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.
EK300
Mounted on CAT349 TIER IV
**APPLICATION**

The largest, most powerful model we’ve produced to date, the EK300 is manufactured to meet customer demands which exceed the already powerful capabilities of the EK250.

The new EK300 incorporates a CAT 349 base with a fully integrated undercarriage, and delivers greater maximum torque and increased main winch pull force. In keeping with our customer-focused philosophy, each machine is supported by the extensive Caterpillar® service network – the largest in the nation.

The EK300 was built using the same concept we use for all our machines – to help ensure the success of every project that uses one of our machines, to minimize downtime on the job site, and to maximize each contractor’s return on investment. Massive, and more powerful that its predecessors, the EK300 is designed for ease-of-use, and simple conversion for numerous applications.

**BOTTOM DRIVE CFA**
### TECHNICAL SPECIFICATIONS

#### KELLY BAR STANDARD MAST APPLICATION
- Max. Drilling Depth (standard version - interlocking kelly bar): 157 ft, 48,000 mm
- Max. Drilling Depth (friction kelly bar): 250 ft, 76,200 mm
- Max. Drilling Diameter (without lower mast): 180 in, 4,600 mm
- Max. Drilling Diameter (with lower mast): 100 in, 2,540 mm

#### KELLY BAR SHORT MAST APPLICATION
- Max. Drilling Depth (interlocking kelly bar): 60 ft, 18.3 m
- Max. Drilling Depth (friction kelly bar): 80 ft, 25 m
- Max. Drilling Diameter: 15 ft, 4,600 mm

#### ROTARY HEAD
- Maximum torque (nominal): 32,200 kgf.m
- Working Speed: 8 - 30 rpm
- Spin-off Speed: 47 - 111 rpm

#### CROWD SYSTEM
- Pull down force (nominal): 82,650 lbf, 37,500 kgf
- Pull up force (nominal): 87,600 lbf, 39,700 kgf
- Cylinder stroke: 21 ft 4 in, 6,500 mm

#### MAIN WINCH (PULL-UP)
- Max. Pull force effective (1st layer): 71,000 lbf, 32,200 kgf
- Max. Pull force effective (1st layer - 2nd speed): 57,000 lbf, 25,600 kgf
- Line speed (1st layer): 200 ft/min, 63 m/min
- Line speed (2nd speed): 250 ft/min, 78 m/min
- Cable diameter: 1.25 in, 32 mm
- Drum pitch diameter (1st Layer): 24.6 in, 624 mm

#### AUXILIARY WINCH
- Max. Pull force effective (1st layer): 22,000 lbf, 10,000 kgf
- Cable diameter: .75 in, 19 mm
- Drum pitch diameter (1st Layer): 16.7 in, 442 mm

#### MAST INCLINATION
- Backward: 15°
- Forward: 5°
- Sideways: 8 / 8 °

#### DIESEL ENGINE CAT349 TIER IV (CAT C13 ACCERT)*
- Exhaust Emission Standard: EPA Tier 4 Interim
- Gross Power - SAE J995: 432 hp, 322 kW
- Displacement: 763 in³, 12.5 L
- Fuel tank: 190 gal, 720 L

#### MAIN HYDRAULIC SYSTEM
- Main circuit pressure (max.): 5,076 psi, 350 bar
- Main circuit flow rate (max.): 180 gpm, 680 lpm
- Hydraulic Oil Tank (CAT + Additional): 177 gal, 670 L

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

#### UNDERCARRIAGE
- Track length: 21 ft 2 in, 6,443 mm
- Length to center of rollers: 17 ft 10 in, 5,440 mm
- Transport position width (retracted): 11 ft 6 in, 3,500 mm
- Operation position width (extended): 16 ft 5 in, 5,000 mm
- Track shoes width: 35 in, 900 mm

#### TRANSPORT STANDARD MAST APPLICATION
- Overall Height: 12 ft 1 in, 3,680 mm
- Transport Length: 66 ft 9 in, 20,355 mm
- Transport Width: 11 ft 6 in, 3,500 mm
- Transport Weight: 136,500 lb, 61,920 kg

#### TRANSPORT SHORT MAST APPLICATION
- Overall Height: 12 ft 1 in, 3,680 mm
- Transport Length: 44 ft 2 in, 13,470 mm
- Transport Width: 11 ft 6 in, 3,500 mm
- Transport Weight: 107,300 lb, 48,800 kg

#### GENERAL DATA STANDARD MAST APPLICATION
- Overall Height (Working position): 84 ft 5 in, 25,725 mm
- Operation Weight: 217,600 lb, 98,700 kg

#### GENERAL DATA SHORT MAST APPLICATION
- Overall Height (Working position): 30 ft 3 in, 9,200 mm
- Operation Weight: 199,900 lb, 90,700 kg

Specifications are subject to change without notice.
GENERAL DIMENSIONS KELLY BAR

84 ft 5 in / 25,725 mm
84 ft 5 in / 25,725 mm
47 ft 18 in / 14,530 mm
24 ft 7 in / 7,480 mm
50 ft
1,270 mm
17 ft 10 in / 5,440 mm
21 ft 2 in / 6,440 mm
11 ft 6 in / 3,510 mm
**TRANSPORT POSITION**

**Weight:** 190,000 lbs / 86,500 kg

**Weight:** 136,500 lb / 62,000 kg (removing Rotary, Lower Mast and Counterweights)

**Weight:** 17,000 lb / 7,730 kg

**Weight:** 10,000 lbs / 4,500 kg

**Weight:** 2,000 lb / 900 kg

**Weight:** 40,700 lb / 18,500 kg

**Weight:** 2,000 lb / 900 kg

**Weight:** 4,500 kg
GENERAL DIMENSIONS SHORT MAST

TRANSPORT POSITION SHORT MAST

Weight: 175,000 lb / 79,500 kg

Weight: 107,300 lb / 48,800 kg (removing Rotary, Lower Mast and Counterweights)
KELLY BAR

CASED DRILLED SHAFT PILES

Reference only. Depth and diameter will depend on the soil condition.

**CASING DIAMETER** | **MAXIMUM DEPTH**
--- | ---
84 in / 2,130 mm | 64 ft / 19 m
80 in / 2,000 mm | 68 ft / 21 m
70 in / 1,800 mm | 77 ft / 23 m
60 in / 1,500 mm | 90 ft / 27 m
50 in / 1,300 mm | 108 ft / 33 m

- Maximum length of each casing element 18 ft (5,500 mm)
- It can be optionally equipped with a casing oscillator, powered by the drilling rig, for greater diameters and depth of casing.

KELLY BAR CHOICES FOR STANDARD MAST

<table>
<thead>
<tr>
<th>NUMBER OF ELEMENTS</th>
<th>DEPTH - DPT</th>
<th>TRANSPORT - KCL (ft in/mm)</th>
<th>HGT (ft in/mm)</th>
<th>KOP (ft in/mm)</th>
<th>WEIGHT (lb/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 4/160 (48) Interlock</td>
<td>4</td>
<td>160” / 4,8650</td>
<td>47°8’ / 14.535</td>
<td>18°7’ / 5.670</td>
<td>18°7’ / 5.670</td>
</tr>
<tr>
<td>Short 4/127 (38) Interlock</td>
<td>4</td>
<td>127” / 3,8650</td>
<td>39°4’ / 11.985</td>
<td>18°7’ / 5.670</td>
<td>13°5’ / 41.150</td>
</tr>
<tr>
<td>Long 4/199 (60) Interlock</td>
<td>4</td>
<td>199” / 6,0650</td>
<td>57°6’ / 17.535</td>
<td>10°1’ / 3.048</td>
<td>207°1’ / 63.150</td>
</tr>
<tr>
<td>Short 5/159 (48) Friction</td>
<td>5</td>
<td>159°7’ / 48,650</td>
<td>39°4’ / 11.985</td>
<td>18°7’ / 5.670</td>
<td>167°10’ / 51.150</td>
</tr>
<tr>
<td>Long 5/246 (75) Friction</td>
<td>5</td>
<td>246” / 75,000</td>
<td>59°11’ / 18.255</td>
<td>7°8’ / 2.330</td>
<td>254°3’ / 77.500</td>
</tr>
</tbody>
</table>

The standard kelly has 4 interlocking elements and reaches 160 ft (48 m) depth.

KELLY BAR CHOICES FOR SHORT MAST

<table>
<thead>
<tr>
<th>NUMBER OF ELEMENTS</th>
<th>DEPTH - DPT</th>
<th>TRANSPORT - KCL (ft in/mm)</th>
<th>HGT (ft in/mm)</th>
<th>KOP (ft in/mm)</th>
<th>WEIGHT (lb/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 5/55 Interlock</td>
<td>5</td>
<td>55° / 16,800</td>
<td>15°2’ / 4,600</td>
<td>3°2’ / 980</td>
<td>75°5’ / 23,000</td>
</tr>
<tr>
<td>7/80 Friction</td>
<td>7</td>
<td>80° / 25,000</td>
<td>15°2’ / 4,600</td>
<td>3°2’ / 980</td>
<td>84° / 26,000</td>
</tr>
</tbody>
</table>
**TORQUE DIAGRAM**

**TORQUE X WORKING SPEED (NOMINAL)**

![Graph showing torque vs. speed for different gears.](image)

**TORQUE X SPIN-OFF SPEED (NOMINAL)**

![Graph showing torque vs. speed for spin-off.](image)
EK300
Drilling 13ft diameter