



DERINGER-NEY INC



MICROMfg™



ULTRA SMALL PRECISION COMPONENTS

DERINGER-NEY

YOUR TOTAL SOLUTION FROM A SINGLE SOURCE

Deringer-Ney can provide the Total Solution for your component and assembly requirements. From Engineering support to make your design efficient & economical to assembly capabilities to produce your entire device, Deringer-Ney provides a full range of services and solutions:

- On-site staff of materials scientists, mechanical, electrical and manufacturing engineers to assist with your design.
- In-House tooling design and build to develop your process quickly and efficiently.
- Wide variety of standard and custom alloys including precious, exotic and composite metals
- Custom alloy and composite development.
- A wide variety of equipment and processes to produce a broad range of parts and assemblies.
- Rapid prototyping for small quantities and custom prototypes.
- Automation design and build for high volume applications.
- Project Management to assure your components are ready on-time and under budget.
- Manufacturing processes include stamping, cold forming, machining, multi-slide forming, brazing, welding, injection molding and assembly.
- Low-cost assembly capabilities in our Nogales, Mexico facility.

Why MICROMfg™?

ECONOMY

MICROMfg™ is fast, efficient and less expensive. Utilization of materials is unsurpassed. A part can be made to net or near net shape with little or no scrap. With screw machining running your part means production speeds of a few hundred parts per hour and machining away up to 40% of the material. That is no longer the case – MICROMfg™ can produce parts up to 100 times faster than screw machining. You can now specify expensive alloys, including precious metals, and use a near scrapless process with speeds not possible on screw machines.

MATERIAL SELECTION

With MICROMfg™ you don't have to compromise your material selection by including Lead and Sulphur additives required by screw machined parts. MICROMfg™ is applicable to a broad range of materials such as, stainless steel, precious metals, nickel alloys, low-expansion alloys, or virtually any copper alloy, including beryllium.

FINISH

MICROMfg™ parts are inherently smooth and free from machine tool marks. Surfaces are smoother and more consistent, and in many cases surface finishes of under 8 RA can be achieved. Secondary finishing processes can often be eliminated to further reduce part cost. MICROMfg™ parts are well suited for automated assembly operations because improved surface finishes allow lower insertion forces, which decreases localized wear and friction.



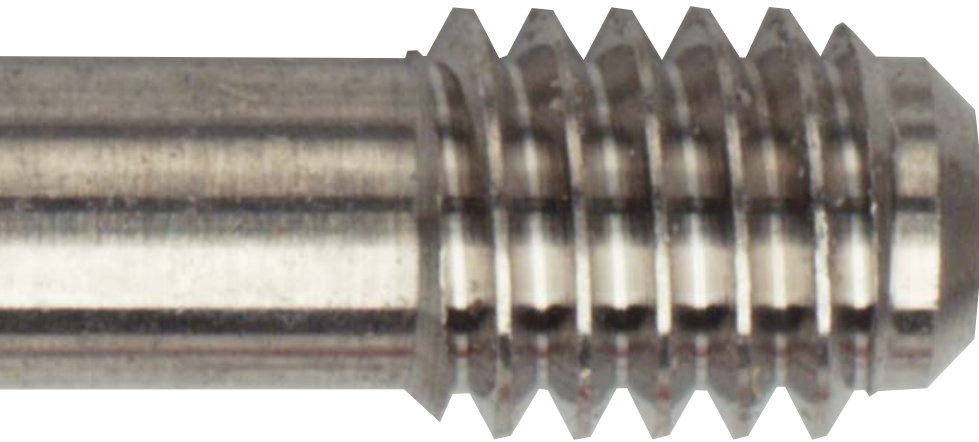
MINIATURIZATION

Parts with diameters of less than .015" (.38mm) are now possible. Dimensional tolerances can typically be held to +/- .0005 (.013mm). MICROMfg™ not only makes miniaturization possible, but the enhanced grain flow and work hardening make a stronger part, which reduces the chances of part failure. Typical applications in cold forming include: parts used in semiconductor packages, cell phones, disk drives, pagers, automotive and medical applications.

The Deringer-Ney

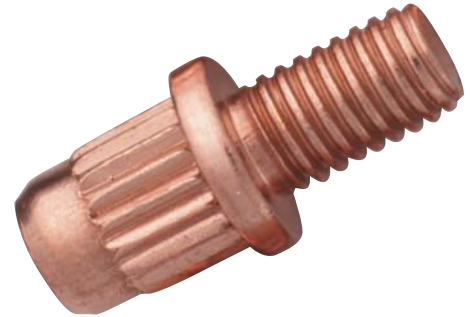
WHAT MAKES US UNIQUE?

- Part Design and Development. Let us work with you early in the design process to optimize part performance and price. Our skilled designers have decades of experience designing and producing these types of components. Send us a rough sketch or drawing to review and we'll help you design a cost-effective component.
- Experience with many different alloys. Not only do we go beyond the typical stainless steels and coppers, Deringer-Ney develops and produces custom alloys for specific applications. Unlike most suppliers, we're comfortable working with non-ferrous, precious and exotic metals.
- A wide variety of equipment to produce a broad range of parts. In addition to the smallest of parts, we can produce components up to 3.0" (76.2mm) long and 5/16" (7.94mm) in diameter.
- Experience producing ultra-small components to tight tolerances.



- Brazing and Plating capabilities that allows us to produce Bi-Metal and composite components to provide the highest performance at the lowest cost.
 - Beyond Micro Mfg, Deringer-Ney has additional capabilities including precision insert molding and assembly services. Let us quote producing your entire assembly.
 - In-House Tooling capabilities to develop your entire process quickly and efficiently.
- Small quantities and Prototypes. We're used to economically producing parts in small quantities, especially at the start of a new program. Our Prototype Department is ready to bring your design or concept to life with quick turn-around and custom tooling.

Advantage



HOW DOES MICRO MFG COMPARE TO TRADITIONAL SCREW MACHINING?

- Faster production rates resulting in lower part costs.
- Producing parts to net or near-net shape to reduce secondary operations.
- Better part-to-part consistency.
- Eliminates machining scrap loss resulting in lower part cost.
- Improved mechanical properties because additives like lead and sulfur aren't required for machining and work hardening and improved grain flow improves part strength.
- Letters, logos and other markings easily stamped into parts during manufacturing.
- Lower overall cost.



Typical

AUTOMOTIVE DASH BOARD SWITCH CONTACTS

- Part produced in tin-plated, high purity Copper.
- 10X production rate vs. screw machined part.
- Replaced a screw-machined part at a 75% cost savings.



ELECTRONIC HEAT SINKS FOR CELL PHONES

- Replaced a stamped part at a 20% cost savings.
- Burr-free, smooth edges with no secondary operations compared to a stamped part.
- Lower tooling cost than stamped part.
- Can produce a variety of shapes and configurations.



Applications



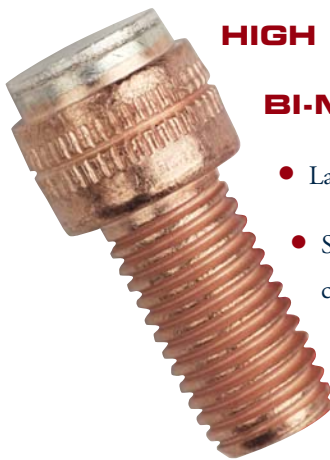
CIRCUIT BOARD SPACERS

- Replaced stamped part at a 20% cost savings.
- Smooth part finish compared to screw machined part allows automated assembly.
- Higher level of precision than traditional cold forming.



MINI VAN SLIDING DOOR CONTACTS

- Replaced screw machined parts at a 30% cost savings.
- Bi-Metal Contacts reduce cost and improve performance.
- Silver Metal Oxide contact brazed to shaft.
- Lower cost and higher precision than screw machined part.



HIGH AMPERAGE BI-METALLIC CONTACT

- Large Copper bolt
- Silver contact brazed to top to reduce precious metal content and cost.
- Replaced screw machined part at a 40% cost savings.
- Work hardening increases thread strength.

ALLOYS AVAILABLE

- Paliney
- Neyoro
- Stainless Steel
- Nickel and Nickel Alloys
- Copper and Copper Alloys
 - Beryllium Copper
 - Molybdenum
 - Tantalum
 - Niobium
 - Gold
 - Silver
 - Platinum
 - Iridium
 - Palladium
 - Brass
 - Steel



ABOUT DERINGER-NEY

Deringer-Ney is a vertically integrated manufacturer of High Performance Alloys, Precision Metal Components, Precision Insert Molded Components and Part Assemblies. Typical products are Electrical Contacts & Rivets, Ultra-Small Metal and Plastic Components, Screw Machine Parts, Fine Wire and Films. Capabilities include Custom Alloy Development, Product Design and Development, Prototypes, Tooling Design and Build, Part PPAP, Fully Integrated Manufacturing and Project Management. Manufacturing processes include stamping, cold forming, machining, multi-slide forming, brazing, welding and insert molding. The markets we serve include Automotive, Electronics, Medical and Industrial. Deringer-Ney has sales representatives in North America, Europe and Asia. Deringer-Ney has four manufacturing locations - all are registered to ISO 9000 and the domestic facilities are registered to QS-9000.

DERINGER-NEY MANUFACTURING FACILITIES

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