Under our policy of continuous product development, we reserve the right to change specifications and design without prior notice.
Clamping system

Being compared with the traditional clamping mechanism, it can clamp the casing no matter at what position, and keep the vertical accuracy of the casing, and the large drawing resistance of casing causes greater clamp force.

Motor Reducing system

Multiple sets of motor reducer can supply the sufficient torque, transfer a strong rotary force to the casing, which can adapt to the complicated stratum and cut obstructions.

Vertical Levelling device

Hydraulic vertical device ensures the verticality of drill holes, and correct the casing angle timely in the construction.

Caliper Reducer

The convenient caliper change various requirements size of calipers makes the equipment adapt to change.

Auxiliary Clamping force

It can better ensure the verticality of casing, and additionally compensate for the problem of low crane capacity of the equipped crane during deep excavation.

Crawler Tracks

The crawler traveling device is with the function of hydraulic Transverse expansion, which is convenient for the equipment to move automatically and conduct The pile core localisation.
### Main Structure

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine</strong></td>
<td>The great power of engine can supply a huge torque of the equipment. It provides the machine with a great torque and make it adapt to any complicated and difficult stratum.</td>
</tr>
<tr>
<td><strong>Remote control</strong></td>
<td>According to the working condition the operating system platform of micro computer can keep the machine at an optimum working state by adjusting the speed, torque and pressing force, and promote the work efficiency to the maximum.</td>
</tr>
<tr>
<td><strong>Cutter Head Automatic control system</strong></td>
<td>When cutting the hard rock, it can well protect the cutter head, enhance the cutting efficiency by the automatic control of computer.</td>
</tr>
<tr>
<td><strong>Instant Enhancement system</strong></td>
<td>When encountering obstructions, pulling force and torque to clear it can instantly enhance the obstruction.</td>
</tr>
<tr>
<td><strong>Emergency System</strong></td>
<td>The emergency modules control system is also set in the power station. When there is a malfunction, the emergency system can be adopted to complete the construction work.</td>
</tr>
<tr>
<td><strong>Powerpack Trailer</strong></td>
<td>The power station, which is convenient for traveling, can make the equipment travel freely on the construction site and complete itself transfer; the support structure can ensure the stability and safety of equipment during working.</td>
</tr>
</tbody>
</table>
The casing rotator is a new type drill with the integration of the full hydraulic power and transmission, and the combination control of machine, power and fluid. It is a new, environmental and highly efficient drilling technology. In recent years, it is widely adopted in the projects such as the constructions of urban subway, articulation pile of deep foundation pit enclosure, clearance of waste piles (underground obstructions), high-speed rail, road and bridge, and urban construction piles, as well as the reinforcement of reservoir dam.

The successful research of this brand new process method has realized the possibilities for the construction workers to conduct the construction of casting pile, displacement pile, and underground continuous wall, as well as the possibilities for the pipe-jacking and shield tunnel to pass through the various pile foundations without barriers, when the obstructions, such as the gravel and boulder formation, cave formation, thick quicksand stratum, strong necking down formation and various pile foundation.

The construction method of casing rotator has successfully completed construction missions of more than 5000 projects at places of Singapore, Japan, Hongkong District, Shanghai, Hangzhou, Beijing, Tianjin and Chengdu. It certainly will play a bigger role in the future urban construction and other pile foundation construction fields.

1. Foundation pile, continuous wall:
   * Foundation piles for high-speed rail, road and bridge and house building
   * Articulation pile constructions which are required to be excavated, such as subway platforms, underground architectures, continuous walls
   * Water retaining wall of reservoir reinforcement

2. Drilling gravels, boulders and karst caves:
   * It is allowable to conduct the foundation piles construction at mountain lands with gravel and boulder formations.
   * It is allowable to conduct operation and cast the foundation piles at the thick quicksand formation and necking down stratum or the filling layer.
   * Conduct rock-socketed drilling to the rock stratum, cast the foundation pile

3. Clear the underground obstructions:
   * During the urban construction and bridge rebuilding, the obstructions such as the steel reinforced concrete pile, steel pipe pile, H steel pile, pc pile and wood pile can be cleared directly, and cast the foundation pile on the spot.

4. Cut the rock stratum:
   * Conduct the rock-socketed drilling to the cast-in-place piles.
   * Drill through-holes on the rock bed(shells and ventilation holes)

5. Deep excavation:
   * Conduct the in-place casting or steel pipe pile inserting for the deep foundation improvement.
   * Excavate deep wells for construction use in the construction-reservoir and tunnel.
Drilling performance of machine

The Casing rotator, with the strong torque and pressing force can complete the construction task in the hard rock formation. The rock hardness which can be drilled can reach: the uniaxial compressive strength of 130–180 MPa. Because of the perfect cutting performance, it has been widely applied in the clearing constructions of cutting concrete blocks, high strength bolts, H piles and steel pipe piles.

Working Principle:
Automatic control device

The automatic control device, which is the cutter head load control device, controls the pressure of thrust hydraulic oil cylinder, makes the cutter head load not change with the changes of the casing weight and the surrounding resistance, and keeps the machine in its optimum working state. This is the most advanced automatic control system in machine, power and fluid, which has greatly enhanced the world. It is a perfect representation of the intergraded the safety and working efficiency of the construction.
FES815CR
The main technical parameters of working device:

- Diameter of Anthony: 4800 – 10200
- Rotary torque: 18015/15915/15919 instantaneous 1117
- Rotary speed: 2095/440
- Rotary motor model: 4476500 four phases
- Lower pressure of sieve: 6.7
- Pulling force of sleeve: 2440
- Pressure-pulling stroke: 1600
- Weight: 34 (with transition frame, without reducer blocks)

FES816CR
The main technical parameters of working device:

- Diameter of Anthony: 4800 – 10200
- Rotary torque: 2440/767617 instantaneous 1359
- Rotary speed: 1907/443
- Lower pressure of sieve: 6.7
- Pulling force of sleeve: 2440 instantaneous 2500
- Pressure-pulling stroke: 800
- Weight: 31.5 (with transition frame, without reducer blocks)

Major technical parameters of hydraulic power station:

- Engine Model: Cummins QS88.7–C260
- Engine Power: kW/rot/min 194 / 2000
- Fuel consumption of engine: g/kWh 222 (when the maximum power rate)
- Weight: ton 8
- Control mode: Wired remote controllerless remote control
**FES816CRHH**

- Diameter of drill hole: 6000 mm
- Rotary torque: 1720/1750/1670 kN·m, instantaneous 1913 kN·m
- Rotary speed: 1500 rpm
- Rotary motor model: AM1400/4 pieces + MS83016K/4 pieces
- Lower pressure of sleeve: ≤500 kN
- Pulling force of sleeve: ≤5000 kN
- Pressure-pulling stroke: 500 mm
- Weight: 33 ton (With transition frame, without reducer blocks)

**FES1020CR**

- The main technical parameters of working device:
  - Diameter of drill hole: 6000 mm
  - Rotary torque: 3995/1750/5700 kN·m, instantaneous 3901 kN·m
  - Rotary speed: 1100 rpm
  - Lower pressure of sleeve: ≤500 kN
  - Pulling force of sleeve: ≤5000 kN
  - Pressure-pulling stroke: 730 mm
  - Weight: 46 ton (With transition frame, without reducer blocks)

**Major technical parameters of hydraulic power station:**

<table>
<thead>
<tr>
<th>Engine Model</th>
<th>Cummins QSM11-335</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Power</td>
<td>272/1800 kw/k rpm</td>
</tr>
<tr>
<td>Fuel consumption of engine</td>
<td>216 g/kwh (when the maximum power rate)</td>
</tr>
<tr>
<td>weight</td>
<td>8 ton</td>
</tr>
<tr>
<td>Control mode</td>
<td>Wired remote control, wireless remote control</td>
</tr>
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</tr>
<tr>
<td>weight</td>
<td>8 ton</td>
</tr>
<tr>
<td>Control mode</td>
<td>Wired remote control, wireless remote control</td>
</tr>
</tbody>
</table>
FES1021CR
The main technical parameters of working device:

- Diameter of drill hole: mm 3000 - < 3000
- Rotary torque: kNm 360/360/300 instantaneous 335
- Rotary speed: rpm 60 / 50 / 40
- Lower pressure of sleeve: kN Max 300
- Pushing force of sleeve: kN 2700 instantaneous 4300
- Pressure-pulling stroke: mm 360
- Weight: ton 48 (With transition frame, without reducer blocks)

FES1226CR
The main technical parameters of working device:

- Diameter of drill hole: mm 3000 - < 3000
- Rotary torque: kNm 360/360/300 instantaneous 335
- Rotary speed: rpm 60 / 50 / 40
- Lower pressure of sleeve: kN Max 500
- Pushing force of sleeve: kN 3800 instantaneous 4349
- Pressure-pulling stroke: mm 750
- Weight: ton 56 (With transition frame, without reducer blocks)

Major technical parameters of hydraulic power station:

- Engine Model: Cummins QSM11-535
- Engine Power: kW 1340
- Fuel consumption of engine: g/kWh 219 (when the maximum power rate)
- Weight: ton 9
- Control mode: Wired remote control / Wireless remote control

Major technical parameters of hydraulic power station:

- Engine Model: Cummins QSM11-536
- Engine Power: kW 1360
- Fuel consumption of engine: g/kWh 213 (when the maximum power rate)
- Weight: ton 13
- Control mode: Wired remote control / Wireless remote control
The advantages of casing rotator

- No noise, no vibration, and high safety;
- Without mud, clean working surface, good environmental friendliness, avoiding the possibility for mud to enter the concrete, high pile quality, enhancing the bond stress of concrete to the steel bar;
- During construction drilling, the characteristics of stratum and rock can be directly distinguished;
- The drilling speed is fast and reaches about 14m/h for the general soil layer;
- The drilling depth is large and reaches about 143.8m according to the situation of soil layer;
- The hole forming verticality is easy to master, which can be accurate to 1/500;
- No hole collapse will be caused, and the hole forming quality is high.
- The hole forming diameter is standard, with little filling factor. Being compared with other hole forming methods, it can save a lot of concrete usage;
- The hole clearing is thorough and fast. The drilling mud at the hole bottom can be clear to about 3.0cm.

FES2032CR

The main technical parameters of working device:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter of drill hole</td>
<td>32000~32000</td>
</tr>
<tr>
<td>Rotary torque</td>
<td>98005.36/36/30/34 Instantaneous 10955</td>
</tr>
<tr>
<td>Rotary speed</td>
<td>0.0118</td>
</tr>
<tr>
<td>Lower pressure of sleeve</td>
<td>Max.1100</td>
</tr>
<tr>
<td>Pulling force of sleeve</td>
<td>7237 Instantaneous 3279</td>
</tr>
<tr>
<td>Pressure-pulling stroke</td>
<td>750</td>
</tr>
<tr>
<td>Weight</td>
<td>96.1 (With wedge-shaped auxiliary clamping, transition frame, without reducer)</td>
</tr>
</tbody>
</table>

Major technical parameters of hydraulic power station:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Model</td>
<td>Cummins QSM11-385</td>
</tr>
<tr>
<td>Engine Power</td>
<td>270/31/1800</td>
</tr>
<tr>
<td>Fuel consumption of engine</td>
<td>27.0~30.3/t (when the maximum power rate)</td>
</tr>
<tr>
<td>Weight</td>
<td>13</td>
</tr>
<tr>
<td>Control mode</td>
<td>Wireless remote control</td>
</tr>
</tbody>
</table>
CESCO DEEP FOUNDATION EQUIPMENT

- Nanjing Daqiao Station Underwater pipe gallery construction
- Xiangya pile pulling site construction
- Project construction of Guanyang Guangzhou Free Trade Zone
- Nanjing Electric Power Company Continuous wall project of the underground pipegallery
- Xuzhou 3rd metro line West Station Judge steel pipe construction
- Beijing 14th subway line Dingguoyuan Station steel upright mast insert construction
- Jiangsu China twenty-four Bureau "3.24" Jiangsu railway project construction
- Sidnian Tafang Station of Chengdu railway" & Shangli bridge construction
- Xiamen Haiyang the cross-sea Metro Construction
- Subway pile foundation construction approaching to Beijing ecological forest
- Stockton sewage treatment plant project
- Lawton Rail Transit Line 4 construction
- Liaocheng Metro Second pile construction
- Guiyang high-speed rail construction
- Fuzhou No.2 Metro IncaPile pulling construction
- Guangzhou Shengzheng Running line foundation pile construction
- Tributary Property Site in Yehuangzhou District, Yichun City, Jiangxi Province
- The first pedestrian Hospital of Hetai interchanged pile construction
- Vanke Shenzhen Binhai landscaped project inserted steel column construction
- The road of Nanjing Jiaochang new area Rapid transformation
Remove the obstruction

Auxiliary Machines

1. **Multi-head claw+Spiral drill head**
   - The rotary drill head and spiral drill head can be selected and matched for the multi-head claw according to the requirements.
   - It works at a state of low noise and low vibration.
   - It can choose the number of suspension wire rope, so the small-scaled crane can be adopted for cooperation.

2. **Multi-head claw+rotary drilling**
   - The multi-head claw is an internal excavation device of sleeve, which is powerful when removing the underground obstructions such as the reinforced concrete, steel pile and broken stone; it can effectively transfer the torque and pressing force of the sleeve.

---

**Impact-grab bucket+heavy**

When the impact excavation cannot be conducted in the rock stratum or concrete piles, use the heavy hammer to repeat the impact, and excavate it with the impact-grab bucket after it is broken. This is a commonly adopted construction method of the cooperation of impact-grab-heavy hammer.

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**Impact-grab bucket**

- The grab bucket is the main internal impact excavation device of the casing. It relies on the big and small hammers of crane to complete the impact and excavation work.
- During operation, the impact-grab bucket falls freely along the internal wall of casing, with the fast falling speed and strong impact force, the hard stratum can be directly impacted and excavated with a high working efficiency.
- The bucket blade is in the shape of circular arc with heavy bucket body, it can realize the underwater with high working efficiency.
- With the built-in pulley block, the grabbing force is multiplied with the increasing lifting force.

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**Combination construction method**

**Rotary drill and casing rotator**

This construction method is a method to borrow the earth by using the casing rotator as the major drilling machine, with the cooperation of rotary drill. It can well highlight the respective advantages of the full rotary to drill into the rock and the rapid earth-borrow of rotary drill, which has greatly enhanced the work efficiency.

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**Principle and examples**

Pulling out (clearing) the old pile.