



DERINGER-NEY INC.

**YOUR TOTAL
SOLUTION FROM
A SINGLE SOURCE**



DERINGER-NEY INC.

Vertical integration of a wide range of capabilities allows you to consolidate your supplier base for

**YOUR TOTAL SOLUTION
FROM A SINGLE SOURCE.**

Superior components, and the expertise to turn those components into superior products—all in one place. That's Deringer-Ney. Your single source for total component and assembly solutions.

For more than 50 years, Deringer-Ney has been the premier solutions provider to the automotive, electronics and medical industries—and it's easy to see why.

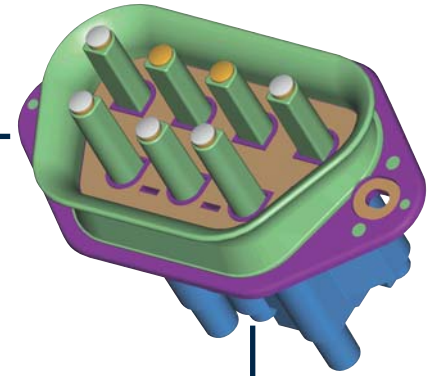
As a manufacturer, we provide the High Performance Alloys, Precision Metal Components, and Precision Insert Molded Components that make great devices. As an engineering and development partner, we provide the expertise to make those devices the most efficient and economical they can be.

It's why, from design through assembly, top manufacturers look to Deringer-Ney.

• Product Development & Design Assistance

On-Site staff of Metallurgists and Engineers

provide technical support, rapid prototypes & cost effective designs



• Custom Alloy Development

We offer a wide range of Alloys and our Metallurgist can work with you to develop custom alloys in precious & composite materials to meet your exact requirements

• Fine Wire, Foils, Strip

- Diameters of less than .003"/.076mm
- Existing & Custom Alloys



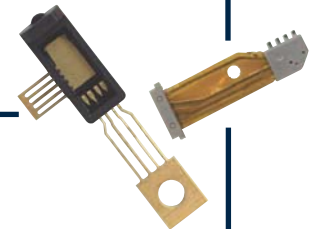
• Precision Metal Components

- Forming, Stamping and Machining
- Joining Dissimilar Metals
- Electrical Contacts
- Ultra-Small Components



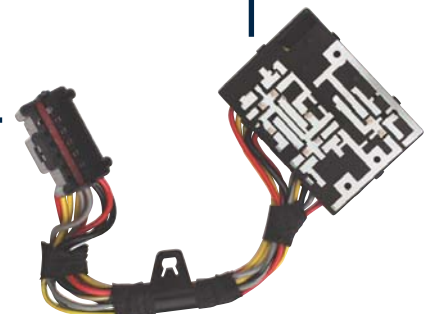
• Precision Insert Molding

- Connectors
- Sensor Assemblies
- Medical Devices

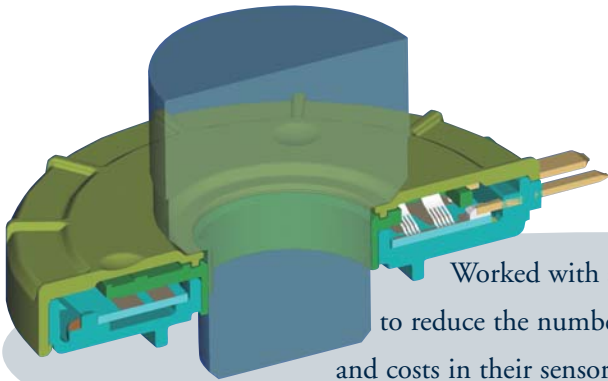


• Contract Manufacturing

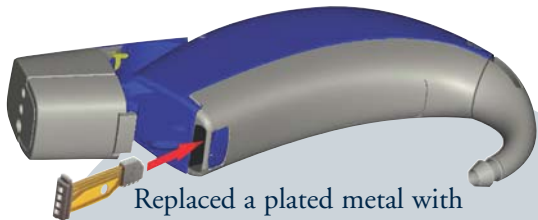
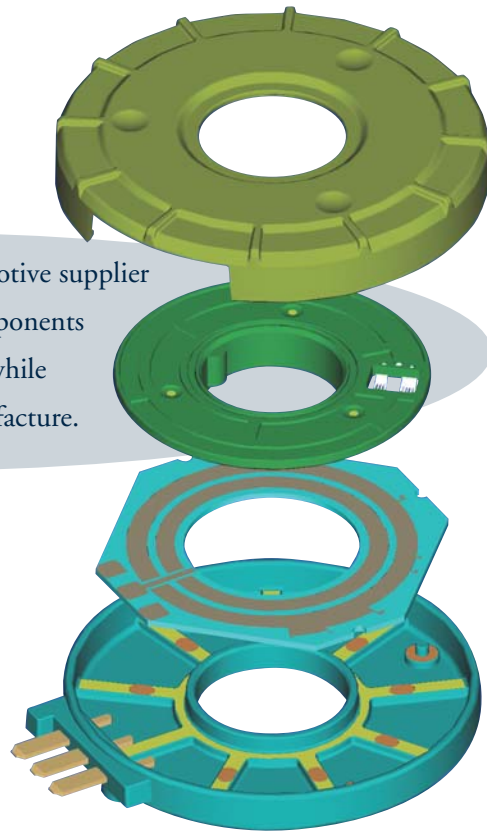
- Low Cost Hand Assembly in our Mexico Facility
- High Volume Automated Assembly
- From Sub-assemblies to Full Devices



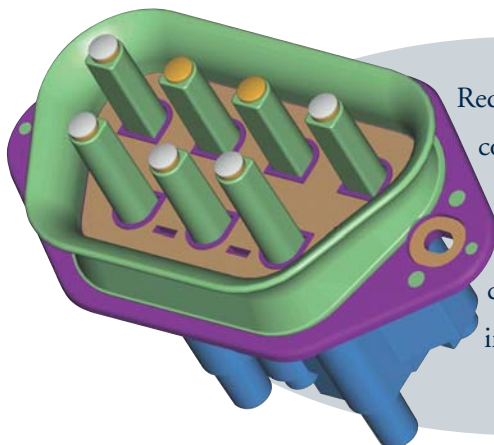
Product Development & Design Assistance



Worked with an automotive supplier to reduce the number of components and costs in their sensor design, while improving reliability and ease of manufacture.



Replaced a plated metal with a custom alloy to improve corrosion resistance and product life. Worked with their designers to develop an insert molded connector produced to exacting tolerances.



Redesigned a mini-van door contact to improve reliability and reduce cost. We produce the entire contact component, which previously involved 3 different suppliers.

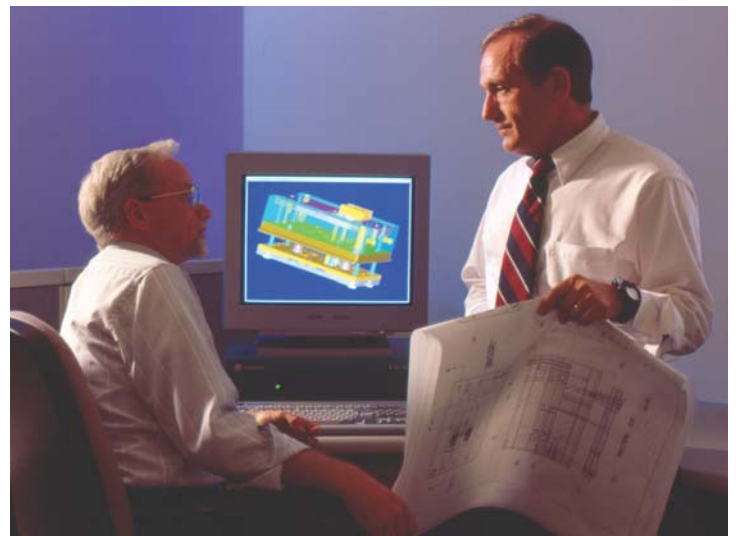


OPTIMIZED PERFORMANCE. MINIMIZED COST.

PRODUCT DESIGN & DEVELOPMENT Our on-site materials scientists, including mechanical, electrical and manufacturing engineers, have decades of experience designing precision components and assemblies of all types and are available to help optimize your part's performance, ease of manufacture and cost. A rough sketch or drawing is all that's needed to get the process started. Let us help you design your next component and assembly.

SMALL QUANTITY, CUSTOM PROTOTYPING As proficient as we are with high-volume production, we also understand the need for economically produced, small quantity parts—especially at the start of a new program. Our Prototype Department will bring your concept and design to life with quick turn-around and custom tooling.

PROJECT MANAGEMENT 'On-time and under budget' is the motto of our Project Management Team. With state-of-the-art in-house tooling, design, testing and building facilities at our disposal, we'll take any size program from design to PPAP to production ramp-up quickly, efficiently and economically. Regular design and project reviews assure your project stays on-track and on schedule.



Custom Alloy Development

MELTING • WIRE DRAWING • ROLLING • SLITTING • HEAT TREATING



Standard alloys don't meet your requirements? Let us help! Our metallurgical staff can tailor a custom alloy to meet your specific needs.

The Deringer-Ney Research group is internationally recognized for its innovative materials solutions to our customers' most challenging problems. We are constantly offering new and creative materials solutions to the most vexing electrical contact and material design issues faced by our customers.



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

From its founding in 1812, the J. M. Ney Company has been known as a technology leader in the development of new Platinum Group Metal alloys, including such standard bearers as Paliney® 6 and Neyoro® G. Now this problem-solving heritage is available to all of Deringer-Ney's customers. We understand the unique needs of micro-amp contacts typical of automotive position sensors, but we are equally comfortable helping to formulate a solution for AC and DC switches or relays operating with surge currents well over 250 amps. In addition to the specialized world of electrical contacts, we also understand the demands of the medical world from dental implants to cardiac pacemakers. We can assist with application engineering & failure analysis on both new and existing designs.

FINE WIRE, FOILS, TAPE AND STRIP MATERIALS

Deringer-Ney produces fine wire from less than .003" (.076 mm) in diameter, and foils, tape and strip from .001" (.025 mm). Lengths range from miniature cut pieces to continuous reels. Flat, half-round and custom configurations are also available. In additions to fine wire, rod stock is available in sizes in excess of .250" (6.35 mm).



Precision Metal Components

STAMPED AND FORMED PRECISION METAL COMPONENTS

Deringer-Ney sets the global standard for contacts and stampings. We offer the widest selection of alloys—from precious, exotic and composite metals to custom alloys we produce ourselves. We offer component stamping using progressive and four slide processes from .0015" (.038mm), and wire forming in diameters starting at less than .003" (.076mm). Our ultra-small components are produced to the tightest tolerances.

ELECTRICAL CONTACT RIVETS

We offer both standard and custom products, including precision thin-gauged stamped contacts. Contacts can be assembled to a blade, terminal or machined backing and produced either by Deringer-Ney or supplied by our customers. Assemblies can utilize contact rivets, contact tapes, buttons or composite strip for automated, low-cost assembly.



MULTI-SLIDE METAL FORMING

Deringer-Ney makes headed leads for semiconductors, upset pins, wire forms, wire leads, clips and terminal components for connectors. We also offer base, contact and socket pins. Parts are available as individual pieces or on bandoliers for use in automatic insertion. Sizes range from ultra-small to larger components and assemblies. All are produced to exacting tolerances.



ELECTRICAL CONTACT ASSEMBLIES

Deringer-Ney contacts are the industry standard for Automotive Fuel Level Sensors, Throttle Position Sensors, Relay Contacts and Appliance Control Contacts. Composed of a variety of precious and non-precious metals, as well as bimetallic material, they are manufactured in high-speed presses and multi-station progressive dies to extraordinarily precise tolerances. Contacts are offered in knuckle, rake, welded button, four-slide and high speed welded construction, depending on the application. Bimetallic contacts reduce precious metal content while still providing extremely reliable performance. They are available in edge weld, button and inlay configurations depending on the application.



KNUCKLE



Knuckle contacts are ideal for applications requiring the contact to traverse segmented tracks or wire-wound potentiometers and switches. Precision Deringer-Ney designed and built high-speed stamping dies provide accurate knuckle-style contacts for the life of the program. Deringer-Ney's bimetallic material may be used to reduce the cost of your contacts.

RAKE



Rake contacts are preferred in applications when precise stable resistance values are required over the life of the system. The rake contact has proven to be especially suited to critical automotive sensor applications. Deringer-Ney's tight tolerance tooling and tip conditioning processes provide the exact tip topography required. In many applications Deringer-Ney's bimetallic material may be used to reduce the cost of your contacts.

WELDED BUTTON



Welded button contacts provide a cost-effective method of producing a larger wear mass for extended life applications. Precision formed Paliney® 6 buttons are welded to high strength C72900 copper alloy cantilever arms. The noble metal button is precisely located in the required contact positions while utilizing the less costly base metal for the arms.

FOUR-SLIDE



Contacts formed from wire or flat stock with multi-axis bends are manufactured using the Four-Slide process. Deringer-Ney designs and develops its own custom Four-Slide tools for high-volume, low-cost production.



← Actual size of
.061" (1.55 mm) across



Precision Metal Components

BRAZING, WELDING AND JOINING DISSIMILAR MATERIALS

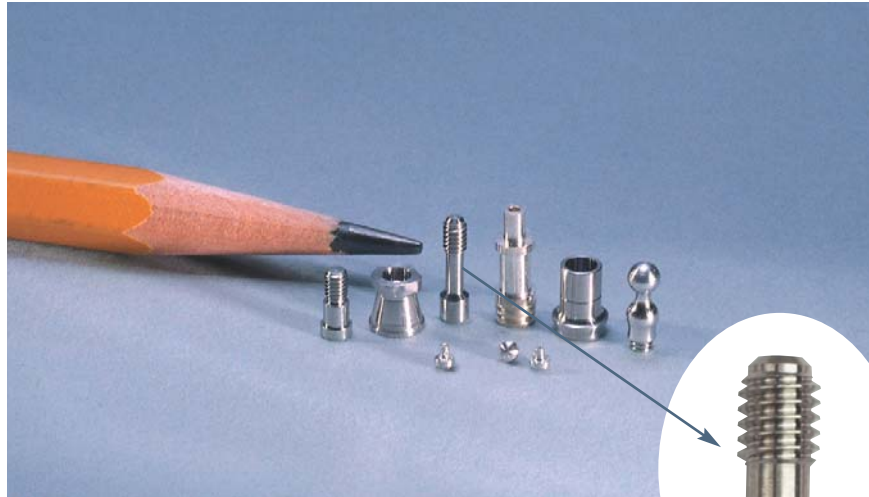
Joining dissimilar materials allows manufacturers to greatly reduce the amount of precious metal content in a part, while still maintaining the conductivity and life requirements of the component. In some cases, exotic or custom alloys can actually improve part performance. Deringer-Ney employs a variety of continuous and low-cost processes to join dissimilar materials:

- Hot and cold-welding, forming, rolling and brazing to bond dissimilar materials
- Wire Welding, which vertically welds precious metal to a less expensive base metal
- Tape Welding, which bonds a thin layer of precious metal to a lower-cost base material
- Seam Welding, which applies a continuous strip of raised precious metal and facilitates a high density of contacts in a small space

MICROMfg. PRECISION COLD-FORMED COMPONENTS

MICROMfg. is an incredibly fast, efficient and cost-effective process that offers unsurpassed materials utilization. Parts can be made to net or near-net shape with little or no scrap, from diameters of less than .015" (.38mm), with dimensional tolerances of +/- .0005 (.013mm). MICROMfg. not only makes miniaturization possible, it offers enhanced grain flow and work hardening, resulting in stronger, more reliable parts. Typical applications include components for semiconductor packages, cell phones, disk drives, pagers, and automotive and medical applications.





PRECISION TURNED AND SCREW MACHINED PARTS

Our Swiss-style screw and high-speed machine centers are capable of producing parts from virtually any material, up to .630" (16mm) in diameter. Commonly employed for dental copings, catheter tips and other medical components, these high-precision parts are made to extremely tight tolerances. Our machining capabilities include CNC backworking, dual spindle, Swiss-type screw machines up to 16mm.



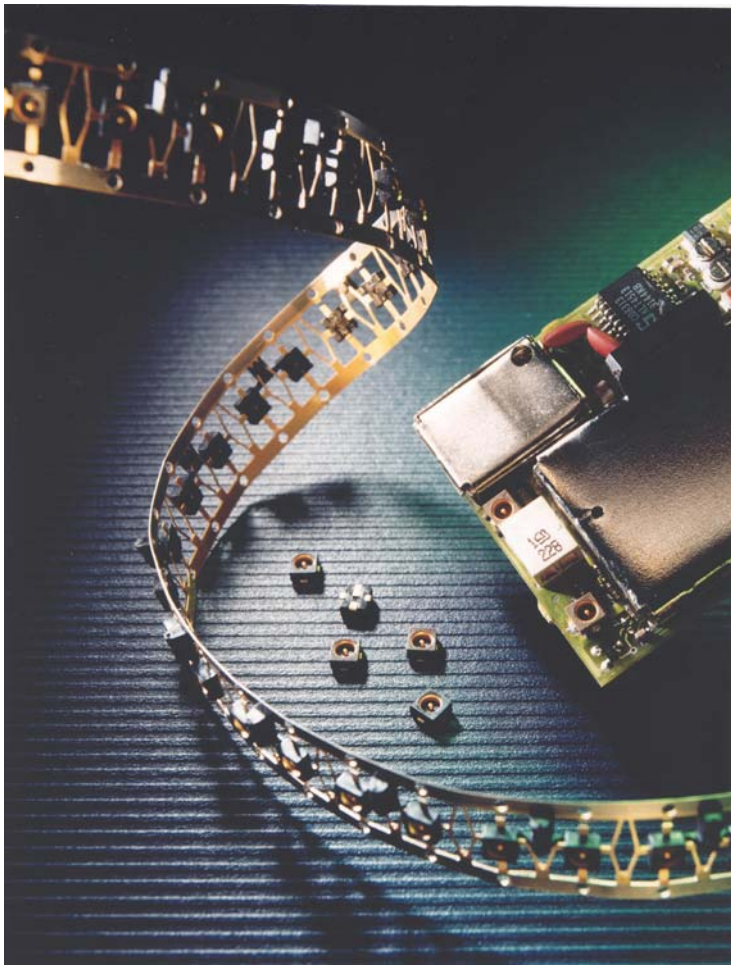
Precision Insert Molding

Deringer-Ney has a long and distinguished history producing injection-molded components. Ultra-small components produced to tight tolerances are our specialty. Parts are available in reel-to-reel or singulated form. Complex metal components produced by Deringer-Ney or consigned by customers are insert-molded into final assemblies. For high volume applications, our automation group can design fully automated moving cells to produce components at the lowest possible cost.

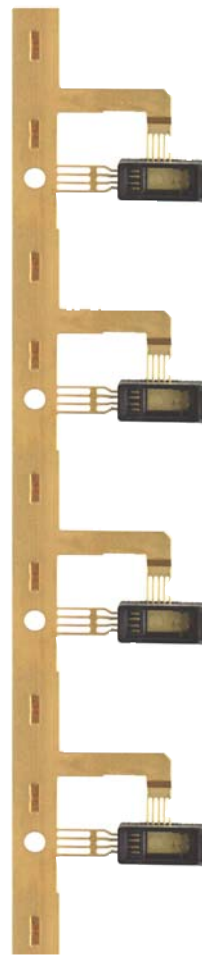


Transmission position switch with insert-molded nickel silver stamping.

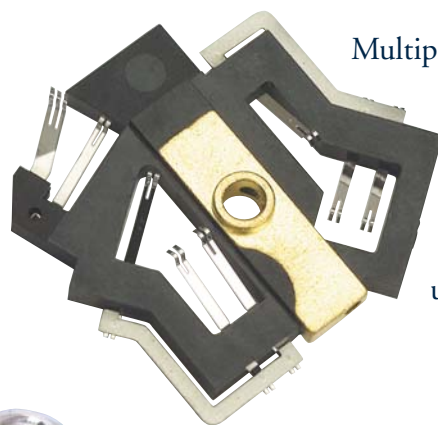
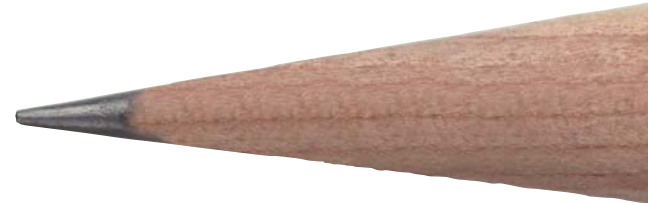
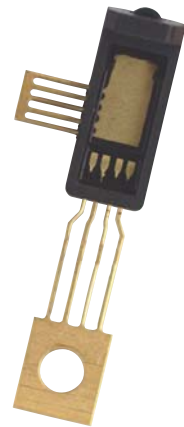




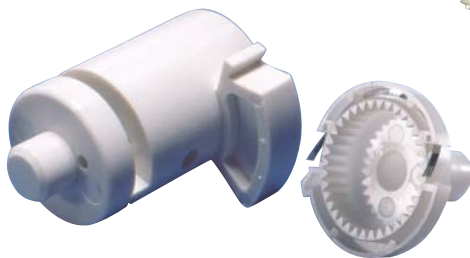
Reel-to-reel insert-molded 6 GHz surface mount Rf connector with selective gold-plated nickel-silver lead frame



Insert-molded fiberoptic component with inserted lens and gold-plated beryllium-copper lead frame. Their manufacture was highly automated to minimize part cost.



Multiple position switch for aerospace applications. Our seven-piece assembly replaced an eighteen-piece assembly used previously.



Insert-molded copper alloy dynamic contact for Military fuse detonator



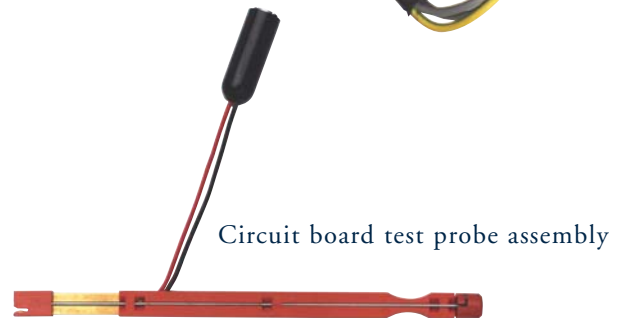
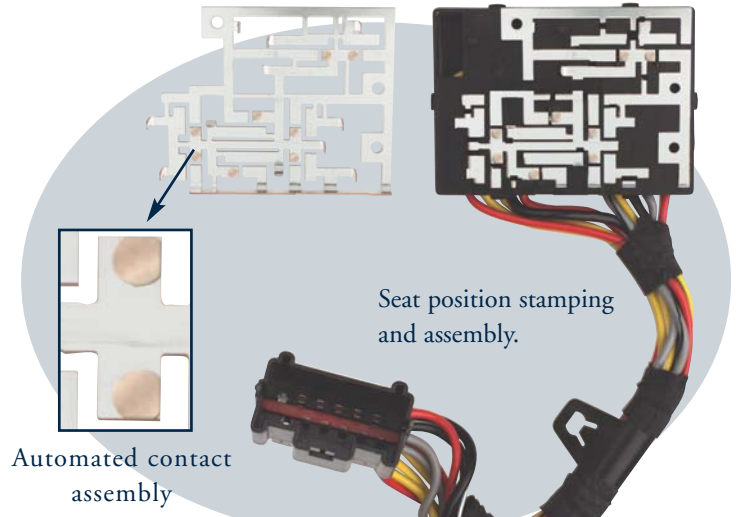
Custom Paliney® alloy, precision stamped and insert molded with Kapton® for corrosion resistant hearing aid connector

Contract Manufacturing & High Level Assemblies

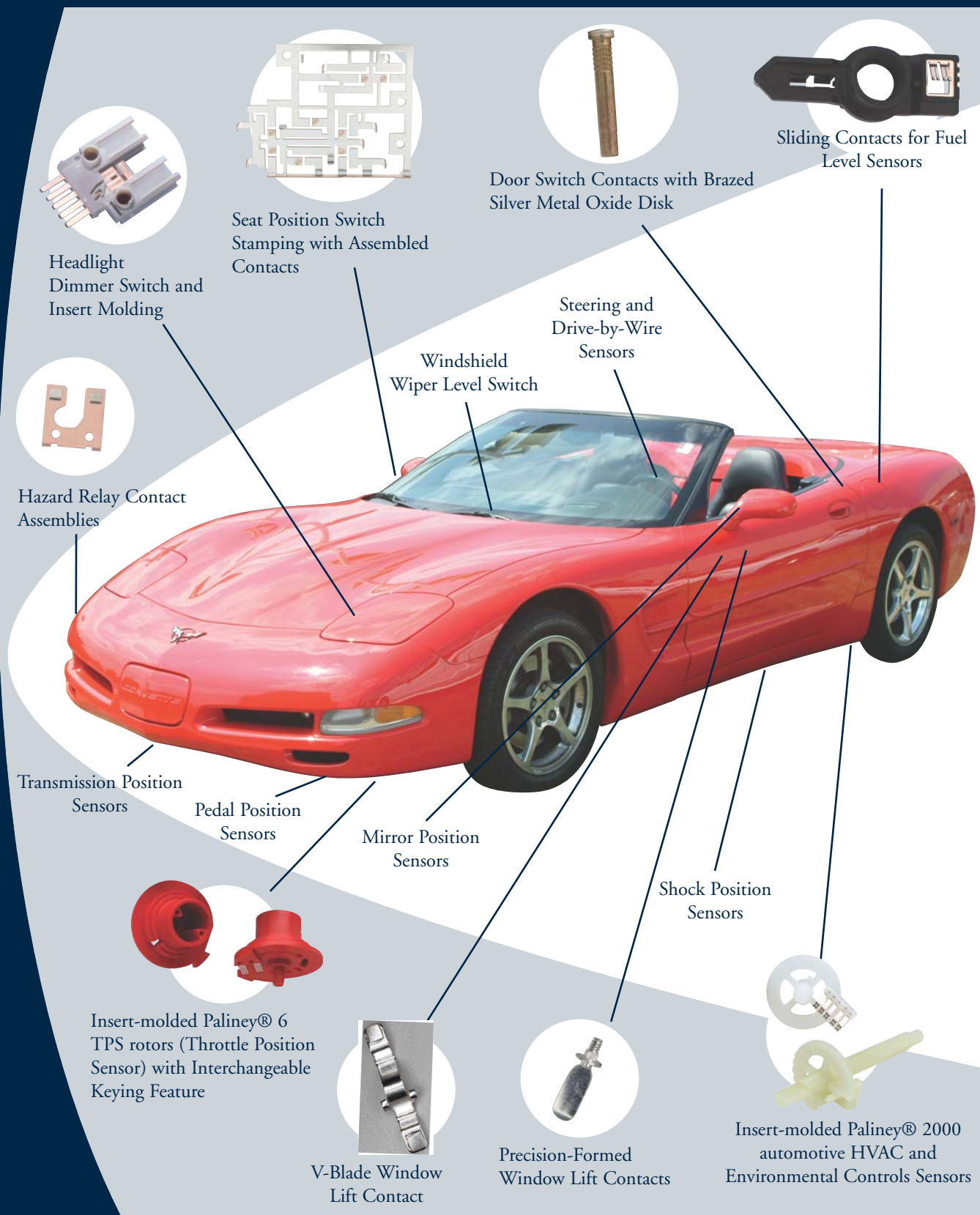
OUR NOGALES, MEXICO FACILITY

While many of our customers once performed their own assembly or insert-molding operations with Deringer-Ney's products, we now offer comparable services of the highest quality, for a lower overall cost. Case in point, our recently expanded facility in Nogales, Mexico which provides precision stamping, molding, resistance welding and assembly operations—for both our own or our customers' metal components. Operations at the Nogales facility are geared specifically to assembly and secondary operations, with an eye toward efficiency and overall savings. The facility was recently registered to ISO 9002 and utilizes our company-wide Quality Systems.

CUSTOM AUTOMATION FOR HIGH VOLUME APPLICATIONS



Components & Sensors for Automotive Applications

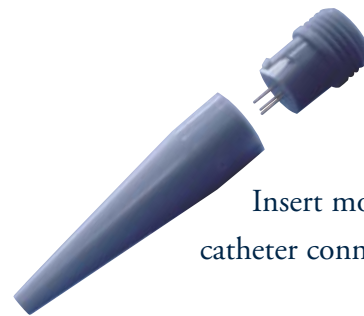


Products and Components for the Medical Industry



Fine wire from less than .003"/.0076 mm in diameter for pacemakers & catheters in platinum based custom alloys.

Insert-molded Paliney® 6 sliding contact position sensor for medical instrumentation



Insert molded catheter connector



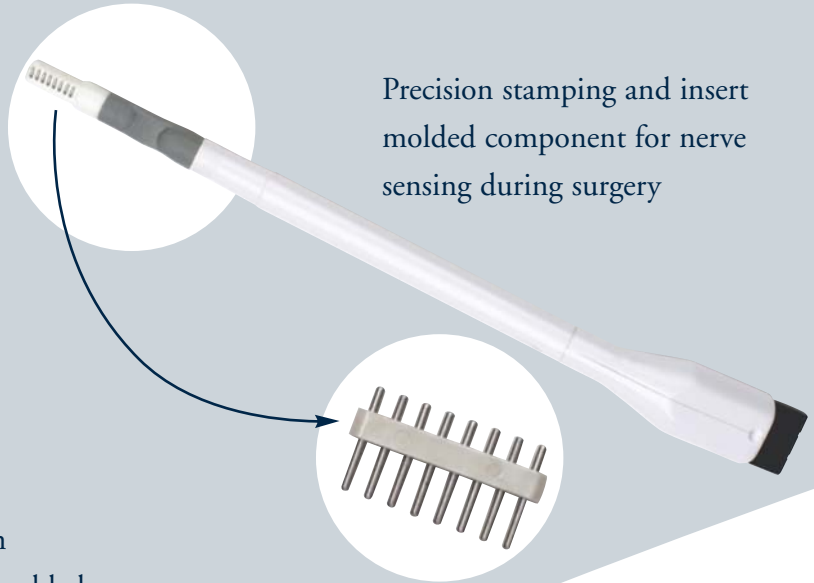
Screw machined copings and implant components in gold, platinum, palladium, titanium and other alloys.



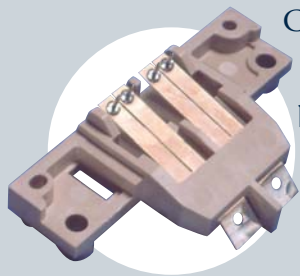
Precision screw catheter tips in 90% platinum and 10% Iridium alloy.



Dental and Medical implants and copings



Precision stamping and insert molded component for nerve sensing during surgery



Custom alloy, precision stamping and insert molded blood analyzer component



Volume switch wiper in custom alloy to eliminate plating

Components for Hearing Aids



Actual size

Available in singulated or strip form



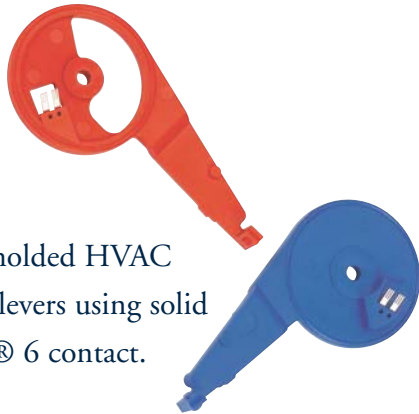
Connectors with custom alloys, precious metal stampings and tight toleranced insert molding



Actual size

On-off switch stampings and Four-Slide components in custom alloys

Industrial & Electronic Applications



Insert-molded HVAC control levers using solid Paliney® 6 contact.

CELL PHONE HEAT SINK

We reduced its cost by 20% by replacing a stamped part, with an alternative that required less tooling. We manufacture this product in a variety of shapes and configurations. It has smooth edges, with none of the burrs that result from a stamped part, with no secondary operations.



HIGH AMPERAGE BI-METALLIC CONTACT

Features a large copper bolt, and a silver contact brazed to its top to reduce precious metal content and cost. We replaced a screw-machined part for a 40% cost savings. The replacement part is also work-hardened, to increase its thread strength.



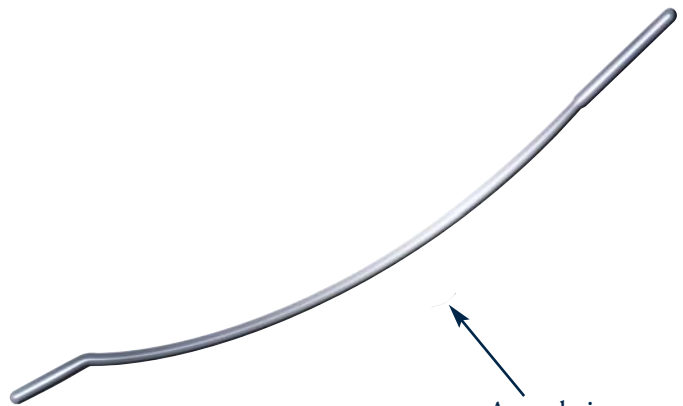
CIRCUIT BOARD SPACERS

Precision formed using MICROMfg. to replace a stamped part at a 20% cost savings. Smooth finish compared to screw machined parts allows automated assembly.



SEMICONDUCTOR & WAFER LEVEL TEST CONTACTS

Paliney® alloys, Four-Slide formed and insert molded for electronics reliability testing



Actual size

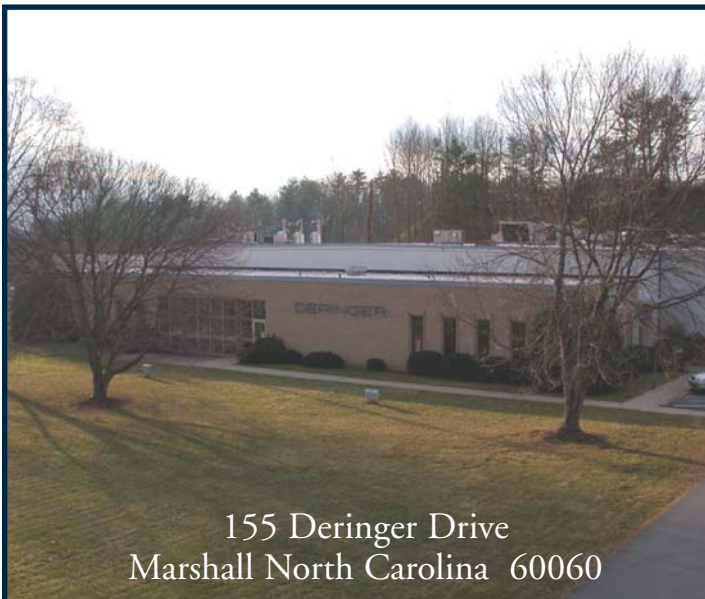
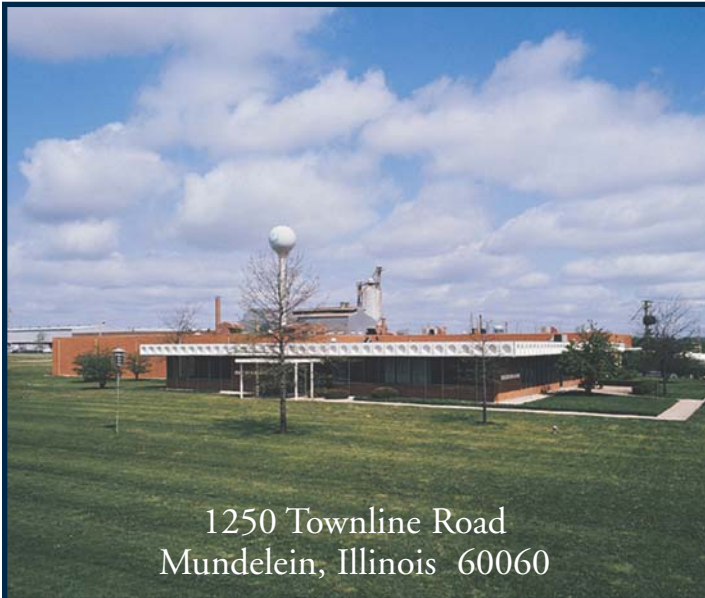


DERINGER-NEY INC.

QUALITY SYSTEMS AND CONTINUOUS IMPROVEMENT

Our four manufacturing locations are all registered to ISO 9000 and our domestic facilities are registered to QS-9000. We also comply with all military specifications, as well as the FDA's Good Manufacturing Practices and ISO 13488 for Medical applications. Each step in our manufacturing processes are thoroughly monitored from ingot to final assembly—to ensure that we design-in and deliver total product quality.

DERINGER-NEY MANUFACTURING FACILITIES





DERINGER-NEY INC.

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, Appliance, Medical and Industrial applications. 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.

www.deringerney.com

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