THE COMPANY

- CZM has over 40 years of foundation equipment manufacturing experience with a wide range of models for multiple applications: drilled shafts, CFA, driven piles with hydraulic hammers, secant piles, micro piles, and anchoring, among others.
- CZM Foundation Equipment's USA manufacturing facility is located in Savannah, Georgia.
- CZM Foundation Equipment has designed their models with the after sales being priority. Quality and service are the main ingredients to a quality machine, this is one of the direct reasons CZM uses Caterpillar as a base, the Caterpillar bases are not only operator and maintenance friendly but by using Caterpillar it enables the customer access to the large and already nationally established Caterpillar Network.
- CZM is the world's largest manufacturer of CFA drilling rigs, featuring the revolutionary torque mechanism "Bottom Drive CFA", an internationally recognized CZM patent.
EK200HP
Mounted on CAT336 (Tier IV)
APPLICATION

The EK200 from CZM has been designed for high performance and versatility. It is a reliable drilling rig mounted on a CAT base, keeping the operation and maintenance extremely friendly and efficient.

The EK200 rotary head follows the most robust design in the market and has the largest inner passage of its drilling rigs’ class. These features allow the EK200 to deliver high drilling torque, the use of stronger Kelly Bars and the versatility of various applications such as Kelly Bar (long and short mast) and CFA. There are no changes to hydraulic hoses for converting to any application thanks to the unique patented torque mechanism “Bottom Drive CFA.”

In the EK200 short mast version, there is no down grade of torque due to the great rotary head inner passage which allows for more external elements to the Kelly Bar.

Hydraulic extendable crawlers, additional counterweight, and a mast manufactured in “Weldox” steel (light weight – High Yield Strength) give the EK200 excellent stability.

**BOTTOM DRIVE CFA**
## TECHNICAL SPECIFICATIONS

### KELLY BAR STANDARD MAST APPLICATION
- **Depth (Standard – 4 elements; Interlock Kelly bar)**: 130 ft (39 m)
- **Depth (Maximum – 4 elements; Interlock Kelly bar)**: 175 ft (53 m)
- **Depth (Optional – 3 elements; Interlock Kelly bar)**: 90 ft (27 m)
- **Diameter (Max. with the mast shoe)**: 70 in (1,800 mm)
- **Diameter (Max. w/o the mast shoe)**: 73 in (1,850 mm)

### KELLY BAR LOW CLEARANCE APPLICATION
- **Depth (Max. – 6 elements; Interlock Kelly bar)**: 95 ft (29 m)
- **Depth (Standard – 6 elements; Interlock Kelly bar)**: 78 ft (24 m)
- **Diameter (Max. with the mast shoe)**: 70 ft (1,800 mm)
- **Diameter (Max. w/o the mast shoe)**: 73 ft (2,200 mm)

### CFA APPLICATION
- **Drilling depth (Auger + Extension)**: (68 + 18) = 84 ft (20.6 + 5) = 25.6 m
- **Drilling Diameter (Max.)**: 24 in
- **Depth with Mast Extensions**:
  - **Diameter (Max. with the mast shoe)**: 63,540 lbf (28,000 kgf)
  - **Diameter (Max. w/o the mast shoe)**: 61,350 lbf (27,000 kgf)

### ENGINE - CAT C9.3 ACERT*
- **Exhaust Emission Standard**: EPA Tier 4 (Final)
- **Gross Power – SAE J1995**: 323 hp (241 kW)
- **Displacement**: 568 in³ (9.3 L)
- **Fuel tank**: 164 gal (620 L)

### ROTARY HEAD
- **Maximum torque (nominal)**: 193,400 lbf ft (26,700 kgf m)
- **Working Speed**: 10 - 26 rpm
- **Spin-off Speed**: 43 - 110 rpm

### CROWD SYSTEM
- **Pull down force**: 52,200 lbf (23,750 kgf)
- **Pull up force**: 62,800 lbf (28,500 kgf)
- **Pull down speed**: 37 ft/min (11 m/min)
- **Pull up speed**: 39 ft/min (12 m/min)
- **Cylinder stroke (Standard Mast)**: 16 ft (4.8 m)
- **Cylinder stroke (Short Mast)**: 8 ft (2.45 m)

### MAIN WINCH (PULL-UP)
- **Maximum pull-force 1st layer (nominal)**: 63,540 lbf (28,000 kgf)
- **Maximum pull-force 1st layer (effective)**: 50,800 lbf (23,100 kgf)
- **Line speed 1st layer**: 190 ft/min (58 m/min)
- **Cable diameter**: 1 in (26 mm)
- **Drum diameter 1st Layer**: 20.2 in (513 mm)

### AUXILIARY WINCH
- **Maximum pull-force 1st Layer (effective)**: 22,479 lbf (10,196 kgf)
- **Line speed - 1st layer**: 240 ft/min (73 m/min)
- **Cable diameter**: 3/4 in (19 mm)
- **Drum diameter 1st Layer**: 16.5 in (420 mm)

### MAIN HYDRAULIC SYSTEM*
- **Main circuit pressure (max.)**: 5,076 psi (350 bar)
- **Main circuit flow rate (max.)**: 131 gpm (498 lpm)
- **Pilot circuit pressure (max.)**: 595 psi (41 bar)
- **Pilot circuit flow rate (max.)**: 7 gpm (26 lpm)

### AUXILIARY HYDRAULIC SYSTEM
- **Pump Displacement**: 3.66 in³ (60 cc3)
- **Auxiliary circuit flow rate (max.)**: 29 gpm (108 lpm)

### MAST INCLINATION
- **Forward**: 5°
- **Backward**: 5°
- **Sideways**: 9°

### UNDERCARRIAGE
- **Track length**: 17 ft 10 in (5,450 mm)
- **Length to center of rollers**: 15 ft 1 in (4,600 mm)
- **Transport position width (retracted)**: 9 ft 10 in (3,000 mm)
- **Operation position width (extended)**: 14 ft 7 in (4,450 mm)
- **Track shoes width**: 28.3 in (750 mm)

### TRANSPORT
- **Overall Height (Standard Mast)**: 11 ft 10 in (3,615 mm)
- **Overall Height (Short Mast)**: 11 ft 10 in (3,600 mm)
- **Transport Length (Standard Mast)**: 53 ft 1 in (16,155 mm)
- **Transport Length (Short Mast)**: 38 ft 10 in (11,400 mm)
- **Transport Width (Standard Mast / Short Mast)**: 10 ft 8 in (3,245 mm)
- **Transport Weight (Standard Mast)**: 121,000 lb (55,000 kg)
- **Minimum Transport Weight (Standard Mast)**: 92,000 lb (41,800 kg)
- **Transport Weight (Short Mast)**: 115,000 lb (52,300 kg)
- **Minimum Transport Weight (Short Mast)**: 86,000 lb (39,100 kg)

### GENERAL DATA
- **Overall height (Working position; Standard mast)**: 70 ft (21,100 mm)
- **Overall height (Working position; Short mast)**: 32 ft 4 in (9,845 mm)
- **Operation weight (Standard mast)**: 138,400 lb (62,000 kg)
- **Operation weight (Extra counterweight)**: 145,200 lb (66,000 kg)
- **Operation weight (Short mast)**: 125,800 lb (56,000 kg)
- **Ground pressure**: 17 psi (1.20 kg/cm²)
TRANSPORT POSITION

Weight: 121,000 lb / 55,000 kg (transport weight without removing counterweights and rotary)

Weight: 92,000 lb / 41,800 kg (transport weight removing counterweights and rotary)

Weight: 18,700 lb / 8,500 kg
Weight: 9,900 lb / 4,500 kg (optional)
Weight: 10,200 lb / 4,600 kg
GENERAL DIMENSIONS SHORT MAST

Weight: 115,000 lb / 52,300 kg (transport weight without removing counterweights)

TRANSPORT POSITION SHORT MAST

Weight: 96,000 lb / 43,600 kg (transport weight removing counterweights)

Weight: 9,900 lb / 4,500 kg (Optional)
KELLY BAR CHOICES FOR STANDARD MAST

<table>
<thead>
<tr>
<th>NUMBER OF ELEMENTS</th>
<th>DEPTH - DPT</th>
<th>TRANSPORT - KCL</th>
<th>HGT</th>
<th>KOP</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 4/130 Interlock</td>
<td>4</td>
<td>130ft (39m)</td>
<td>39ft (11.9m)</td>
<td>13ft 8in (4.2m)</td>
<td>132ft 3in (40.3m)</td>
</tr>
<tr>
<td>3/90 Interlock</td>
<td>3</td>
<td>90ft (27m)</td>
<td>39ft 4in (12m)</td>
<td>13ft 4in (4.0m)</td>
<td>100ft 5in (30.6m)</td>
</tr>
<tr>
<td>Long 4/175 Interlock</td>
<td>4</td>
<td>175ft (53m)</td>
<td>50ft 7in (15.4m)</td>
<td>6ft 7in (2m)</td>
<td>173ft (52.7m)</td>
</tr>
<tr>
<td>Long 3/120 Interlock</td>
<td>3</td>
<td>120ft (36m)</td>
<td>50ft 7in (15.4m)</td>
<td>6ft 7in (2m)</td>
<td>123ft (37.5m)</td>
</tr>
<tr>
<td>4/130 Friction</td>
<td>4</td>
<td>130ft (39m)</td>
<td>39ft (11.9m)</td>
<td>13ft 8in (4.2m)</td>
<td>134ft 10in (41m)</td>
</tr>
<tr>
<td>5/160 Friction</td>
<td>5</td>
<td>160ft (49m)</td>
<td>39ft 4in (12m)</td>
<td>13ft 4in (4.0m)</td>
<td>167ft (50.9m)</td>
</tr>
<tr>
<td>5/200 Friction</td>
<td>5</td>
<td>200ft (60m)</td>
<td>42ft 3in (12.9m)</td>
<td>9ft 10in (3.0m)</td>
<td>206ft (62.9m)</td>
</tr>
</tbody>
</table>

The standard kelly has 4 interlocking elements and reaches 130 ft (39 m) depth.

KELLY BAR FOR LOW CLEARANCE

<table>
<thead>
<tr>
<th>NUMBER OF ELEMENTS</th>
<th>DEPTH - DPT</th>
<th>TRANSPORT - KCL</th>
<th>HGT</th>
<th>KOP</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long 6/95 Interlock</td>
<td>6</td>
<td>95ft (29m)</td>
<td>21ft (6.4m)</td>
<td>2ft 9in (0.9m)</td>
<td>101ft 5in (30.9m)</td>
</tr>
<tr>
<td>Standard 6/78 Interlock</td>
<td>6</td>
<td>78ft (24m)</td>
<td>18ft (5.6m)</td>
<td>2ft 9in (0.9m)</td>
<td>84ft (25.6m)</td>
</tr>
</tbody>
</table>

Maximum length of each casing element 15 ft (4.6 m).
The mast is made of special steel called "Weldox" that has a yield strength 2.8 times higher than regular ASTM A36 steel. It means that with less weight the EK200HP can have better stability and displacements on the job site and easier transport handlings.

- The largest hollow inner passage diameter (24 in / 600 mm) of its class rotaries heads:
  - Higher torque
  - Stronger Kelly Bar
  - Longest durability
- 2 groups of Hydraulic Motor LINDE transmitting the highest starting torque.
- 2 Planetary Gear BREVINNI with Power-Shift for high spin-off.
- 2 Swing Bearings, one at the top and one at the bottom of the rotary.
- Pinions and main gear designed for heavy-duty operation.