primary Machines

**3** State of the Art CMM

**31+** CNC Mills

**84+** Turning Lathes

**25+** Branch Locations

**ISO** 9001-2000

**C–TPAT** Certified

**12+** Strategic Partner Sites

**ROHS** Compliant

**ITAR** Certified

**AS9100** Approved

## PENCOM PRODUCTS

PENCOM is both a Manufacturer and a Distributor, an engineering design provider and a logistics supplier. Its products are divided into standard and special items. The standard line consists of a full range of fasteners and hardware components.

### Nuts, Bolts, Screws and Washers

No supplier could call themselves a Fastener Distributor without supplying a full range of nuts, bolts, screws, and washers. PENCOM provides machine screws, thread cutting screws, thread forming screws, screws for plastics, screws for sheet metal, as well as a full selection of SEMS screws in a wide range of head styles and drive types, in both inch and metric sizes. Additionally, PENCOM offers bolts and hex head cap screws in grades 2, 5, and 8, and metric classes 8.8, 10.8, and 12.9, socket head cap screws, nut styles including hex, jam, flange, nylon inserts, KEPS, and all washer types.

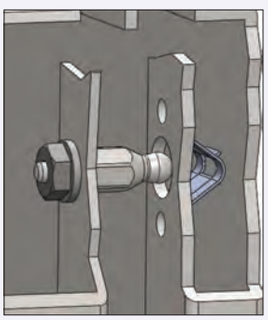
### Standoffs and Spacers

Pencom manufactures a full range of standoffs, spacers, and jack screws with a wide variety of mounting options. They are available with special features like thread locking nylon patches, grounding knurls, hi–torque knurls, and custom dimensions in sizes ranging from 2-56 through ½" and M2 through M12. Materials include Aluminum, Steel, Stainless Steel, Nylon, Delrin, and Brass. All materials are RoHS compliant.

## PENCOM HISTORY

In early 1982, the United States found itself in an economic slowdown. The results of this slowdown provided PENCOM's founder, William Gardiner, with a unique opportunity to pursue his dream of starting a business. Contacting some old friends in the industry, he offered his services as a manufacturer's rep on the West Coast. In February of 1982, Gardiner filed for a fictitious business name as Peninsula Components, DBA PENCOM. With MacLean-Fogg, Fastener Technology, Acimet, and Special–T Fasteners on his line card, it was now time to go to work. " Looking back at those days, I wonder why I did not starve to death", Gardiner laments.

The previous 10 years had prepared him well. Graduating with a Bachelor of Science Degree in Aerospace Engineering, he learned right away that things do not always go as planned. The Aerospace industry was going through a massive reduction, leaving no jobs for young graduating engineers. In need of a job, Gardiner started the interviewing process and it was not long before he and MacLean-Fogg found each other. Working as an Application Engineer, Gardiner was able to see first hand customer needs and to provide solutions. The MacLean-Fogg experience furnished many of the principles that still guide PENCOM today. He credits Barry Maclean for teaching him the concept of "Value Engineering".



Though Gardiner had worked with his customer's design engineers, he knew he lacked the outside sales experience necessary if he was to fulfill his dream of starting his own company. The last piece of the puzzle came when the Camloc division of Rexnord ( now Alcoa Fasteners ) hired him as a Field Sales Engineer, responsible for the Boeing account.

## Guide Pins

PENCOM's GP–series guide pin has become the design engineer's choice due to a broader range of sizes, styles, and tighter tolerances than competing guide pins. The GP is the alignment solution that engineers have relied on for years to precisely locate stacked and/or mating panels and chassis. The series has been enhanced to include a heat treated stainless steel material option for self–clinching installation in stainless steel sheets. Zinc–plated carbon steel and passivated 300–series stainless steel pins easily install in aluminum and carbon steel sheets. PENCOM also offers both male and female threaded versions, as well as pins manufactured to custom dimensions and designs. For applications requiring tighter alignment, PENCOM offers the GR–series press-in guide pin nuts.

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## Inserts for plastics and other soft materials

PENCOM offers its "ZERTS" line of brass and stainless steel inserts for ultrasonic, heat, press–in, screw–in, or molded–in applications which are equivalent to other available inserts on the market. With PENCOM's commitment to on–the–shelf inventory, a plastic molder can be confident that their order will ship the same day.

Fast forward to 1982, Gardiner now had the experience to venture into the world of the entrepreneur. Success was not far behind. An order from Westinghouse for a 2 ½" socket head cap screw for the MX missile program was followed closely by a captive screw contract with Rohm Mil–Spec.

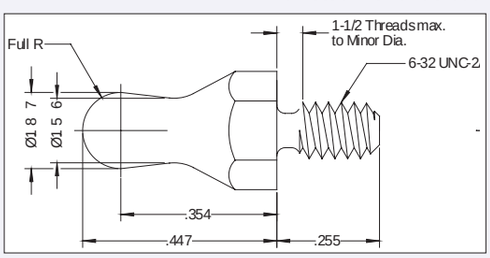
Through the 1980's, PENCOM operated as a small rep firm. Principles came and principles went. Among them were Captive Fasteners, Lyn-Tron, Pioneer Screw, Special-T-Fasteners, MacLean-Fogg, John Hassell Company, PSM International, Promptus, and Topy International. There were also the non–fastener companies Astron (stamping), Tadco (membrane switched), Mutual Metal Stamping, Design Octaves (Rim Plastic Molding), National Northeast (Extrusions and Heat sinks), and NorCal Machining Center.

"The old adage 'being in the right place at the right time' definitely played a part in PENCOM's success," states Gardiner. It came again when an engineer at Cisco was having a problem with a Ball Stud that would not seat flush to the mounting plate. By adding an undercut to the threaded shank, the part worked perfectly. Problem solved, customer won!

"Things were different in those days," Gardiner recalls," I spent many hours, at night, hand drawing prints for customer applications."

> " Being in the right place at the right time definitely played a part in PENCOM's success "

*Ball Stud with undercut*



*Hex Head High Torque Insert*

When an application requires additional performance, PENCOM's engineers will partner with the customer to design a custom solution, as is illustrated by this example. A pool cleaning equipment manufacturer found that after a couple years of ownership, the inserts in their products could sometimes be tightened to failure due to material degradation and shrinkage. By creating an insert with a unique hex shaped flange that provided superior torque–out performance, PENCOM was able to provide a solution for the customer.

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## Self–Clinching Fasteners

PENCOM began manufacturing its own line of self–clinching fasteners 11 years ago, starting with custom or modified standard parts with long lead–times and/or high minimums. Today PENCOM produces a complete line of press–in hardware, "ZINS", as a direct substitute for other press–in fasteners on the market, at a lower cost and better availability. Known for having odd sizes and lengths, many fastener distributors see PENCOM as their source for self–clinching hardware. PENCOM has pioneered innovations in the press–in hardware field, such as floating standoffs and nylon tip standoffs.

PENCOM did not have CAD drawing programs. There were no FAX machines or internet. There was, however, a garage and it was from there that parts were counted, bagged, and shipped. PENCOM's first computer was a 286 with a 20MB hard drive (enough for 20 digital pictures today).

In 1989, PENCOM moved from the garage to a 1100 square foot office/ warehouse in Foster City, California. Silicon Valley customers were in full "afterburner mode" and PENCOM was there to provide any fastener assistance they needed. Each successful solution created more calls for help. PENCOM was making drawings and design engineers were putting them in applications. If the designs could not be supplied by the companies PENCOM represented, it would sub–contract out the manufacturing.

*Fiber Optic Routing Standoff.*

In August 1995, Pencom hit the $1,000,000 milestone for sales in one month.

One of the sub–vendors PENCOM used was Accuracy Screw Machine in Hayward, California. In 1998 Lee Wilkerson, the owner of Accuracy, indicated that he wanted to sell his company. PENCOM saw an opportunity, its own internal manufacturing. The ability to control cost, quality, and delivery was appealing and it was not much later that Accuracy became a PENCOM subsidiary.

The Millennium saw things really begin to change at PENCOM. Its customers were on the move, contract manufacturers were becoming the prime source to manufacture products. This motivated Pencom to develop logistic sites to supply these manufacturers In 2000, Pencom opened a site in Singapore and a Guadalajara manufacturing plant, as well as sites in Austin, Texas and Salem, New Hampshire. The talent of Henry Villaume was also added as the head of PENCOM's Thermal team.

## Captive Screws

PENCOM manufactures a complete line of captive screws, from the least expensive styles that use a tapped hole to captivate a screw, to multiple piece assemblies that are either pressed–in or swaged–in. Working with the design parameters defined by the customer, PENCOM is not bound to “promote” a product line but is free to offer the best value solution for each application.

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## Ball Studs and Clips

One of the earliest products PENCOM manufactured, ball studs, are still an important product line. PENCOM’s ball studs have an undercut behind the thread ensuring that the part will seat flush in any female mating thread. This feature has made PENCOM’s parts favored over other standard ball studs. Offered in both steel and stainless steel, distributors and design engineers use PENCOM as their source.

By now PENCOM’s rep efforts were beginning to wane, while its distribution and custom design business grew. The years 2001 through 2005 saw PENCOM acquire Du-All Thermal Products, ( a heat sink manufacturer in Northern California), West Coast ATD (a machine shop in

Camarillo, California), Technicomp (a fastener distributor in Tucson, Arizona), CSS Manufacturing (a CNC milling and machining plant in Nogales, Mexico), and Visible Inventory ( an inventory automation system in Salem, New Hampshire).

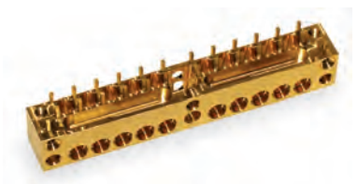
PENCOM’s most daring endeavour to date came in 2005 with the construction of a manufacturing plant in Dongguan, China. In China, PENCOM started with an empty field and built a factory from the ground up. PENCOM would be learning about permits, dealing with government officials and local contractors, and hiring workers. In the end PENCOM had a world class 50,000 square foot production site.

Quality has always been an important part of PENCOM’s commitment to its customers. To this end, PENCOM committed to the ISO certification process and has been ISO certified since 1995.

## Fabrication from Customer Drawings – Turning and Milling

PENCOM also offers manufactured per customer print items. This is the area where PENCOM really steps away from the distribution world and enters into the manufacturing arena. Using its CNC conventional and Swiss-type lathe machines, PENCOM can turn diameters of up to 14 inches and lengths up to 24 inches, holding tolerances of +/- 0.0003. Parts with slots, cross holes, milled flats, male threads, female threads, and broached shapes are finished complete. Materials generally machined are all varieties of carbon steels, stainless steels, brass, and aluminum.

Typical applications are fittings, valves, shafts, housings, connectors, and inserts. Going hand–in–hand with PENCOM's lathes are its CNC milling machines producing parts that range from bow and arrow components to medical pump housings. PENCOM offers customers a choice of low cost manufacturing at its sites in either Nogales, Mexico or Dongguan, China, enabling PENCOM to match customer's delivery needs.



PENCOM maximum part size is 20"wide x 40" long x 15" high, with tolerances being held to +/- 0.0003. With its CNC mills, PENCOM also manufactures semi–custom product line items such as heat sinks, board stiffeners, and front panels.

PENCOM is also AS9100 certified, ITAR registered, and C–TPAT approved. At PENCOM, one out of every 10 employees works in the quality department. This commitment is supported with over $750,000 in the latest state of the art inspection equipment.


PENCOM saw that inventory automation was to become the future of VMI programs. With the purchase of New Hampshire start–up, Visible Inventory, PENCOM now owned the premier inventory automation software and hardware on the market. It was not long before customers started searching out PENCOM, requesting that PENCOM automate their current VMI programs using Visible Inventory.

Today, nearly 30 years after Gardiner first introduced himself as working for PENCOM, the company continues to expand to meet the increasing demands of its customers. 2010 has seen PENCOM internalize the plating requirements of its Nogales Manufacturing plant, invest in manufacturing and inspection equipment, and add logistic support centers. " In the future, I expect our value added assemblies to be our next growth area," explains Gardiner. When asked if PENCOM would ever leave the Fastener Business, Gardiner's answer is a simple "Never!"

*Pencom's trained assembly technicians*

## Assembly Capabilities

Many of PENCOM's customers that were buying individual components asked if PENCOM could assemble these components into upper level sub–assemblies. PENCOM's response was "yes", and for the past three years PENCOM has operated an assembly group. One current program for airplane escape slides requires PENCOM to machine three components, purchase a fourth, then TIG weld the entire assembly together. These parts are now found on all newer Boeing and Airbus aircraft.

Another example of providing added value is the assembly of a pump rotor for a medical customer. Assembled by PENCOM's China plant, most of the 29 components are turned or milled–in house. Component quality and cost are optimized at one location by using PENCOM's wide range of precision turning and milling equipment. Additional components, such as springs and fasteners, are purchased. The final assembly is done by highly trained technicians, following exacting instructions and using dedicated inspection tools. Each part carries a unique serial number with a complete set of inspection results.

*Fully assembled pump rotor*

**APPLICATION REVIEW**

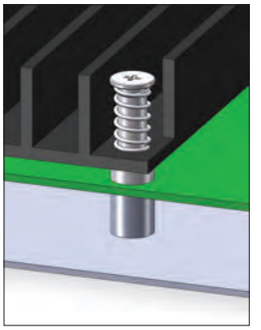
## Collaboration Tools Used to Design Custom Heat Sink Retaining Screw

Designing a heat sink retaining screw can be a challenging and sometimes tedious process. Normally several trial –and–error calculations are required to determine the optimal combination of spring rate and diameter, screw travel and height, and resulting spring compression load while mitigating load deviations due to tolerance stack up. A custom heat sink retaining screw and mating shouldered spacer designed and manufactured for arguably the world's largest supplier of telecommunications equipment illustrates Pencom's commitment to providing complimentary design assistance and the benefit of centralized service and manufacturing capabilities.

The customer's specifications required that a threaded fastener and spring apply a prescribed load at four corners of a heat sink to create optimum thermal transfer from the mating heat–emitting device. The fastener must pass through a spacer attached to a PC board, preferably with a shoulder to prevent lateral movement of the heat sink during assembly, and thread into a standoff below the PC board. Various space constraints from adjacent board–level components created numerous design obstacles.

Using 3D CAD modeling software, the customer and Pencom engineers were able to collaborate simultaneously on the design despite being in three different US time zones. The customer imported the screw and spacer models directly into their assembly model and then discussed necessary design changes with Pencom Engineer, Gregg Summers.

Within minutes, revised models were sent back to the customer for re–evaluation in the assembly. Pencom Account Manager, Arianne Ito, was integrated throughout the design process so that immediately upon customer approval, order fulfillment transitioned seamlessly to Pencom's Hayward, California factory for prototypes. Production subsequently transferred to China to support the CM locally.



For your next design challenge, let Pencom be your fully integrated service solution.