Please read the manual book and maintenance book before operation. Changes or improvements subject to modification and production models or services described in this book may be different from those in this book. All rights of the manual book belong to Sunward. SWDM EN 2016-10

Rural Kingkong Series Rotary Drilling Machines

SWDM 04/06II/10II/12/15C/15S
The Most Professional Manufacturer of Underground Construction Equipment

- Sunward started with independent research and development of hydraulic static pile driver. Through more than 10 years of engagement in underground construction, Sunward Intelligent has successfully developed the professional underground works equipment series with the most complete categories and the highest geology adaptability and become an enterprise that is able to provide comprehensive solutions (design, equipment and construction) for underground works construction under complicated geological conditions. The Company has developed the powerful multi-function drilling machine, pipe following drilling machine and rotary drilling machine that are unique in this industry.
- The first hydraulic static pile driver highly coupled with mechanism, electricity and hydraulics (winning the National Second Prize in Terms of Scientific and Technological Progress) integrates various patented technologies and has gained a market share as high as 60%. This product has been derived from the original one through innovation in terms of construction method and theory and is regarded as a milestone in the application history of pre-cast concrete pipe piles in the foundation industry of China.

Committed to The Field of Underground Construction

Sunward developed the rotary drilling machinery series products with the most complete specifications in China, with power head output torque ranging from 40KN to 600KN-M and construction bore diameter ranging from 350MM to 3,500MM. Its theoretical system has formed the only two monographs in this professional industry, namely Research and Design of Rotary Drilling Machine and Rotary Drilling Machine, Construction and Management.

Sunward insists on technological innovation and constant improvement in development and construction of underground construction equipment, and boasts the most complete construction equipment and construction technologies suitable for underground works construction process in China in the aspects of foundation piles, even wall, foundation treatment, new pile types and new technologies.
**Target Market**

Sunward is the first in China to launch Rural Kingkong series drilling machines, which are designed specifically for bore forming construction of cast-in-place piles in civil projects and are very suitable for construction in various special, narrow and crawl spaces, such as bridges, culverts, the inside of buildings, workshops, metro, and municipal pole lines.

**A solution to problems with cast-in-place pile construction of 400~600m housing construction**

**Easier Transportation, Lower Cost and Higher Efficiency**

Rural Kingkong rotary drilling machines could be transported together with the drilling rods. Particularly, SWDM04/06 could be transferred using an ordinary carrier vehicle, thus reducing cost and increasing efficiency for users.

**High Stability and Anti-Tipping Capacity**

Arranging the main and auxiliary winches at the lower end lowers the center of gravity of the drilling machine during operation and transportation, and improves the stability of the complete machine. The steel wire rope is used to hoist the drilling stem and drilling rigs directly through the goose head pulley. This can prolong the service life of the steel wire rope.

**Compact, Flexible and Highly Maneuverable**

Compact machine body ensures a satisfactory passage capacity and can accommodate pile pore construction in narrow space. It is a truly buster at the construction site.
**Stable and Reliable**

**Special Chassis**
- The self-made special hydraulic flexible chassis structure suitable for the actual load is adopted. Meanwhile, the main and auxiliary winches are installed on the rotating platform, which remarkably reduces the tipping load and guarantees the stability of the complete machine fundamentally.
- The position of the gravity center of the complete machine is optimized, with the stability angle increased from 10° to 15°. This guarantees operation stability on all dimensions of 360°.

**Square-Shaft Casing Structure**
- The box type square shaft casing structure is used for the mast deflection seat. The force of mast is directly transferred onto the trolley traveling mechanism, thus eliminating the stress of the rotary frilling force on weak links of the deflection seat and improving the structural stability and reliability.

**Mast Structure**
- The high-strength anti-deform design is used for the drilling stem. The rectangular mast section is even wider on the guide rail direction. This can effectively reduce the structural stress of the mast and make it more suitable for the in-rock construction conditions with high-strength variable and constant load.

**Winch**
- The main and auxiliary winches are installed on the platform, which greatly reduces the tipping torque of the operation device and the revolving inertia of the upper part of the platform and improves the stability of the complete machine.

**Auxiliary Landing Leg**
- The standing leg hidden below the lower mast can not only act as the auxiliary support for drilling construction, but can also help you with other unimaginable matters.
High-Grade Configuration Ensures High Efficiency

The efficient and reliable engine is equipped with efficiency hydraulic transmission system, and this guarantees the strong power of the machine. The advanced intelligent electronic control system can give full play to the efficiency of the machine. Meanwhile, the reasonable local structural design noticeably reduces the wearable and consumable.

Complete Machine System

The engine of world-well-known brand is equipped with high-efficiency hydraulic transmission system. The advanced intelligent electronic control system can give full play to the efficiency of the machine. The complete machine system boasts advantages such as high reliability, fuel economy and high reserve power. The engine emission meets the European EPAC3 standard, which means the engine is environmental friendly. In addition, it can operate regularly even in alpine and high-altitude areas.

Power Head

The compact machine has a large-torque power head and boasts high speed. This ensures high construction efficiency.

Hydraulic Elements

The hydraulic system has been developed in joint efforts with a world first-class element manufacture to improve the hydraulic energy conversion rate of the element and reduce the transmission loss of pipelines of the system.
## Technical Parameters

### Crowd Cylinder

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Type</th>
<th>SWDM04</th>
<th>SWDM06 II</th>
<th>SWDM10 II</th>
<th>SWDM12</th>
<th>SWDM15C</th>
<th>SWDM15S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall height</td>
<td>m</td>
<td>8.79</td>
<td>12.7</td>
<td>16.0</td>
<td>16.3</td>
<td>14.4</td>
<td>18.4</td>
</tr>
<tr>
<td>Total weight</td>
<td>t</td>
<td>16</td>
<td>22</td>
<td>34</td>
<td>37</td>
<td>43</td>
<td>45</td>
</tr>
<tr>
<td>Max. drilling diameter</td>
<td>mm</td>
<td>900</td>
<td>1000</td>
<td>1300</td>
<td>1300</td>
<td>1500</td>
<td>1500</td>
</tr>
<tr>
<td>Max. drilling depth</td>
<td>m</td>
<td>23</td>
<td>28 (Optional)</td>
<td>35 (Optional)</td>
<td>47 (Optional)</td>
<td>35 (Optional)</td>
<td>56 (Optional)</td>
</tr>
</tbody>
</table>

### Engine

<table>
<thead>
<tr>
<th>Model</th>
<th>Brand</th>
<th>SWDM04</th>
<th>SWDM06 II</th>
<th>SWDM10 II</th>
<th>SWDM12</th>
<th>SWDM15C</th>
<th>SWDM15S</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWDM04</td>
<td>1104D-44T</td>
<td>4JJ1XKSC-02</td>
<td>QSB7-C166G3</td>
<td>QSB7-C166G3</td>
<td>QSB8.7-C220</td>
<td>QSB6.7-C225</td>
<td></td>
</tr>
<tr>
<td>SWDM06 II</td>
<td>8.79</td>
<td>12.7</td>
<td>16.0</td>
<td>16.3</td>
<td>14.4</td>
<td>18.4</td>
<td></td>
</tr>
<tr>
<td>SWDM10 II</td>
<td>16.0</td>
<td>22</td>
<td>34</td>
<td>37</td>
<td>43</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>SWDM12</td>
<td>16.3</td>
<td>34</td>
<td>43</td>
<td>45</td>
<td>56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWDM15C</td>
<td>14.4</td>
<td>45</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWDM15S</td>
<td>18.4</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Rotary Head

<table>
<thead>
<tr>
<th>Max. torque (kN.m)</th>
<th>40.8</th>
<th>60</th>
<th>100</th>
<th>120</th>
<th>160</th>
<th>160</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotation speed (rpm)</td>
<td>6~54</td>
<td>8~35</td>
<td>8~38</td>
<td>8~40</td>
<td>6~32</td>
<td>6~32</td>
</tr>
<tr>
<td>High-speed throwing (optional)rpm</td>
<td>/</td>
<td>/</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
</tbody>
</table>

### Pressurized Systems

| Max. applied pressure (kN)    | 60       | 100    | 100       | 150       | 150    | 150     |
| Max. lifting force (kN)       | 70       | 120    | 120       | 150       | 150    | 150     |
| Max. stroke (mm)              | 1500     | 3000   | 3000      | 4000      | 4000   | 4000    |

### Main Winch

| Max. lifting force (kN)       | 60       | 80     | 120       | 130       | 150    | 150     |
| Max. rope speed (m/min)       | 66       | 72     | 60        | 65        | 64     | 64      |

### Aux Winch

| Max. lifting force (kN)       | 15       | 30     | 50        | 50        | 50     | 50      |
| Max. rope speed (m/min)       | 50       | 45     | 45        | 45        | 45     | 45      |

### Drill Mast

| Left and Right tilt (°)       | ±3       | ±3     | ±5        | ±5        | ±5     | ±5      |
| Forward tilt (°)              | 5        | 5      | 5         | 5         | 5      | 5       |

### Chassis

| Max. travel speed (km/h)      | 3        | 3.2    | 3         | 3         | 1.5    | 1.5     |
| Max. grade ability (°)        | 20       | 15     | 15        | 15        | 15     | 15      |
| Crawler width (mm)            | 500      | 600    | 600       | 600       | 700    |         |
| Crawler extension width (mm)  | 2420     | 2600   | 2550~3450 | 2600~3500 | 2680~3880 | 2680~3880 |
| Chassis length (mm)           | 3415     | 3745   | 4260      | 4630      | 4630   | 4680    |

### Operation Status

**SWDM04**

**Transportation Status**

**Size**

<table>
<thead>
<tr>
<th>Model</th>
<th>A(mm)</th>
<th>B(mm)</th>
<th>C(mm)</th>
<th>D(mm)</th>
<th>E(mm)</th>
<th>F(mm)</th>
<th>G(mm)</th>
<th>H(mm)</th>
<th>J(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWDM04</td>
<td>4935</td>
<td>8745</td>
<td>2531</td>
<td>4630</td>
<td>500</td>
<td>2420</td>
<td>3230</td>
<td>6220</td>
<td></td>
</tr>
</tbody>
</table>
### Transport Status

#### Rural Kingkong Series Rotary Drilling Machines

<table>
<thead>
<tr>
<th>Model</th>
<th>A(mm)</th>
<th>B(mm)</th>
<th>C(mm)</th>
<th>D(mm)</th>
<th>F(mm)</th>
<th>G(mm)</th>
<th>H(mm)</th>
<th>J(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWDM06II</td>
<td>5308</td>
<td>12660</td>
<td>2701</td>
<td>600</td>
<td>2800</td>
<td>3440</td>
<td>9085</td>
<td></td>
</tr>
<tr>
<td>SWDM10II/12/15C</td>
<td>6970</td>
<td>15960</td>
<td>2885</td>
<td>~4210</td>
<td>4260</td>
<td>600</td>
<td>2550</td>
<td>~3450</td>
</tr>
<tr>
<td>SWDM12</td>
<td>7350</td>
<td>16300</td>
<td>2990</td>
<td>~4550</td>
<td>4630</td>
<td>600</td>
<td>2680</td>
<td>~3500</td>
</tr>
<tr>
<td>SWDM15C</td>
<td>7400</td>
<td>14400</td>
<td>3060</td>
<td>~4650</td>
<td>4630</td>
<td>600</td>
<td>2680</td>
<td>~3880</td>
</tr>
</tbody>
</table>

### Size

#### SWDM06II

<table>
<thead>
<tr>
<th>Model</th>
<th>A(mm)</th>
<th>B(mm)</th>
<th>C(mm)</th>
<th>D(mm)</th>
<th>F(mm)</th>
<th>G(mm)</th>
<th>H(mm)</th>
<th>J(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWDM06II</td>
<td>5308</td>
<td>12660</td>
<td>2701</td>
<td>600</td>
<td>2800</td>
<td>3440</td>
<td>9085</td>
<td></td>
</tr>
</tbody>
</table>

#### SWDM10II/12/15C

<table>
<thead>
<tr>
<th>Model</th>
<th>A(mm)</th>
<th>B(mm)</th>
<th>C(mm)</th>
<th>D(mm)</th>
<th>F(mm)</th>
<th>G(mm)</th>
<th>H(mm)</th>
<th>J(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWDM10II</td>
<td>6970</td>
<td>15960</td>
<td>2885</td>
<td>~4210</td>
<td>4260</td>
<td>600</td>
<td>2550</td>
<td>~3450</td>
</tr>
<tr>
<td>SWDM12</td>
<td>7350</td>
<td>16300</td>
<td>2990</td>
<td>~4550</td>
<td>4630</td>
<td>600</td>
<td>2680</td>
<td>~3500</td>
</tr>
<tr>
<td>SWDM15C</td>
<td>7400</td>
<td>14400</td>
<td>3060</td>
<td>~4650</td>
<td>4630</td>
<td>600</td>
<td>2680</td>
<td>~3880</td>
</tr>
</tbody>
</table>

### Operation Status

#### SWDM06II

- Size
- Model: SWDM06II
- A(mm): 5308
- B(mm): 12660
- C(mm): 2701
- D(mm): 600
- F(mm): 2800
- G(mm): 3440
- H(mm): 9085

#### SWDM10II/12/15C

- Size
- Model: SWDM10II/12/15C
- A(mm): 6970
- B(mm): 15960
- C(mm): 2885
- D(mm): ~4210
- F(mm): 4260
- G(mm): 600
- H(mm): 2550
- J(mm): ~3450

- Size
- Model: SWDM12
- A(mm): 7350
- B(mm): 16300
- C(mm): 2990
- D(mm): ~4550
- F(mm): 4630
- G(mm): 600
- H(mm): 2680
- J(mm): ~3500

- Size
- Model: SWDM15C
- A(mm): 7400
- B(mm): 14400
- C(mm): 3060
- D(mm): ~4650
- F(mm): 4630
- G(mm): 600
- H(mm): 2680
- J(mm): ~3880
### Operation status

**SWDM15S**

### Transportation status

### Size

<table>
<thead>
<tr>
<th>Model</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>F (mm)</th>
<th>G (mm)</th>
<th>H (mm)</th>
<th>J (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWDM15S</td>
<td>7796</td>
<td>18370</td>
<td>3284~4977</td>
<td>4680</td>
<td>700</td>
<td>3880</td>
<td>3512</td>
<td>15560</td>
</tr>
</tbody>
</table>
Construction Applications

The Rural Kingkong series drilling machines of Sunward are well-known for their high efficiency, low power consumption, high flexibility and maneuverability. They are suitable for construction of foundation piles of top-grade villas, and small high-rise buildings and are well received by customers in coastal developed areas such as Jiangsu, Zhejiang, Guangdong, and Fujian. Compared with traditional process, it can solve the problem of low efficiency and high safety risk. On average customer can drill more than 20 holes with the rotary drilling machine of Sunward, which saves a lot of manpower and material resources and improves the efficiency, and brings surprising returns. Some customers say that we drill with metal buckets but we harvest gold.
International Construction Cases

Worldwide Network for Sales and Service

- GOBHAWARI Cross-river Bridge in eastern part of India
- Construction of Thomson Line Subway Station in Singapore
- Construction of Job site near the Ganges River, India
- Drilling machine construction using CFA construction method in Switzerland
- Construction using rotary drilling rig in CFA Method in Annecy, France
- American Football Training Venue Foundation Pile Construction site
- Mackenzie River Cable-stayed Bridge, Canada
- Construction at -30°C in Moscow, Russia
- Venezuela Railway Modernization Project
- Construction of Tinaco-Anaco Railway of Venezuela by China Railway Erju Group Corporation

Widening of Azzno Highway in Italy
Salerno construction site, Italy

Russia
Turkey
European Union
Eastern Europe
Finland
Sweden
U.K
Germany
Poland
Czech
France
Spain
Portugal
Italy
Croatia
Bulgaria
Greece
Hungary
Ukraine
Romania
Tunis
Algeria
Libya
Egypt
Israel
Saudi Arabia
UAE
Iran
Nigeria
Kenya
Tanzania
Agola
South Africa
Reunion Island
Canada
USA
Mexico
Brazil
Chile
Argentina
Japan
Korea
Mongolia
Australia
Indonesia
Singapore
Malaysia
India
Kazakhstan
Myanmar
Thailand
Vietnam
Cambodia
New Zealand
Belgium

Rural Kingkong Series Rotary Drilling Machines