

**IF YOU NEED CARBIDE PARTS OR COMPONENTS. . .
FOR TOOLING, YOUR MANUFACTURED PRODUCTS, OR QUALITY CONTROL...**

We produce them. To your prints and specifications.

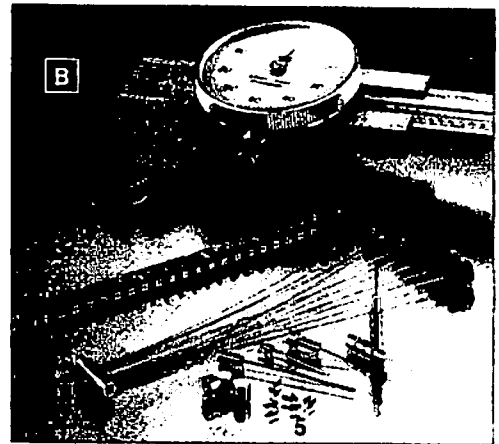
A 1. Carbide tooling to compact ferrite memory cores from powder for the first generation of digital computers - tubular punches, mating dies, and core rods. The punches range from .007" to .036" ID, wall thicknesses to .0015" and included brazed, cemented, press-fit and solid carbide types. OD and ID tolerances were held within 25 millionths inch. The core rods were constructed of carbide brazed into steel bodies - with pin diameters as small as .005" held to tolerances of .000010". Compacted memory cores are shown in the foreground.

2. Carbide tooling for the 2nd generation of com-



puter memory cores produced from ferrite tape, presently in production.

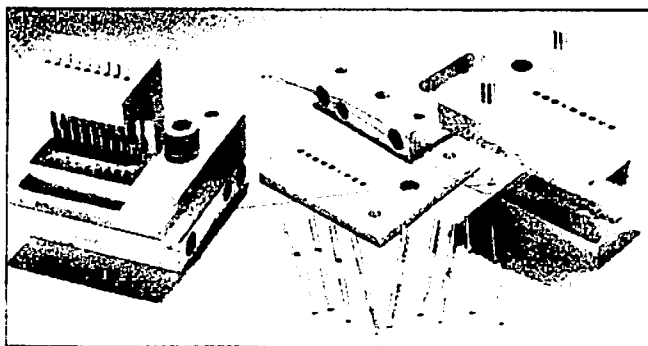
3. Tooling for the 3rd generation, involving punches and dies to .004" in diameter, to produce memories in multi-layer ceramic chips. Presently in production.



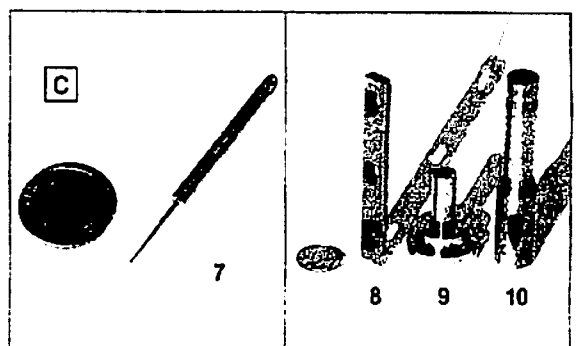
B 4. Special carbide print wires. .011" diameter, and guide for high speed matrix printer. Each dot in the matrix is printed by a carbide wire; hardness is required to prevent wear on the printing end and to accommodate the sliding action of guides along its length.

5. Carbide inserts for print wires.

6. Special rail wear strip.



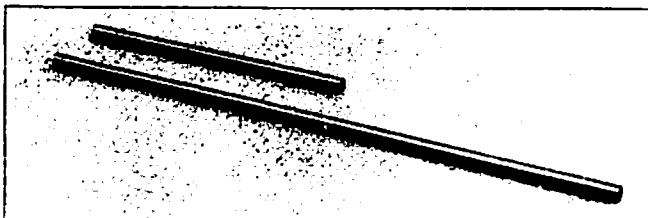
Tungsten carbide, 8-level tape punch and die assemblies in component and assembled form. Tolerances on both dies and punches are held within .000050" and the working-surface finish is less than 2 microinches.



C 7. Carbide capillary punch used with compacting die to form ceramic tooling which feeds and bonds .001" diameter wire to IC chips.

8. A carbide guide way for electronic gaging equipment.

9, 10. Compacting tools for Uranium pellets for nuclear power fuel rods.



Carbide support and guide ways for high-speed computer disk readers. Quality requirements for straightness and bow were .0005" in 8"; for surface finish, 2 microinches.

We produce carbide products for almost every manufacturing sector of the electronics industry. Statistical Process Control (SPC) is fully implemented for all processes for our own internal control and to meet our customer's requirements.

Great Lakes-Eglinton specializes in the manufacture of parts made from tungsten carbide. We have the facilities, technologically advanced equipment, carbide

stock, and experienced people which are necessary to respond to your requirements with the best product, quickly and efficiently.

CARBIDE PRODUCTS

Tooling

- Punches and dies - micro-sized for multi-layer ceramic chips, other difficult applications. Conventional sizes for other work.
- Circuit board drill bushings. cut-off bushings for wire, other applications.
- Special tooling - for forming, sealing, etc.
- Compacting tooling - micro-sized for computer memory cores, larger for Uranium pellets, etc.
- Multiple tool die plates, die holders.
- Carbide rod and tubing - for EDM electrodes, etc.

Components for Manufactured Products

- Rotary wear parts - bearing surfaces, bushings, shafts, etc.
- Linear motion (push or pull) activating elements - for print wires and guides for high speed matrix printers, etc.
- Linear motion round ways - for high speed computer disk readers, etc.
- Special flat ways or guides
- Diamond-inserted support and guidance pads
- Precision buttons, needles
- Carbide rod and tubing

Quality Control

- Plug and ring gages - standard or extra length.
- Progressive plug and ring gages - 2,3,4, or more steps.
- Ring and plug masters, master disks.
- Thread wires, taper, concentricity, slot, cross and other special gages.
- Gage certification.

Conventional and micro-precision carbide details as listed above have been and are being produced to the most exacting specifications for manufacturers throughout the United States, Europe, and the Far East.

Size or Precision Requirements - No Problem

We regularly produce parts with ID's and OD's from .005" to 6" with tolerances on size, roundness, straightness, concentricity to .000010," and finishes to 1 microinch.

Product Complexity - No Problem

Our manufacturing facility includes drilling, milling, turning; centerless, OD, ID, and surface grinding; honing and lapping; brazing; and electrical discharge machining (EDM). We have produced parts which required brazed, cemented, press-fit and solid carbide configurations. Precision parts involving carbide brazed to steel is a common problem which is accommodated by Great Lakes' production facility.

Quantity Requirements - No Problem

We are automated to handle both high and low volume work for maximum efficiency. Automatic feeding mechan-

isms for high volume, manual loading for prototype and short lot quantities. We regularly produce in lot sizes of 1 to 50 and up-to millions of parts. Standard in-house automation modules improve turn-around and eliminate the need to assign amortization costs to the product.

Delivery Turn-Around

We stock raw carbide in standard sizes to cover our production range. This allows us to respond quickly to meet the emergency needs of our customers. Where customers can establish annual requirements, we develop cooperative schedules which allow us to plan our workload and to produce the parts in the most efficient quantities. This assures these customers of deliveries which fit their requirements at prices which are the most economical.

Quality Control

In-process inspection procedures on the production floor assure that each operation is performed to specified tolerances while the systematic calibration of "working masters" in our quality control laboratory guarantees their integrity. SPC procedures are established by operation and tolerance classification and are controlled by the supervisor of each production department. Inspection results are charted in accordance with established procedures or customer requirements.

Great Lakes' Quality Control Laboratory, equipped with modern precision dimensional measuring instrumentation, is located in a controlled environment. All operating personnel are skilled metrologists, and all inspection equipment and master blocks have precision traceable to the National Bureau of Standards. A strict certification schedule for all masters is maintained. Two sets of certified masters, with staggered certification periods, assure continuity.

Experience

Great Lakes-Eglinton combines over 50 years experience and skill in grinding and lapping tungsten carbide, ceramic and other hard metals with one of the most modern, completely equipped facilities in the nation. This exceptional combination enables Great Lakes-Eglinton to serve almost every segment of the metalworking industry with distinction and pride.

Our highly skilled staff has an average length of service of 15 years and is comprised of people from neighboring small communities. The level of skills is comparable to that available in large metropolitan areas, but the stability and small-town pride in craftsmanship make a difference which can be seen in the products and service.

Great Lakes-Eglinton - a unique facility with a capability for precision work in carbide and other hard materials which is unusual.

If it's made of carbide, ceramic, steel, or other hard material, we make it - in the production volume and quality that you need.

