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ORION INDUSTRIES INCORPORATED

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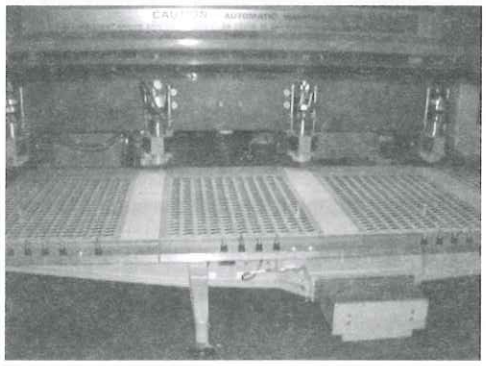
EMI/RFI Shielding Laminates • Insulators • Seals and Gaskets • Screens ..... ISO 9001 UL REGISTERED FIRM A3744 ..... Precision Die Cutting • Laminating • Adhesives • Screen Printing/Hot Stamping

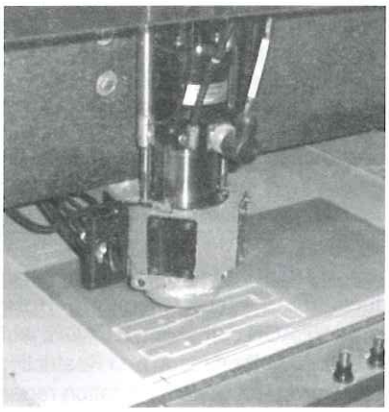
CNC Machined Plastic Parts

CNC Drilling & Routing:

CNC Drilling & Routing technology is ideal for the high precision manufacture of electronic insulators and plastic parts at a full range of production quantities. Parts can be nested on sheets and cut with up to four heads at a time to greatly increase production throughput and reduce costs to our customers.



Material can be stacked and cut simultaneously by the four cutting heads.



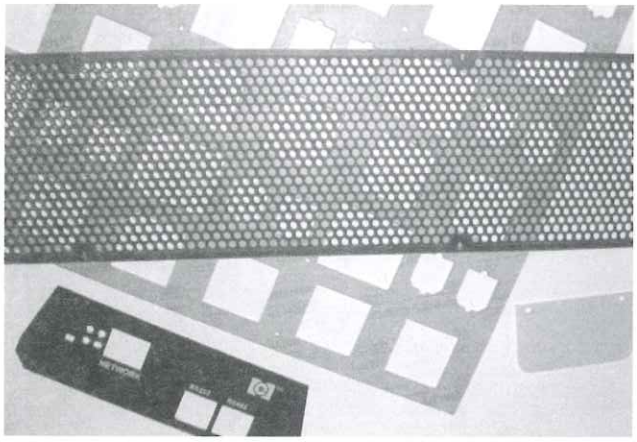
A close up view of one of the spindles as it cuts through 1/4" thick G-10

Specifics of this machine:

Each spindle is mounted on a stationary gantry, and can move up or down. The table below moves on precision ball screws, and can maintain consistent position within a few thousandths of an inch. The spindles turn up to 60K rpm. The router bits typically used are 0.062" and 0.093" in diameter. We can also use drill bits in a wide range of sizes and gauges, up to .277" in diameter.

Benefits over steel rule die cutting:

The drilling and routing process allows us to hold much closer tolerances than with steel rule die cutting, and also allows us to cut materials that are either too thick or too hard for die cutting. This is beneficial for parts with lots of holes, which would otherwise require expensive tooling to produce. These machines drill all of the tiny holes for components and route-out perimeters of the boards found in any electronic item. Primarily, this equipment is capable of cutting plastics like G-10/FR-4, polycarbonate, PVC, ABS, and others in a thickness range of 0.010" to 0.5". Its wide range of speeds and feeds allows efficient material removal over many material characteristics.



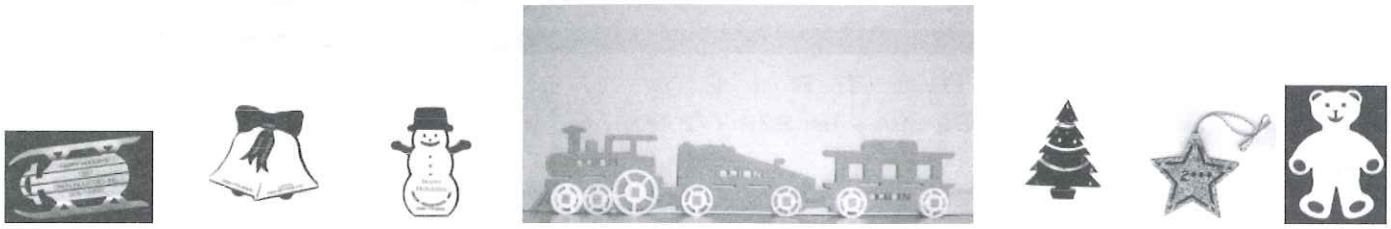
Parts with multiple holes are ideal for this machine.

This type of processing also allows us to drill holes that are much smaller and cleaner than those that are die cut. In most cases, holes are drilled from 0.010" to 0.277" in diameter with position tolerances well within 0.005". The main design constraint comes with routing internal features. Typically, design constraints for internal features require a 0.032" minimum radius at the corners of each piece.

Discuss your design challenges with us and see if CNC drilling and routing is the most cost efficient means of production for your part.

It is through this continued effort to expand our capabilities that ORION® remains a leader in the custom fabrication of electronic components.

Season's Greetings From Everyone at Orion!



Troop 4

Since 1998, ORION has had the pleasure of assisting Boy Scout Troop #4 of Hopkinton, Massachusetts with its annual Christmas Tree fundraiser. For a nominal fee, the boy scouts pick up and dispose of old Christmas trees, which is also a beneficial service to the town of Hopkinton. ORION provides them with die cut tags shaped like Christmas trees that are imprinted with Troop 4 contact information.

Four members of Troop 4 proudly pose in front of some of the many trees they helped collect for their fundraiser last year.

Greg Kelley, Scoutmaster of Troop 4: "The Christmas Tree Pick-up was very successful last year and we hope to do as well this year. Your company's contribution plays a big part in that and it is greatly appreciated."

Ryan McCrillis is a manufacturing engineer at ORION who works extensively with customers to solve design and materials issues. To submit your questions to *Ask Ryan*, email us: info@orionindustries.com

Dear Ryan – My compliance engineer told me that I must design all parts to be "RoHS compliant". What does this mean? Can you supply us with RoHS compliant products?

RoHS is a directive first adopted by the European Union in 1996. China has adopted a version as well. It restricts the use of certain hazardous substances in electrical and electronic equipment. Commonly it is known as the **R**estriction of **H**azardous **S**ubstances Directive, which specifically regulates these six hazardous materials:

1. Lead (Pb)
2. Mercury (Hg)
3. Cadmium (Cd)
4. Hexavalent chromium (Cr6+)
5. Polybrominated biphenyls (PBB)
6. Polybrominated diphenyl ether (PBDE)

RoHS restricted substances have been used in a broad array of consumer electronics products including lead solder, nickel-cadmium batteries, mercury switches and fluorescent lamps.

All of the insulation, gasket and thermal transfer materials that ORION converts into products for our customers are RoHS compliant. Additionally, they are all REACH compliant. REACH, which stands for the **R**egistration, **E**valuation, **A**uthorization and Restriction of **Ch**emical substances, is another European Union regulation regarding the safe use of chemicals, and has been in force since June 1, 2007.

Most of the raw material manufacturers that we recommend have REACH and RoHS statements, as well as certificates available on their websites. We have found this to be the most reliable source for product specific compliance documentation. ORION is committed to providing product compliant with all applicable state, local and international laws and standards, especially those regulating environmental concerns.

ORION uses quality materials to produce high quality parts.

GE · The Bergquist Company · ROGERS · DuPont The miracles of science · ITW Formex · 3M · mactac · Laird