Giddings & Lewis
FT / FTR Series, Floor-Type Horizontal Boring Mills

Massive Part Machining Capabilities

- Capacity to handle industries largest parts with virtually unlimited X axis travel
- Configure the machine to the application with Giddings & Lewis modular design
- Rigid design produces a solid machining platform for heavy accurate cuts
- Attachments provide machining versatility
Meeting the Demands of Today’s Manufacturers

Machining Capabilities for all Industries
Giddings & Lewis horizontal boring mills have the attributes to optimize production of even the most demanding applications:

**Capacity** to handle large or heavy parts such as construction frames

**Accuracy** to meet the exacting tolerances of the wind and nuclear industries

**Power** for heavy cuts and hard materials common to oilfield parts

**Versatility** required for parts with complex geometries like those in aerospace

**Speed** needed by all industries to be competitive in today’s fast-paced manufacturing environment

Two versions of floor-type boring mills are available, the FT and FTR Series. The FT is equipped with a standard boring mill live spindle. The FTR adds a ram headstock for extended reach and rigidity.
Decades of Large-Part Application Experience
Match the Machine to the Application with Giddings & Lewis Modular Design

MODULAR DESIGN
The modular design of Giddings & Lewis boring mills offers a wide range of choices allowing manufacturers to maximize productivity by tailoring the machine to the job. Choose the travels, tool magazines, spindles, headstocks, workholding, control, coolant system and attachments that will get the job done.

The modular design approach, used for all Giddings & Lewis machine tools, allows us to not only customize machines, but by standardizing modules we offer the best reliability and fastest lead times in the industry for large machine tools.

Y-AXIS / HEADSTOCK TRAVEL
Tall or short, there is a column that is right for any size part.

X-AXIS / COLUMN TRAVEL
Starting at four meters and available in two meter increments, X-Axis travel is virtually unlimited and allows for use of a variety of workholding options.

RAM OR SPINDLE HEADSTOCK
The FT 3500 is equipped with a live spindle. The FTR 3500 and 5000 have a collinear ram in addition to the boring mill spindle for added reach and rigidity.

TWO OR FOUR SPEED WITH VARYING DIAMETERS
Two or four speed, spindle diameters of 130, 155 or 180 mm, there are five headstocks available on Giddings & Lewis floor-type boring mills.
TOOL MAGAZINE
Tool magazines with 60, 90 or 120 tools are available. Not only are the tool magazines capable of holding a large number of tools, attachments such as programmable boring bars and large heavy tools weighing up to 50 kg (110 lb) may be stored in and exchanged from the magazine. A tool magazine platform simplifies tool loading and unloading. Multiple magazines and special configurations are available to suit the application.

ATTACHMENT CHANGING AND STORAGE
Store and change additional heads from the convenient attachment storage rack. Contouring heads, programmable boring bars, right angle heads, spindle supports and more may be changed out quickly to speed production.
RIGID, HIGH-SPEED WAYS HANDLE HEAVY LOADS

A sturdy machining platform is the foundation of an accurate machine. Whether it is the “X” ribbed cast gray iron version of the FT 3500 or the bulkhead reinforced fabricated construction of the FTR 3500 and FTR 5000, Giddings & Lewis boring mill columns are designed to resist torsional deflections and minimize vibration. The boring mill’s construction characteristics maximize dynamic stiffness for heavy metal removal rates:

- Large, preloaded roller guideways
- Wide way spreads on column and runway
- Rigid runway castings
- Preloaded rack and pinion X-axis drive

The high accuracy of Giddings & Lewis floor-type boring mills starts with the machines’ rigid design and solid foundation.
HIGH PERFORMANCE DRIVE / WAY SYSTEM
The high performance drive/way system produces faster positioning speeds, enhanced contouring performance, increased thrust and dependable accuracy. All Giddings & Lewis horizontal boring mills use a proven way system with hardened and ground preloaded roller guideways. The roller guideways reduce friction allowing traverse rates up to 30 m/min (1181 ipm).

- Design of the roller packs optimizes way surface contact and rigidity
- Hydraulically preloaded ballscrews provide superior axis stiffness via constant preload which is unaffected by heat
- Large, zero-backlash ballscrews supply smooth axis motion and high trust performance. The stiffness of the larger screws enhances load carrying capacity.
- The FTR series is powered with dual ballscrews for added rigidity and machine accuracy
- Special geared AC digital drives maintain high torque and impressive stiffness even at high traverse and feed rates
- The spur gear design is quieter and requires less maintenance than belt drives
- Digital servo drives are sized to handle the headstock positioning and weight influences

Unsurpassed positioning accuracy is provided by the standard linear scale feedback system on the X-, Y-, and W-axes
- Positioning accuracy 0.015 mm (0.0006 in)
- Repeatability 0.008 mm (0.0003 in)
SPINDLE OR RAM HEADSTOCK
The FT 3500 is equipped with a live spindle. The FTR 3500 and 5000 have a collinear ram in addition to the live spindle.

- Fabricated from heavy-duty castings, the ram adds rigidity for machining operations requiring extended reach.
- The live spindle, a programmable axis, adds reach for boring and other machining operations. The Z-axis extension permits the use of shorter tools which can reduce tooling costs and improve cutting performance.
- The infinitely variable spindle drive provides optimal cutting speed, tool life and part finish.
- The ram, optionally equipped with a variety of attachments including universal heads and milling and drilling heads offers flexibility with automatic head changing from an attachment rack.
- The addition of a contouring head or programmable boring bar adds turning and contour boring capabilities reducing setups and cycle times.
- Standard high-pressure coolant through-the-spindle assists with cutting and chip evacuation.

Capable of high precision even on the biggest parts, Giddings & Lewis floor-type boring mills incorporate accuracy-enhancing features such as standard linear scales and spindle growth compensation.

<table>
<thead>
<tr>
<th></th>
<th>FT 3500</th>
<th>FTR 3500</th>
<th>FTR 5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter</td>
<td>mm, inch</td>
<td>130/5.1</td>
<td>130/5.1</td>
</tr>
<tr>
<td>Speed</td>
<td>rpm</td>
<td>4000/155</td>
<td>3500/3500</td>
</tr>
<tr>
<td>Power</td>
<td>kW (hp)</td>
<td>30/45 (40/60)</td>
<td>37/56 (50/75)</td>
</tr>
<tr>
<td>Torque</td>
<td>Nm (ft lb)</td>
<td>1108/817</td>
<td>4120/4120</td>
</tr>
<tr>
<td>Z travel</td>
<td>mm (inch)</td>
<td>800/31.5</td>
<td>1000/39.4</td>
</tr>
<tr>
<td>W travel</td>
<td>mm (inch)</td>
<td>800/31.5</td>
<td>1000/39.4</td>
</tr>
<tr>
<td>Ram Size</td>
<td>mm (inch)</td>
<td>475 x 500</td>
<td>500 x 630</td>
</tr>
</tbody>
</table>

Powerful, Precision Headstocks
EXCLUSIVE SPINDLE GROWTH COMPENSATION
Developed by Giddings & Lewis, the exclusive Z- and W-Axis thermal compensation software dynamically offsets spindle and ram growth, maintaining tight accuracies. Algorithms control the spindle gauge line variation to less than 0.076 mm (0.003 in) deviation over an average seven-hour cycle.

DYNAMIC RAM DISPLACEMENT COMPENSATION
Angular ram displacement resulting from variations in ram extension and attachment weights is mitigated using a hydraulically-actuated tension rod system. Forces applied to the tension rods are adjustable to counteract the static loads of attachments and dynamic to correct for the natural effects of ram extension. The dual ballscrews of the FTR series further add to the headstock rigidity and accuracy.
ATTACHMENT OPTIONS
The wide variety of heads and attachments available for use with all Giddings & Lewis boring mills add to the machine’s capabilities and part production flexibility.

- Contouring
- Universal
- Right angle
- Orthogonal
- Programmable boring or feedout bars
Variety of Tables, Plates and Slides

**TABLES / FLOOR PLATES / AUXILIARY SLIDES**
A variety of part mounting options are available for use with Giddings & Lewis horizontal boring mills.
- Single or multiple rotary tables for reduced setups and machining on multiple sides.
- Floor plates for extremely large or cumbersome parts.
- Auxiliary slides with rotary tables facilitate machining on multiple sides of long, unwieldy parts.

**Additional Options**
- Chip conveyors
- Tool and part probes
- Industrial workzone cameras
- Enclosures

<table>
<thead>
<tr>
<th>Auxiliary Slides with Integral Rotary Tables</th>
<th>15</th>
<th>25</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load capacity</td>
<td>tons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum table top dimensions</td>
<td>mm/in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum table top dimensions</td>
<td>mm/in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W-axis</td>
<td>mm/in</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tables with load capacity up to 130 tons available
### Operator Convenience Features

**OPERATOR PLATFORM**
The operator platform provides protection and convenient access to the machining area.
- Mounted on a slide, the platform travels with the column in the X-axis direction.
- A sliding window and door provides access to the work area.
- The control may be repositioned within the cabinet for optimal viewing of the control and cutting operations.
- A roof panel with drip edged provides protection from coolant and chips.
- Platform options such as lifts, catwalks, extending platforms and an operator convenience package are available.

**MAINTENANCE-FRIENDLY SERVICES AREA**
The services area was designed using Visual Uptime Management principles. This design methodology improves and simplifies maintenance while also maximizing machine and control availability.
- All services are centralized.
- The panel is at floor level.
- Labeling is clear and specific. Hoses are marked with the type of fluid or gas and the direction of flow. Labels and noteplates are color coded. Solenoids are lighted. Gauges are marked with normal operation ranges.
Control Choices and Software Options

**CHOICE OF HIGH-PERFORMANCE CONTROL**

Fives Giddings & Lewis offers Siemens and Fanuc controls on all horizontal boring mills. All control choices include: fast ethernet connection, rigid tapping, high-level programming capabilities, interior lighting for control cabinets and remote hand-held pendant with MPG (manual pulse generator).

**SPINDLE LOAD MONITORING SOFTWARE**

Giddings & Lewis spindle load monitoring software provides a simple operator interface and application. The operator sets cutting operation acceptance values and activates or deactivates load monitoring using M codes. Available on Siemens or Fanuc, the control retracts the tool or uses feed hold when the trip point is exceeded protecting the machine, tooling and part from damage.

**ADAPTIVE CONTROL**

This easy-to-use feature adjusts the feedrate between programmed minimum and maximum values to compensate for changes in cutting conditions including depth of cut and hardness while maintaining the desired cutting horsepower. Giddings & Lewis adaptive control provides machine protection and enhances productivity by allowing aggressive feed rates.

**SPINDLE SPEED OSCILLATION CONTROL**

Spindle Speed Oscillation Control provides a means of varying the spindle speed override from the part program. Varying the spindle speed can reduce or eliminate tool chatter.

**W/Z TRACKING**

The W/Z Tracking feature, available on machines with Siemens 840D Solution Line controls, offers ease of programming and operator convenience.
- Maintains constant zero between collinear axes
- Accounts for changes in machine geometry when one of the axes in a collinear set is repositioned in the part program
- After the W/Z relationship is established through part referencing, the control tracks all W and Z axis moves, displays their relationship and moves one or both axes to maintain the correct gap

**DIAGNOSTIC COMMUNICATION SYSTEM (REMOTE DIAGNOSTICS)**

Benefit from quicker response and reduced machine maintenance costs by using remote diagnostics, standard on all new Giddings & Lewis machine tools. This feature allows the Machine Tool Services & Solutions team the ability to see the machine tool control in order to diagnose issues. Connection to the control is via a laptop. The enabling software, TeamViewer®, establishes an encrypted, password-protected connection to the CNC over a VPN (virtual private network).
## Technical Data

### Capacities

<table>
<thead>
<tr>
<th></th>
<th>FT 3500</th>
<th>FTR 3500</th>
<th>FTR 5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-Axis column travel</td>
<td>m</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>ft</td>
<td>13.1</td>
<td>13.1</td>
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<tr>
<td>X-Axis travel options (2 m increments)</td>
<td>m</td>
<td>6 to 24</td>
<td>6 to 24</td>
</tr>
<tr>
<td></td>
<td>ft</td>
<td>19.7 to 78.7</td>
<td>19.7 to 78.7</td>
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<td>Y-Axis vertical headstock travel</td>
<td>m</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ft</td>
<td>6.6</td>
<td>6.6</td>
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<tr>
<td>Y-Axis travel options</td>
<td>m</td>
<td>2.6 / 3.1 / 3.6</td>
<td>2.5 / 3 / 3.5 / 4</td>
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<tr>
<td></td>
<td>ft</td>
<td>8.5 / 10.2 / 11.8</td>
<td>8.2 / 9.8 / 11.5 / 13.1</td>
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<tr>
<td>Ram cross section</td>
<td>mm</td>
<td>475 x 550</td>
<td>500 x 630</td>
</tr>
<tr>
<td></td>
<td>inch</td>
<td>18.7 x 21.7</td>
<td>19.7 x 24.8</td>
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<tr>
<td>W-Axis ram travel</td>
<td>mm</td>
<td>1000</td>
<td>1500</td>
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<tr>
<td></td>
<td>inch</td>
<td>39.4</td>
<td>59</td>
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### Feeds/Traverse Rates

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<th>FTR 3500</th>
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<tr>
<td>Rapid traverse linear axes</td>
<td>m/min</td>
<td>up to 30</td>
<td>up to 30</td>
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<td></td>
<td>ipm</td>
<td>up to 1181</td>
<td>up to 1181</td>
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<tr>
<td>Feed rate, linear axes</td>
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<td>1 to traverse</td>
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<tr>
<td>(standard travel)</td>
<td>ipm</td>
<td>.039 to traverse</td>
<td>.039 to traverse</td>
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<tr>
<td>Thrust</td>
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<tr>
<td></td>
<td>lb</td>
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### Accuracies (ISO 230-2-97)

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<tbody>
<tr>
<td>X/Y Positioning accuracy A</td>
<td>mm</td>
<td>0.015</td>
<td></td>
</tr>
<tr>
<td></td>
<td>inch</td>
<td>0.0006</td>
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<tr>
<td>X/Y Repeatability R</td>
<td>mm</td>
<td>0.008</td>
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</tr>
<tr>
<td></td>
<td>inch</td>
<td>0.00031</td>
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<tr>
<td>X/Y Reversal B</td>
<td>mm</td>
<td>0.005</td>
<td></td>
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<tr>
<td></td>
<td>inch</td>
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<tr>
<td>W/Z Positioning accuracy A</td>
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<td></td>
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<tr>
<td>W/Z Repeatability R</td>
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<td></td>
<td>inch</td>
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<tr>
<td>W/Z Reversal B</td>
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<tr>
<td></td>
<td>inch</td>
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### Tool Magazine

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<th>FT 3500</th>
<th>FTR 3500</th>
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<tbody>
<tr>
<td>Number of tools</td>
<td>60, 90 or 120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tool diameter</td>
<td>mm</td>
<td>125 / 280</td>
<td></td>
</tr>
<tr>
<td>(full / adjacent pocket empty)</td>
<td>inch</td>
<td>4.9 / 11</td>
<td></td>
</tr>
<tr>
<td>Tool length</td>
<td>mm</td>
<td>750</td>
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</tr>
<tr>
<td></td>
<td>inch</td>
<td>29.5</td>
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<tr>
<td>Tool weight</td>
<td>kg</td>
<td>50</td>
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<tr>
<td></td>
<td>lb</td>
<td>110</td>
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<tr>
<td>Tool taper</td>
<td>ANSI B5.50 No. 50, SK 50 (DIN 69872) or BT50</td>
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### Coolant system

<table>
<thead>
<tr>
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<th>FT 3500</th>
<th>FTR 3500</th>
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<tbody>
<tr>
<td>Capacity</td>
<td>liters</td>
<td>1000 (1800)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gallons</td>
<td>240 (485)</td>
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<tr>
<td>Coolant through-the-spindle</td>
<td>bar / psi</td>
<td>16 / 232 (70 / 1015)</td>
<td></td>
</tr>
<tr>
<td>Machine weight</td>
<td>kg</td>
<td>66,514</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lb</td>
<td>146,640</td>
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<tr>
<td></td>
<td>kg</td>
<td>116,765</td>
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<td></td>
<td>lb</td>
<td>257,420</td>
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<tr>
<td></td>
<td>kg</td>
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</tr>
<tr>
<td></td>
<td>lb</td>
<td>302,850</td>
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</table>

Technical data subject to change without notice.
GLOBAL PARTS SUPPORT
As the OEM, Fives Machine Tool Services & Solutions not only has the parts but the drawings and documents as well for all our legacy brands including Giddings & Lewis. Parts are made to the same exacting specifications as the original machines.

Machine Tool Services & Solutions has a world-class call center with 24/7 operation and highly qualified parts specialists.

Contact us at 1-800-934-0735 or use our Parts Online application at www.fivesgroup.com

PREVENTIVE MAINTENANCE
Reduce the cost of machine ownership with preventative maintenance and reliability assurance programs. Critical, consumable parts are replaced and maintenance data supplied. Our factory-trained technicians provide professional, turnkey service.

HEALTH CHECKS
Concerned about the status of a machine you own or are considering buying? Get a machine health check.

MACHINE CERTIFICATION
Requalify your machine tools to original factory specifications with a turnkey certification.

COMPLETE CARE
Turn your machine maintenance concerns over to Machine Tool Services & Solutions. Develop an individualized complete care package based on your needs:
- On-site service
- On-site parts management
- Training
- Asset management
- Unit repairs
- Machine certification
- Preventative maintenance

MACHINE RENEWAL
Return your machine to the original OEM specifications with a complete mechanical rebuild. Using genuine Giddings & Lewis parts and documentation, we have the expertise to do the job right.

CONTROL RETROFIT
Increase production while reducing installation time with a control retrofit. Choose a Fagor, Fanuc or Siemens control along with upgrade packages for drives and motors.
PART PROCESSING ASSISTANCE
New or existing parts will benefit from process review and optimization by Fives Giddings & Lewis runoff technicians.
— Quickly get new parts into production
— Optimize part programs
— Set up process monitoring options such as adaptive control
— Part fixturing assistance

MACHINIST / CAPACITY SUPPORT
Utilize skilled machinists or programmers to launch your new machine into production. Whether it’s one week or six months, Fives Giddings & Lewis can support you with skilled machinists or programmers during your peak production times.

ADVANCED OPERATOR TRAINING
Fives Giddings & Lewis applications specialists can help you improve efficiency by using control features and options more effectively
— Develop macros to handle repeat operations
— Implement tool management

LEARN PROBING TECHNIQUES
Underutilized by many manufacturers, tool and part probing are options that can significantly reduce cycle times.

Benefits:
— Automatically calculate fixture alignments, workpiece positions and rotary axis setup
— Reduce manual errors
— Improve part quality by performing in-process measurements
— Speed production and prevent compound problems by using tool probe capabilities to measure worn tools and detect broken tools

• Capacity to handle industries largest parts with virtually unlimited X axis travel
• Configure the machine to the application with Giddings & Lewis modular design
• Rigid design produces a solid machining platform for heavy accurate cuts
• Attachments provide machining versatility

Contact us:
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