

“There are only two basic ways to raise the productivity of an NC turret punch. One through faster hit rate; the other, through faster tooling changes.

Our hit rate is already 180 holes per minute on one-inch centers.

Our Cartridge Tooling is the first major development in turret punches in the last two decades—it’s part of our new Q.C.T.-20.”

**Di-Auto<sup>®</sup>**

Precision metal fabricating through craftsmanship.



# QCT-20

**A new NC turret punch with at least three times the productivity of previous models.**

Tonnage has been raised to 22 tons. Hit rate has been increased to 180 hits per minute, on one-inch centers. And the time for a complete 20-station tooling changeover has been cut *ten times!*

The tooling changeover time reduction has been accomplished by Di-Acro's Cartridge Tooling.

Cartridge Tooling permits the operator to change five tools at a time by simply inserting pre-loaded cartridges. The Q.C.T.-20 employs a turret divided into four pie-shaped sections. Each section—cartridge—holds five tools. Patents have been applied for.

In use, the operator loads tools into the sections while the machine is doing the previous job. As soon as it is finished, the operator stops the machine, quickly loads the prepared cartridges into the turret, then resumes operation.

Other productivity gains from Cartridge Tooling are:

Tooling is easy to inspect, visually, simply by pulling out a cartridge; tools are easily removed for sharpening; tools trays can be job-identified, even have their associated tapes with them, to further speed production; operator safety is enhanced—he does all tooling changes off-line.



**Noise, Shock, Vibration Damper.** Joining the dual control units and the main machine frame is a lead-shielded curtain. This effects noise reduction, avoids shock and vibration transfer from main machine to sensitive controls. For easy accessibility, curtain may be quickly removed by detaching two snap fasteners and separating Velcro strips.

**Proximity Switch.** Designed for top of center location. Capable of handling higher tonnage and speeds requirements.

**Shot Pin and Segment Index Roller.** Both are front locations and laterally adjustable. Service door opens for access to the shot pins. A service table segment is provided for easy removal to service lower indexing mechanism.

**Work Holders.** Increased in thickness to provide greater holding power. Three workholders furnished as standard equipment.

SPECIFICATIONS—Q.C.T.-20			
Table Travel	X 41.37 — 36.500 Y	Traverse Speed	1500 IPM in X or Y Axis 2100 IPM Simultaneous Motion of X & Y Axes.
Stations	20	Punch Size Capacity	3½ hole in 12 ga. M.S. 1¼ hole in ¼ M.S.
Tooling Range	12—"B" Stations, 0" - 1" 4—"C" Stations, 1¼" - 1½" 1—"D" Station, 1¾" - 2" 1—"E" Station, 2¼" - 2½" 1—"F" Station, 2¾" - 3¼" 1—"G" Station, 3¾" - 3½"	Clearance (Stripper to Die)	1¼
Tonnage	20 Tons (Metric) 22 Tons (U.S.)	Ram Stroke	2¾
Punch Drive Motor	5 HP	Max. Sheet Size (Without Repositioning)	40" X 36" X ¼"
Servo Drive Motors	2 HP	(With Repositioning)	80" X 36" X ¼"
Hits per Minute	240 on ¼" Moves, Either Axis 180 on 1" Moves, " " 120 on 5" Moves, " " 85 on 10" Moves, " "	Repeat Accuracy	± .005"
		Height (With N/C)	76"
		Width (With N/C)	114"
		Depth (With N/C)	168"
		Weight (Lbs)	10,000

**Controls Specifications.** G.E. 550 custom two axes controls are interfaced with Di-Acro electrical and electronic controls and include as standard:

- Two-axes positioning
- Absolute/incremental programming
- Switchable inch/metric programming
- EIA (RS-244) or ASCII (RS-358) data input
- Trailing zero suppression
- Multiple hole pattern
- Programmable Feedrate
- Operating modes—auto/single/MDI/high jog/low jog/test
- Keyboard manual data input
- Universal readout
- Zeroing—at reference position, present (set) position, or at grid position
- 150 CPS photoelectric tape reader with 75 ft. capacity tumblebox: including manual forward/rewind switch and automatic rewind (M30)
- Present position (G92)
- Mirror image
- International symbols with English titles

**Improved Frame Construction Reduces Deflection.** Less than .001 inch per depth of throat of frame deflection occurs at maximum of 22 U.S. tons capacity. Movement at tip of punch when entering die under this deflection is less than .00015 inches.

**Failsafes.** Upper shot pin, lower turret index and die segment pulldowns are spring-loaded, thus considered failsafe in case of power or air failure. Air pressure is used for release of these devices only.

**Sturdy Table Frame Design.** New lightweight carriage is coupled closely to the lead screws capable of obtaining high speeds. G.E. Hi-Ak servo motors are blower cooled.

**Spring-Loaded Ball Clip Retainer.** Located under the table tops, these retainer clips afford ease of assembly and disassembly for servicing of ball retainers in the field. Patents are pending for these retainer clips.

**Disappearing Sheet Stop.** Interlocks with table feed.

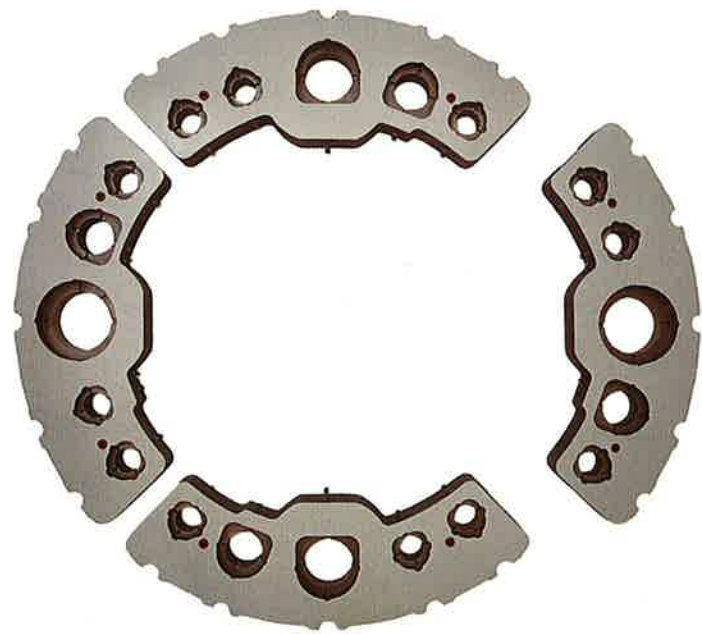
**Feed Controls.** Feed start and emergency stop control buttons are located at front of machine.

**Functional Shrouding.** Serves as access to turrets, provides safeguards. Pneumatic and lubricating systems controls are on outside of frame, accessible behind a cabinet door. Caster-mounted front shroud rolls aside when two latches are opened to permit access to total table assembly. Blower unit is located under front shroud. Service cabinet has working surface for storage of light parts, blueprints.



# CARTRIDGE TOOLING.

## All 20 tool sets can be changed in less than 5 minutes!



Four Cartridge Tooling sections, each holding five stations, are color-coded. When the turret stops in the tool change position, and the tool change door is opened, the table segment directly in front of the lower turret drops for a change position. The Cartridge Tooling section is then free to be removed from the lower turret.

By placing an empty storage rack nearby, the operator merely has to remove the five punch holders and the lower turret segment and insert a fresh, pre-programmed storage rack load into the empty spaces.

Closing the service door automatically locks everything into place, perfectly aligned.

Then the turret can be advanced to the next quadrant and the operation repeated.

### Punch holders.

They're designed to grip K-Prene® urethane or other elastomeric strippers instead of the old method of having the stripper hug the punch body diameter. The same stripper can be used for many diameters of punches, with or without caps, as well as the Porter style stripper. Patents are pending for these punch holders.

### Precision accuracy location.

Die holder segments feature precision accuracy location of all five dies coupled with a round and diamond shaped set of pins which locate and lock the die segment in position positively. Dies are pre-assembled into this segment and lock with square head set screws. Key slots are provided for shaped configurations. Easy die removal is assured by machined clearance on the set screw side of the pocket.

On the bottom side of the segment, a set of T-slots is machined to allow for the rough location of the segment above the locator pin bushings. T-stops are machined so that no matter how the segment is rotated around each

of the two T posts (located in the lower turret) it will slide in easily. Each die pocket has its own indexing notch machined to receive a nylon roller indexing mechanism. Segments have four different center diameter die configurations. Patents are pending for Di-Acro quick change Cartridge Tooling segments.

Cartridge Tooling not only permits quick-change tooling. It eliminates the need for die holder alignment. Die holders are automatically pinned into perfect position every time.

Upper and lower turrets are machined to extremely accurate dimensions. The upper turret features locating shot pin holes accurately positioned directly in front of the punch holder station. Lower segment notches in front of each die station accomplish the same alignment accuracy. And, through use of a nylon roller, greater pull-in ability is made possible.

Thus, misalignment errors are decreased—because the distance between shot pins and point of operation is decreased almost ten times.



As tool change door opens, table segment in front of lower turret drops to change position. Die cartridge is then removed from lower turret.



Operator then removes five punch holders and places them in empty storage rack.



Operator takes fresh, pre-programmed die cartridge from previously-loaded storage rack and inserts it into lower turret.



Punch holders, also previously loaded, are removed from storage rack and inserted into upper turret.



When tool change door is closed, everything locks into place, perfectly aligned. Machine is then ready for operation. For additional tool changes, sequence is repeated.

**TOTAL ELAPSED TIME  
PER CARTRIDGE CHANGE:  
1¼ MINUTES**

**Di-Acro<sup>®</sup>**

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SHEARS  
PUNCHES  
ROLL BENDERS  
PRESS BRAKES