EX-CELL-O precision boring machines

STYLES 308 and 312

Cam operated machines for precision contouring, boring, turning, facing and grooving operations.
Inside Story on Ex-Cell-O Contouring Machines

DIRECT CAM ACTION • NO LEVERS

Ex-Cell-O's line of precision boring machines has been broadened by the introduction of cam operated machines especially suited for generating accurate contours. They will perform such work as precision contouring, boring, turning, facing and grooving. Any of these operations may be done alone or in combination with others. These models are flexible, standard machines that comply with the most modern requirements of productivity, economy, ease of operation and maintenance. And, although they are precision machines, they are capable of semi-finishing operations too.

The Styles 308 and 312 are designed essentially to accommodate parts that can be rotated on one or more spindles while the non-rotating tools are supported on the cross slide. These machines are ideal for production contouring work in which forms must be reproduced over and over again within close tolerances. Such forms can be inspected by checking only one dimension, because accuracy and relationship of all other dimensions are determined by cams.

The machine table, which carries the spindles and their drive equipment, is operated in rapid traverse by a pneumatic cylinder cushioned by oil. The feed portion of the table stroke is actuated by a cam opposed by the pneumatic cylinder. All cross slide movements also are produced by a cam opposed by an air cylinder.

A separate set of cams is required for each form to be machined. The two cams, one for the table and one for the cross slide, are mounted on a single shaft for maximum accuracy. The cams engage the followers at the center of the slides, and action is direct—there are no levers. Cams are hardened and ground, and are engaged by oil wipers to maintain a film of lubricant. The cam shaft is driven through a worm and V-belts from a motor mounted on the rear of the machine base. The whole worm and cam assembly is hinged so that it can be swung out of its compartment for changing cams. Also, the motor is out in the open where heat is dissipated, and maintenance is simple. Cycle time can be changed by changing belts and pulleys. The pulleys also are outside the base and readily accessible.

Hardened and ground ways support both the machine table and the cross slide. These ways are widely spaced for maximum stability, and hold-down gibbs further add to the stability of both slides. A power lubricating system automatically delivers oil to the ways during each machine cycle.

The spindle assemblies, drive motors, chucking equipment and brakes are arranged on the table where they are readily accessible. The selection of this equipment is governed by the size, power and production requirements of the individual work.

Although the Style 308 and 312 machines are generally recommended for a combination of operations, or for contouring, their use is not limited to such work. With the cross slide locked the machine can be used for straight boring, turning and plunge-facing and chamfering operations. Straight feed-facing operations can be performed by advancing the table to a positive stop, then feeding the cross slide.

A generously proportioned chip chute is located between the table and the cross slide. It is inclined toward the rear, and has a spout that directs coolant into the reservoir. coolant equipment, which includes a motor-driven pump, a tank, hoses, piping and electrical controls, is available at extra cost.

This plan view diagram shows Ex-Cell-O's direct cam action. The upper cam acts directly on the cross slide follower; the lower cam acts directly on the table follower—there are no levers.

Close-up view of a 2-tool contouring operation on an Ex-Cell-O Style 312 Machine. The part is an aircraft washer.
The base is a well-ribbed nickel iron casting. Ways are hardened and ground.

This graduated adjustment at the end of the table bracket positions the piston rod, providing a simple means of dimensional control.

The pump (above) lubricates the ways during each machine cycle. Spindles are permanently lubricated, cams are lubricated by wipers.

The wide sloping chip chute is cast integral with the base; has no obstructions or openings where chips or coolant can enter base.

Cams can be changed in minutes! The hinged cam assembly swings out of the base for easy accessibility.

This heavy cam shaft is driven by a worm, has 3 bearings (solid areas) for continued accuracy.

**FEATURES**

5 FEATURES FOR ACCURACY
- Heavy rugged machine
- Ex-Cell-O Precision Boring Spindles
- Hardened and ground ways
- Cams act directly on slides — no levers
- Cam followers guided for rigidity

5 FEATURES FOR FLEXIBILITY
- Cycle time variable within wide range
- Parts or tools may be mounted on either slide
- Cross slide may be locked for straight boring or turning
- Cross slide may be used for feed facing plane surfaces
- Graduated adjustment for size control

5 FEATURES FOR LONG LIFE
- Hardened ways lubricated automatically

5 FEATURES FOR FLEXIBILITY
- Cycle time variable within wide range
- Parts or tools may be mounted on either slide
- Cross slide may be locked for straight boring or turning
- Cross slide may be used for feed facing plane surfaces
- Graduated adjustment for size control

5 FEATURES FOR ACCESSIBILITY AND MAINTENANCE
- Motors outside machine base
- Hinged cam assembly swings out of base
- Openings permit access to cam followers
- Chips wash out large, sloping chute
- Conforms to J.I.C. standards
## Specifications

**EX-CELL-O**  
**PRECISION BORING MACHINE**  
**STYLES 308 and 312**

<table>
<thead>
<tr>
<th></th>
<th>Style 308</th>
<th>Style 312</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum diameter hole bored</td>
<td>1/4”</td>
<td>1/4”</td>
</tr>
<tr>
<td>Maximum table travel</td>
<td>8”</td>
<td>12”</td>
</tr>
<tr>
<td>Maximum table feed stroke</td>
<td>4”</td>
<td>4”</td>
</tr>
<tr>
<td>Maximum cross slide feed stroke</td>
<td>4”</td>
<td>4”</td>
</tr>
<tr>
<td>Height—center of spindle to cross slide</td>
<td>4 1/8”</td>
<td>4 1/8”</td>
</tr>
<tr>
<td>Height—center of spindle to floor</td>
<td>42”</td>
<td>42”</td>
</tr>
<tr>
<td>Table dimensions</td>
<td>18” x 35 1/4”</td>
<td>24” x 44”</td>
</tr>
<tr>
<td>Cross slide dimensions</td>
<td>10 1/2” x 25 1/2”</td>
<td>12 1/2” x 31”</td>
</tr>
<tr>
<td>Cam drive motor, standard</td>
<td>1 hp</td>
<td>2 hp</td>
</tr>
<tr>
<td>Base dimensions at floor</td>
<td>28” x 58”</td>
<td>34” x 71”</td>
</tr>
<tr>
<td>Floor space required without coolant tank</td>
<td>44” x 90”</td>
<td>54” x 100”</td>
</tr>
<tr>
<td>Net weight without tooling, approx.</td>
<td>6,500 lb</td>
<td>8,000 lb</td>
</tr>
<tr>
<td>Gross weight with tooling, boxed for domestic shipment, approx.</td>
<td>8,500 lb</td>
<td>10,500 lb</td>
</tr>
<tr>
<td>Gross weight with tooling, boxed for export approx.</td>
<td>9,000 lb</td>
<td>11,100 lb</td>
</tr>
<tr>
<td>Size of export box, approx.</td>
<td>200 cu ft</td>
<td>260 cu ft</td>
</tr>
</tbody>
</table>

**NOTE:** The machine must be connected to air line in customer's plant.

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**EX-CELL-O CORPORATION**  
**1200 OAKMAN BLVD. • DETROIT 31, MICHIGAN**

**MANUFACTURERS OF**  
PRECISION MACHINE TOOLS • GRINDING SPINDLES  
• CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS  
• AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT