

PROFESSIONAL UNDERGROUND ENGINEERING CONSTRUCTION
EQUIPMENT MANUFACTURER

SUNWARD

Multi-functional Rotary Drilling Rig

SWDM

160 • 160H2 • 160A • 160B • 200
220-3 • 220A • 220B • 240 • 260



SUNWARD

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SWDM EN 2021-03

Professional underground engineering construction equipment manufacturer

In the field of underground engineering equipment, Sunward adheres to the concept of "pilot innovation" and starts with original products: hydraulic static pile driver. After 20 years of accumulation and development, Sunward has formed a product cluster of underground engineering equipment covering "building foundation equipment" and "underground space equipment". It has innovated and developed more than 20 series products of nearly 100 models. Hunan Hua'an Foundation Engineering Co., Ltd. with the first-class qualification for professional contracting of substructure and foundation engineering under Sunward Equipment Group provides complete solutions for underground engineering construction. And the overall technical level and product series perfection of Sunward rank the top in the world.



Development History of Rotary Drilling Rig

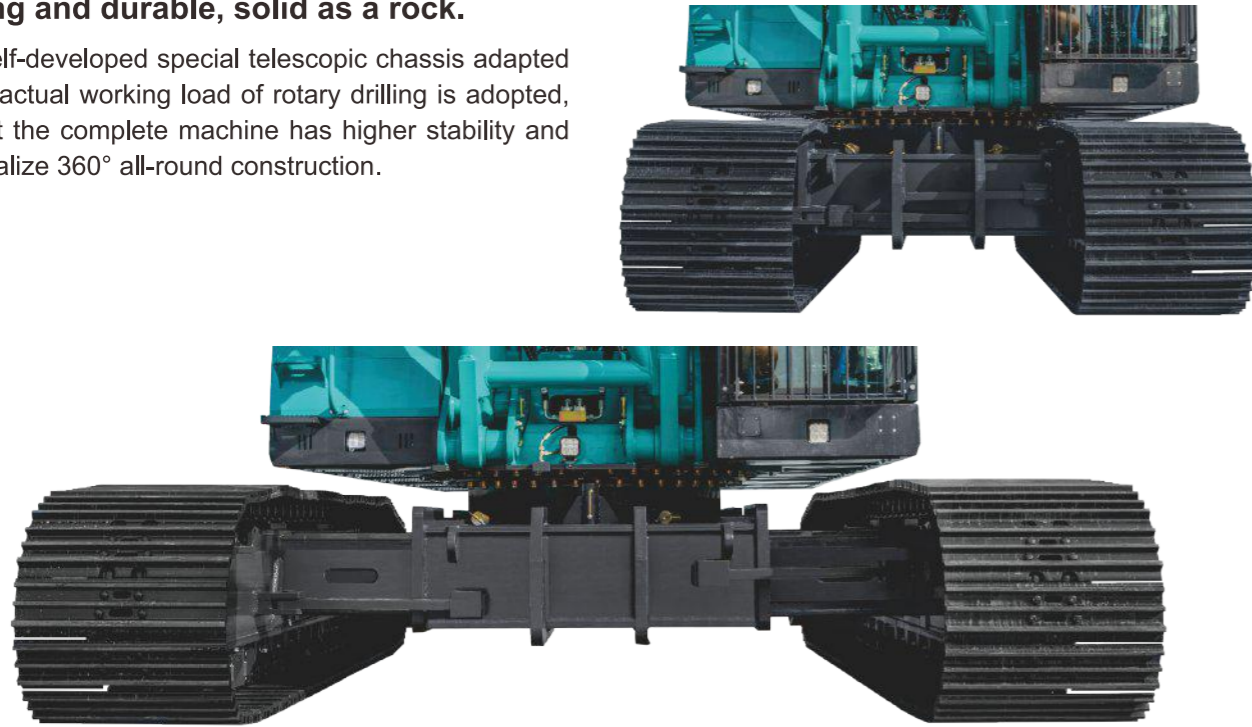
- 1992 Joined the pile industry
- 2003 The first rotary drilling rig SWDM20 has been successfully launched
- 2005 SWDM series rotary spectrum extension
- 2007 Built the first pile in Harbin-Dalian High-speed Railway
Launched a series of small rotary drilling rigs to enter the European market in batches
- 2008 Many breakthroughs have been made in technical field of construction method and accessory. It is realized to use multiple construction methods on one drilling rig.
Second generation full rotary series upgradation
- 2010 Launch rotary drilling rig SWDM36 and SWDM42
- 2012 High performance rotary drilling rig won the first prize of Scientific and Technological Progress Award in Hunan Province
- 2014 Large diameter deep hole reverse circulation drilling rig and large diameter DTH hammer drilling rig have been successfully launched
- 2015 World's first SWRC170 self-propelled fully rotary casing drilling rig has been successfully launched
- 2016 Super large rotary drilling rig SWDM550 has been successfully launched
- 2017 World's largest walking rotary drilling rig SWDM600W has been successfully launched
- 2019 The application of information technology and intelligent technology has upgraded the full series of the third generation rotary drilling rig
SWDM360H won the Annual Product Golden Awards of China Construction Machinery
SWDM300H won the Star Product Award of CMIIC
- 2020 SWDM600 has been successfully launched
SWDM300H won the Gold Award for Market Performance of China Construction Machinery Annual Product



Special Telescopic Chassis

Strong and durable, solid as a rock.

The self-developed special telescopic chassis adapted to the actual working load of rotary drilling is adopted, so that the complete machine has higher stability and can realize 360° all-round construction.



Engine

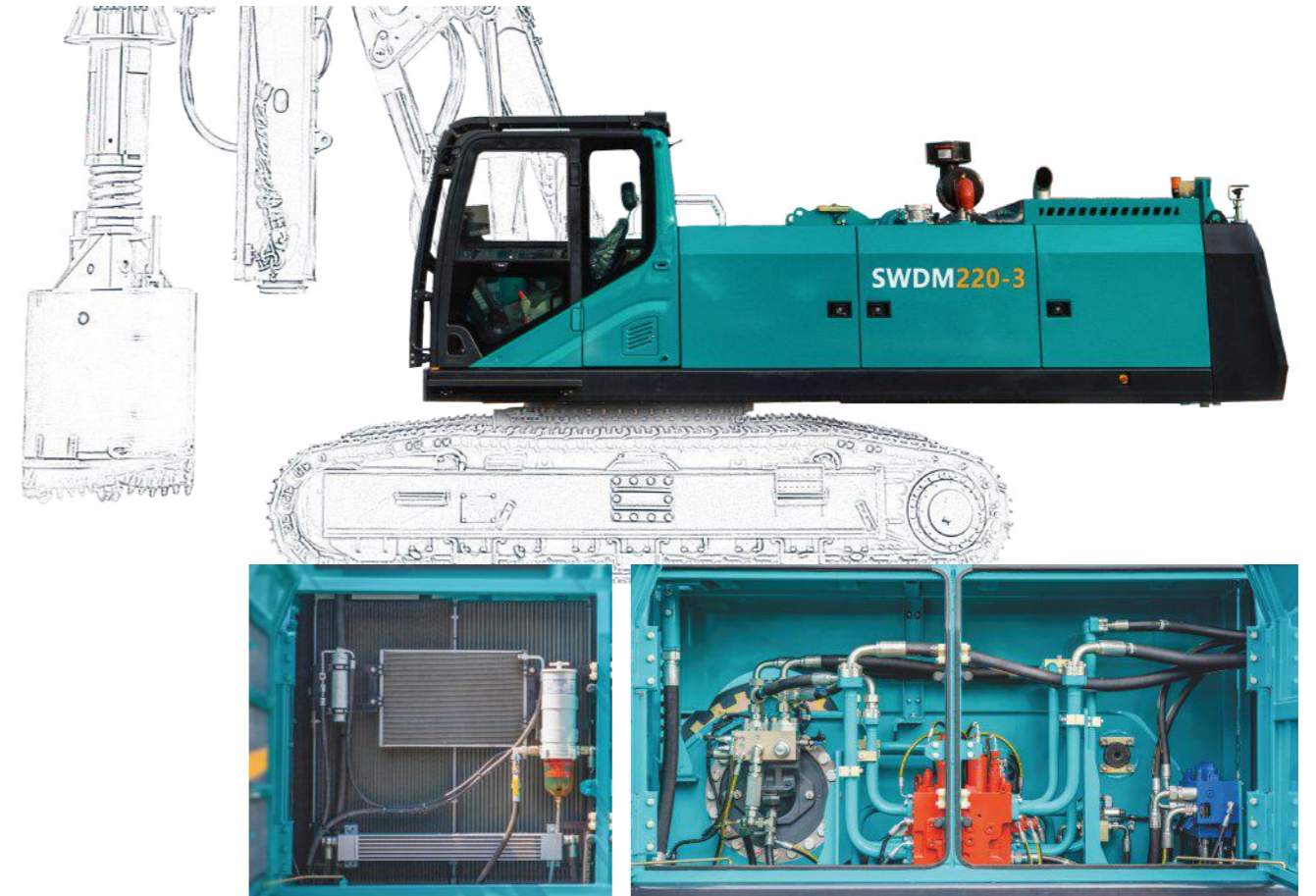
Cummins engine has strong power and is environmentally friendly.

The engine is Cummins electronic fuel injection turbocharged and intercooled engine with high reliability, fuel economy and rather high reserve power. The emission complies with the European standard EPAC3, so the engine is environmentally friendly. It can operate normally at areas with high altitude and extremely cold climate.



Platform Layout Optimization

The pipeline is neat; the space is large and easy to maintain.



Convenient Transportation, Cost Reduction and Efficiency Increase

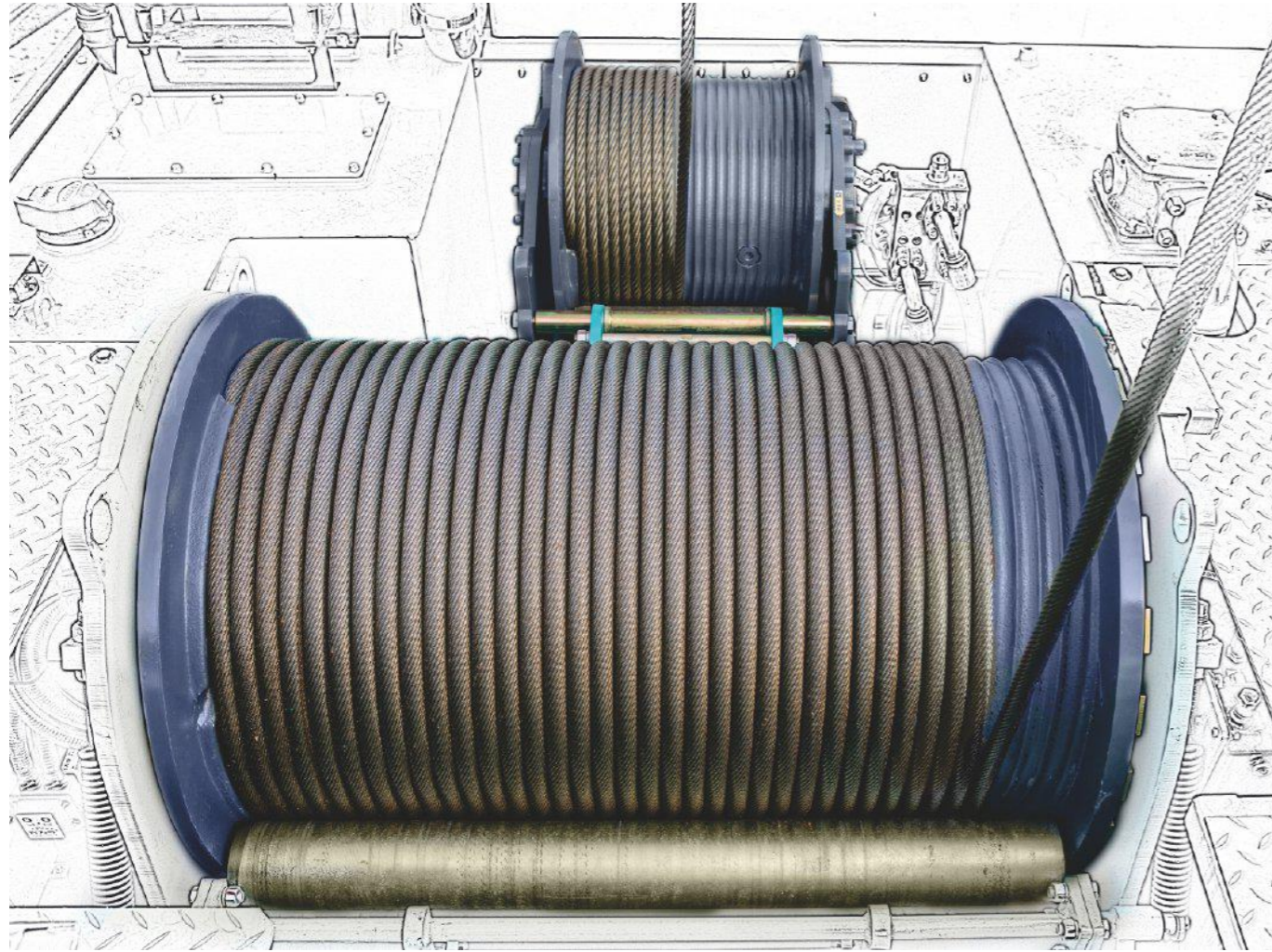
The complete drilling rig of 150/160HII are transported with drill pipe, which is convenient and quick to transfer.



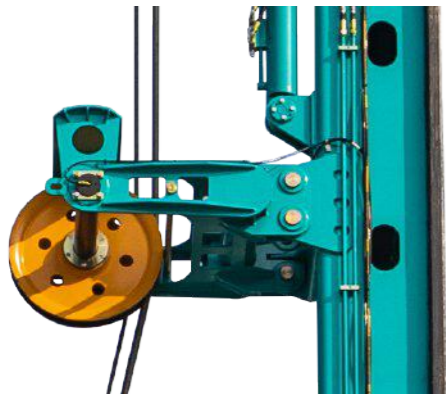
Single Drum

Large diameter long drum, single layer winding of steel wire rope, and longer service life

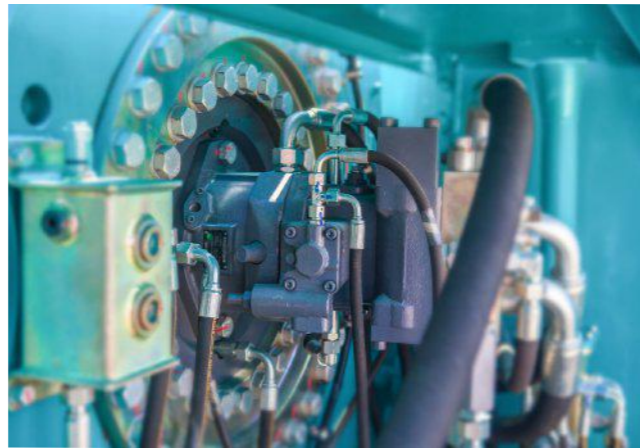
The main and auxiliary winches are installed on the platform. This design greatly reduces the rotary inertia at the upper part of the platform and the tilting moment of the working device, and improves the stability of the complete machine.



The sliding stroke of the transition main pulley is long, and the special internal lubrication structure ensures its sliding flexibility, avoiding bending, squeezing and abrasion of the steel wire rope here.



Bottoming protection device can effectively prevent over laying and disordering of steel wire rope.



Rotary Power Head

Multi-seal structure, high-end quality, drip-proof, improve bearing and gear life.

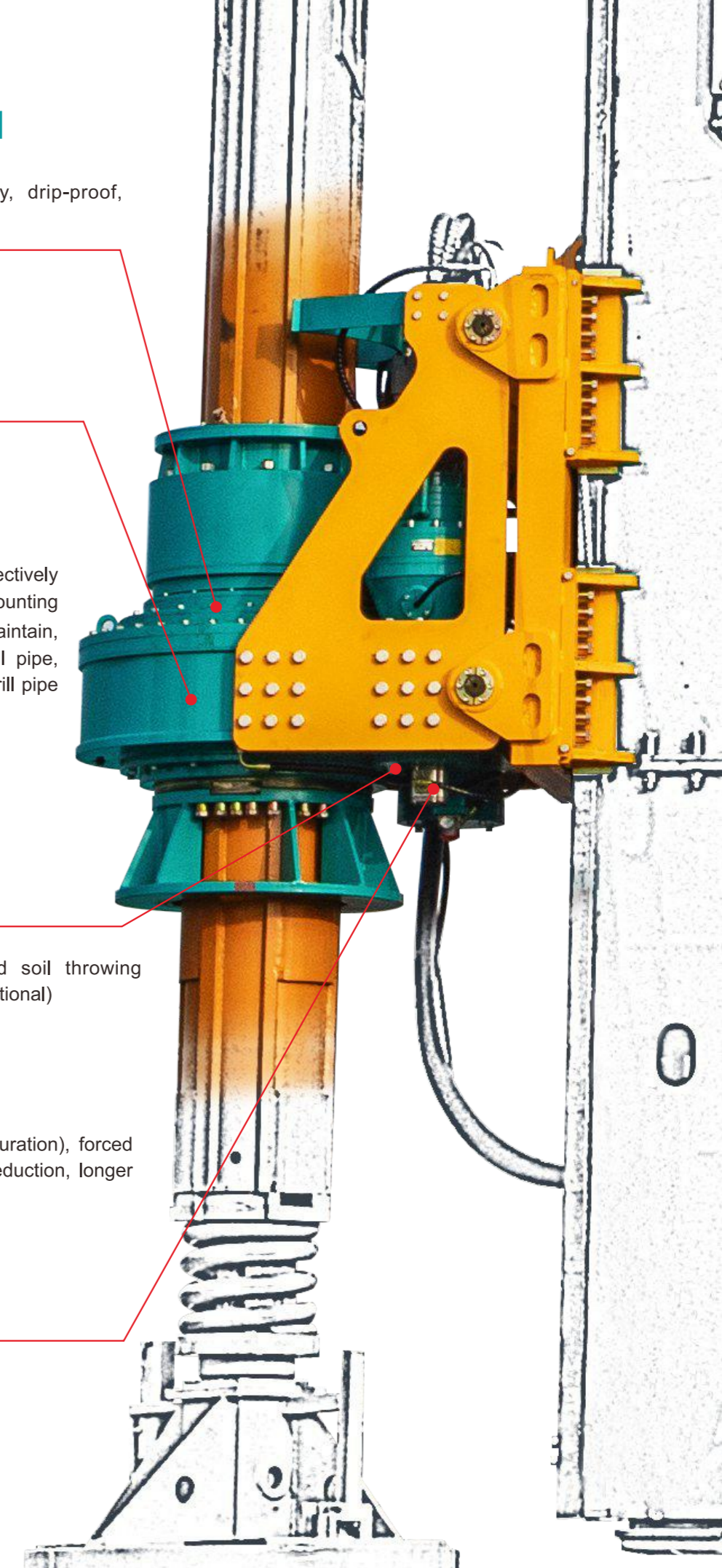
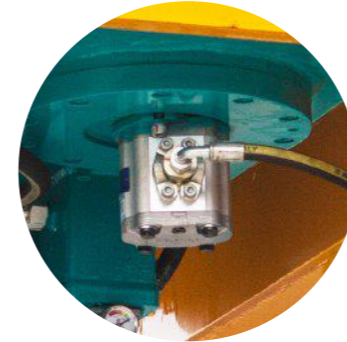


Patented lengthened drive key bar effectively solves the problem that the key bar mounting bolt is easy to break and difficult to maintain, and is perfectly matched with the drill pipe, thus prolonging the service life of the drill pipe by more than 10%.



High speed soil throwing function (optional)

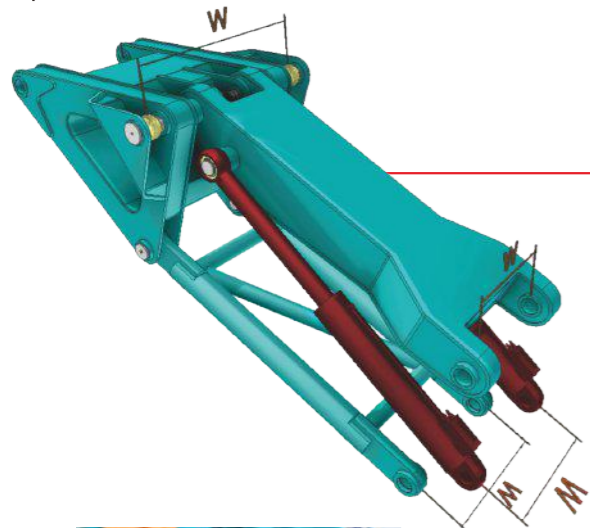
Gear lubrication pump (standard configuration), forced lubrication, wear reduction and noise reduction, longer gear life.



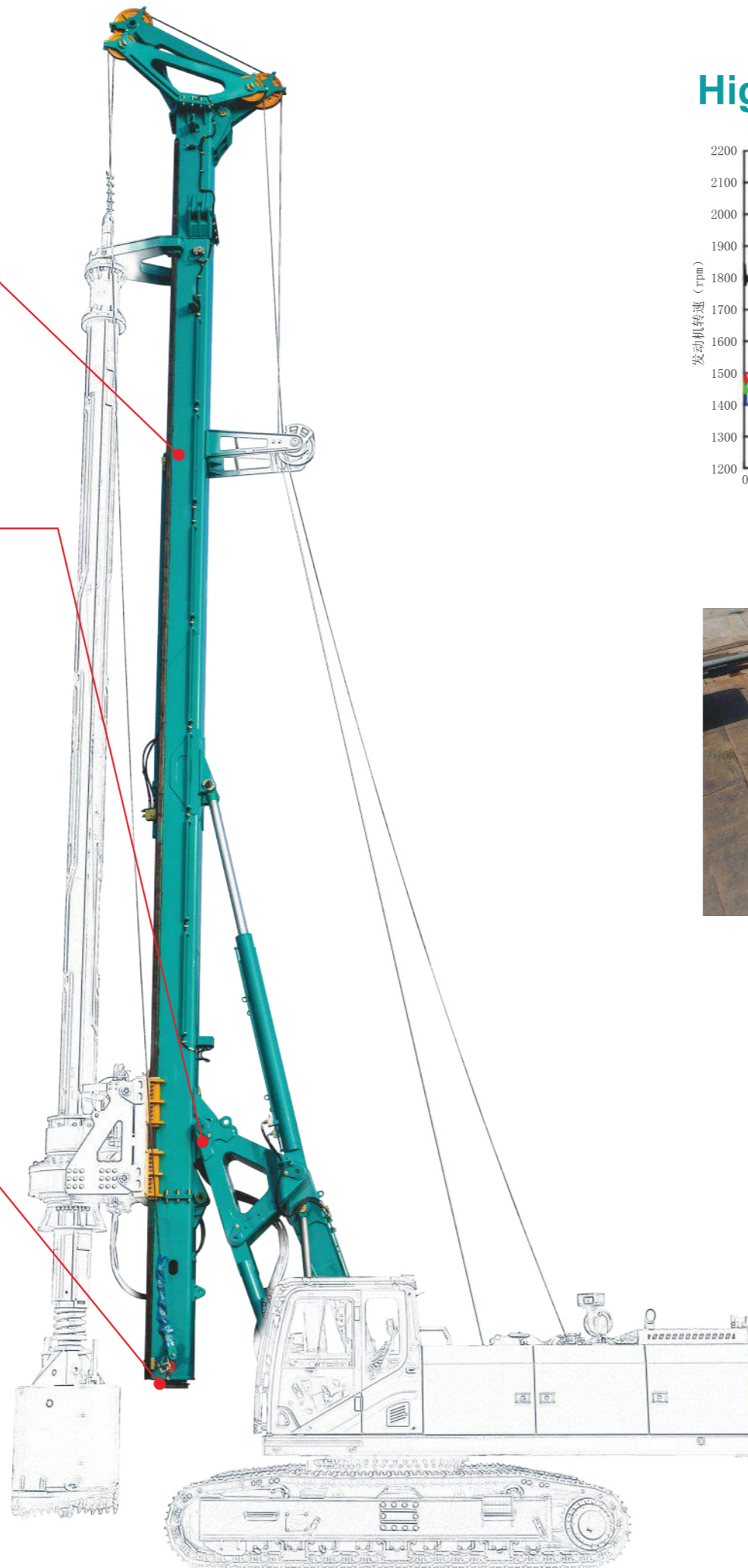
Working Device

Lightweight design of high strength steel is adopted for drilling mast
The structural parts have higher strength and longer service life.

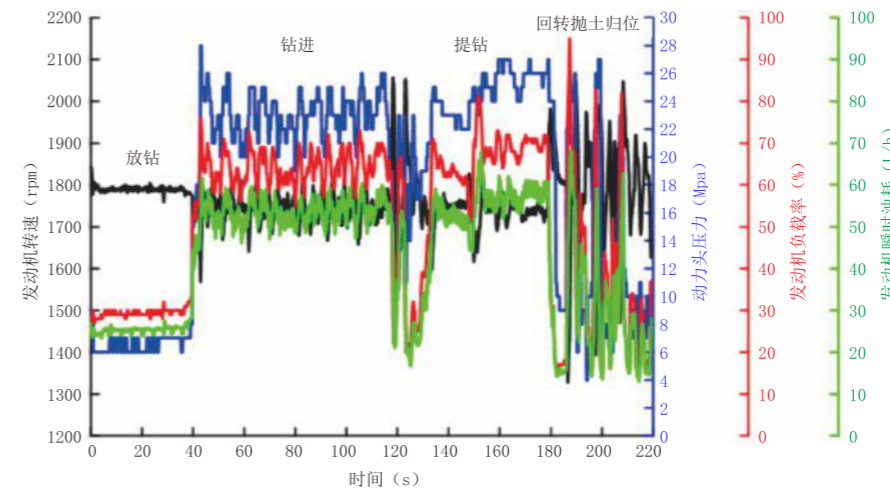
The large parallelogram luffing mechanism has a wide luffing range, large support size and more stable operation.



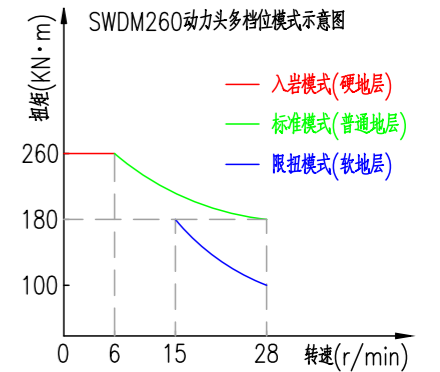
The auxiliary legs hidden in the lower mast not only can provide auxiliary support for drilling construction, but also can accomplish some unexpected things for you.



High Efficiency and Energy Saving



Power system perfectly matches with load power



Driving head multi-gear one-key switching
Energy consumption perfectly matches with formation working conditions



The torque test bench and tension test bench that independently developed by the Company can accurately and conveniently detect relevant data which fill the gap in the domestic technical field of them.

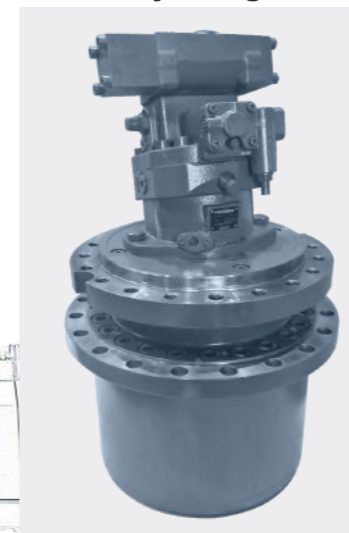


Driving head torque test bench



Hoisting tension test bench

Hydraulic system configuration is high, pipeline loss is small, and comprehensive transmission efficiency is high.



Intelligent Control and Easy Driving



Remote control of the operating system allows a wider field of vision and keeps you outside the "machine" to ensure safety.



- ◆ Fault self-diagnosis alarm, immediate solutions, effective response to emergencies.
- ◆ The control parameters are displayed in real time, the construction data can be exported by USB flash disk, and the man-machine integration is under control.
- ◆ Special electromagnetic handle, one-button locking, cruise operation, getting rid of heavy physical labor

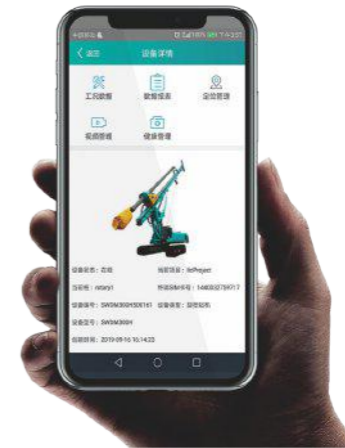


Sunward Cloud



System cloud platform

Mobile phone APP and WEB dual system are online, data are transmitted synchronously, and construction status is controlled at any time. One device in hand enables highly efficient control of multiple equipment.



Multi-function Expansion and High Value Embodiment

Sunward intelligent rotary drilling rig has a variety of configurations for you to choose from, realizing multi-function and diversified construction of one machine.

Casing Oscillator Construction Method

The main machine can be equipped with an external oil source interface for casing oscillator construction. The casing oscillator construction method is adopted to effectively solve the problem of easy collapse in formation construction such as quicksand, silt, backfill soil and the like.



CFA long spiral drilling rig construction method

The CFA long spiral drilling rig construction method can realize continuous pile drilling and grouting. It is a new composite foundation treatment method with high construction efficiency, especially for small holes, dry holes and shallow holes.



DTH Construction Method

Technological Characteristics:

- ◆Drilling with concentric simultaneous casing and wall protection in the whole process
- ◆The positive circulation slag discharge will restrict the slag discharge airflow in the casing to ensure the construction safety.
- ◆The construction scheme of large-diameter down-the-hole hammer is adopted to deal with both hard and soft formation.



Casing driver construction method

The construction of rotary drilling rig equipped with casing driver can effectively and quickly bury casing, which can give play to obvious advantages in backfilling soil layer, shallow sandy pebble layer and limestone layer with multiple karst caves. Placing casing by the optional casing driver can ensure the verticality of the casing and effectively prevent collapse. The drilling and the casing placement can be carried out simultaneously to improve the efficiency of the drilling rig.



Comprehensive Technical Parameters

Parameters		Model	SWDM160	SWDM160H2	SWDM160A	SWDM160B
Drill hole	Max. drilling diameter	mm	1500	1500	1200	800
	Max. drilling depth	m	52/40	56/44	53/42	18.5(CFA)
Engine	Brand		Cummins	Cummins	Cummins	Cummins
	Model		QSB7-C201	QSB6.7-C260	QSB6.7-C260	QSB6.7-C260
	Power	kW/@rpm	150@2050	194@2200	194@2200	194@2200
Rotary power head	Max.torque	kN.m	150	168	160	160
	Rotation speed	rpm	6~32	6~42	6~42	6~42
	High-speed throwing soil(optional)	rpm	70	70	70	70
Pressurization system	Max. applied pressure	kN	150	150	200	200
	Max.lifting force	kN	160	160	200	200
	Max.stroke	mm	4000	4000	11500	11700
Main winch	Max.lifting force	kN	160	165	160	640
	Max.ropespeed	m/min	80	80	80	80
Aux Winch	Max.lifting force	kN	50	50	50	50
	Max.ropespeed	m/min	50	50	50	50
Drilling mast	Left and Right tilt	°	±4	±4	±4	±4
	Forward tilt	°	4	4	4	4
Chassis	Crawler width	mm	600	700	700	700
	Crawler extension width	mm	2980~3880	2980~3980	2980~3980	2980~3980
	Chassis length	mm	4645	4645	4645	4645
Complete machine	Working height	mm	17985	18285	18330	18285
	Working Weight	t	47	49	49	49

Kelly bar parameters

Model	Friction Kelly Bar	Hole depth (m)	Drill rod weight (kg)	Configuration	Model	Interlocking Kelly Bar	Hole depth (m)	Drill rod weight (kg)	Configuration
SWDM160	MZ377-5X11.5m	52	6250	●	SWDM160	JS377-4X11.5m	40	6700	○
	MZ377-5X9.7m	43	5400	○		JS377-4X9.7m	31	5750	○
SWDM160H2	MZ377-5X12.1m	56	7000	●	SWDM160H2	JS377-4X12.1m	44	7030	○
SWDM160A	MZ377-5X10m	45	6100	○	SWDM160A	JS377-4X10m	35	6000	○
	MZ377-5X8m	35	5100	○		JS377-4X8m	27	5000	○

● Standard ○ Optional

Comprehensive Technical Parameters

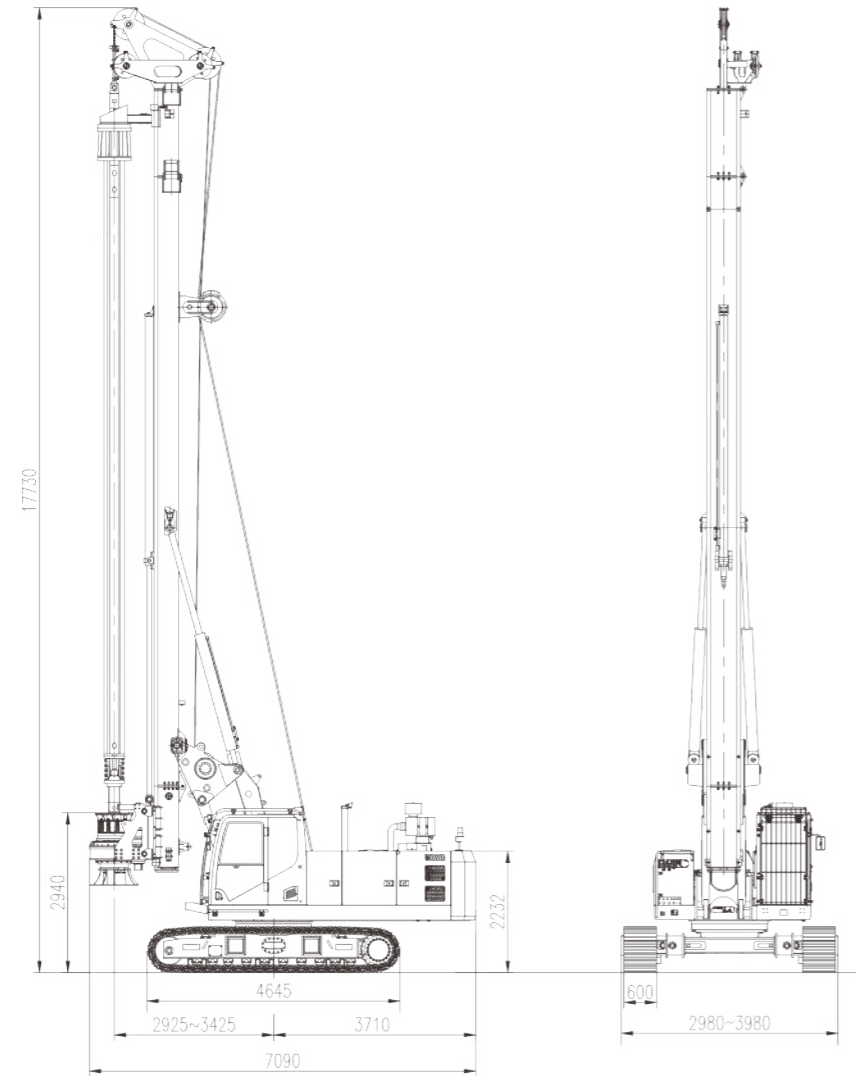
Parameters		Model	SWDM200	SWDM220-3	SWDM220A	SWDM220B	SWDM240	SWDM260
Drill hole	Max. drilling diameter	mm	1800	2000	1800	1000	2000	2200
	Max. drilling depth	m	64/51	69/54	69/54	24(CFA)	69/54	74/59
Engine	Brand		Cummins	Cummins	Cummins	Cummins	Cummins	Cummins
	Model		QSB6.7-C260	QSL9-C325	QSL9-C325	QSL9-C325	QSL9-C325	QSL9-C325
	Power	kW/@rpm	194@2200	242@2100	242@2100	242@2100	242@2100	242@2100
Rotary power head	Max.torque	kN.m	200	245	245	245	248	260
	Rotation speed	rpm	6~35	6~28	6~28	6~28	6~28	6~32
	High-speed throwing soil (optional)	rpm	70	70	70	70	70	70
Pressurization system	Max. applied pressure	kN	210	210	270	270	210	230
	Max.lifting force	kN	210	240	270	270	240	240
	Max.stroke	mm	5000	5000	16000	17000	5000	5000
Main winch	Max.lifting force	kN	190	230	220	880	260	280
	Max.ropespeed	m/min	75	70	70	70	72	70
Auxiliary winch	Max.lifting force	kN	80	80	80	80	80	80
	Max.ropespeed	m/min	55	58	58	58	58	58
Drilling mast	Left and Right tilt	°	±5	±5	±5	±5	±5	±5
	Forward tilt	°	5	5	5	5/90	5	5
Chassis	Crawler width	mm	700	800	800	800	800	800
	Crawler extension width	mm	2900~4200	3000~4500	3000~4500	3000~4500	3000~4500	3000~4500
	Chassis length	mm	5145	5755	5755	5755	5755	5755
Complete machine	Working height	mm	21275	22275	22275	22275	22275	23305
	Working Weight	t	65	76	76	76	76	78

Kelly bar parameters

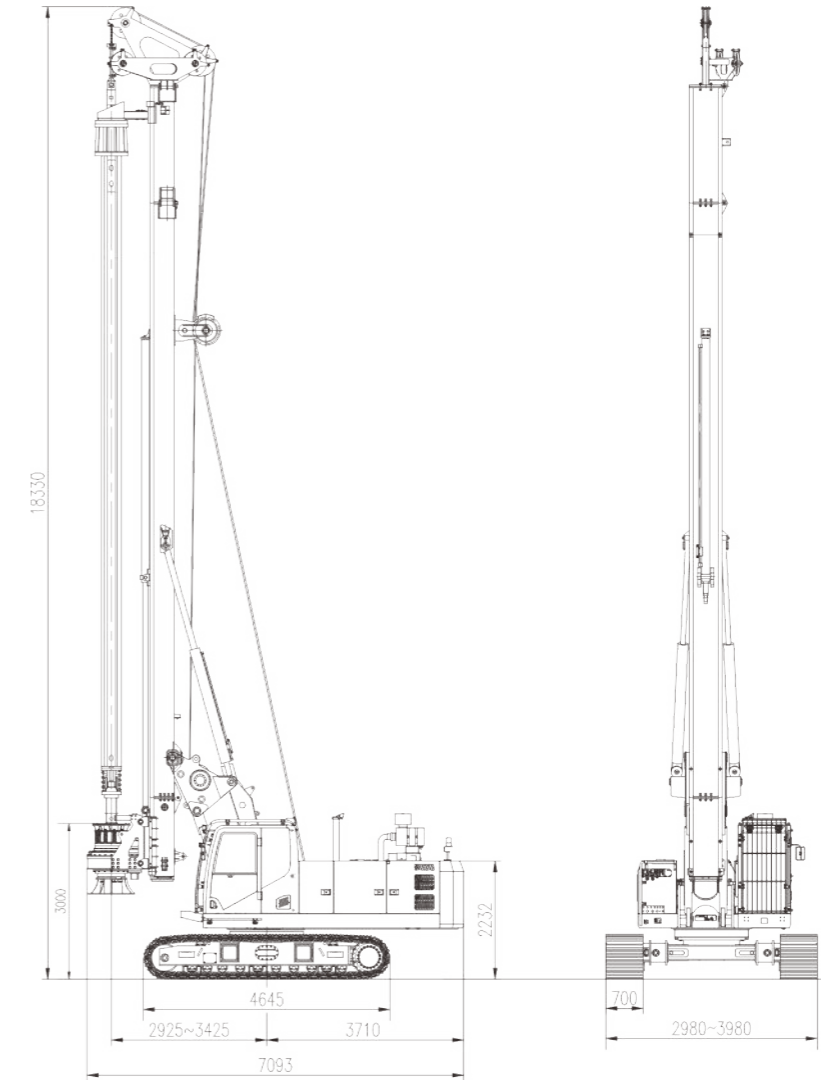
Model	Friction Kelly Bar	Hole depth (m)	Drill rod weight (kg)	Configuration	Model	Interlocking Kelly Bar	Hole depth (m)	Drill rod weight (kg)	Configuration
SWDM200	MZ406-5X14m	64	8600	●	SWDM200	JS406-4X14m	51	9050	○
	MZ406-5X10m	45	6300	○		JS406-4X10m	35	6500	○
SWDM220-3	MZ440-5X15m	69	10200	○	SWDM220-3	JS440-4X15m	54	9090	●
SWDM220A	MZ440-5X11.5m	52	9000	○	SWDM220A	JS440-4X11.5m	41	8000	○
SWDM240					SWDM240				
SWDM260	MZ470-5X16m	74	12500	○	SWDM260	JS470-4X16m	59	11500	●
	MZ470-5X11.5m	52	9600	○		JS470-4X11.5m	41	8600	○

● Standard ○ Optional

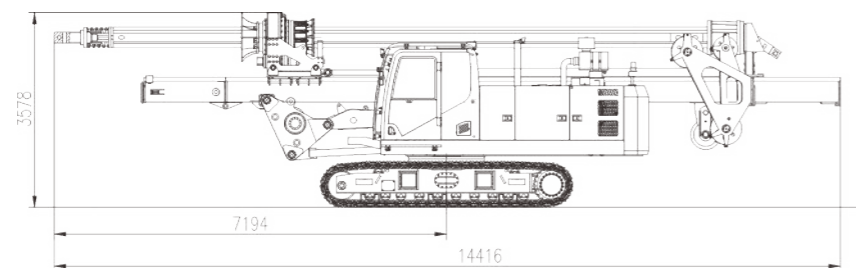
■ Operation status SWDM160 (unit:mm)



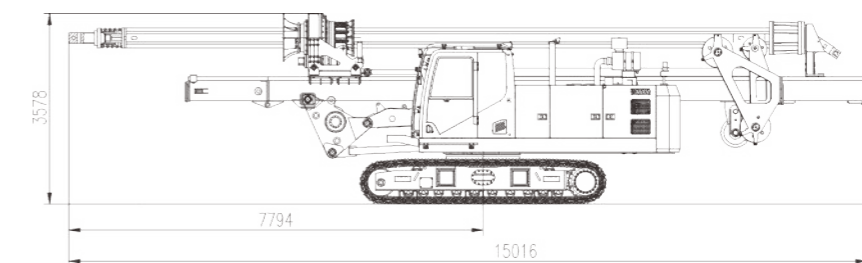
■ Operation status SWDM160H2 (unit:mm)



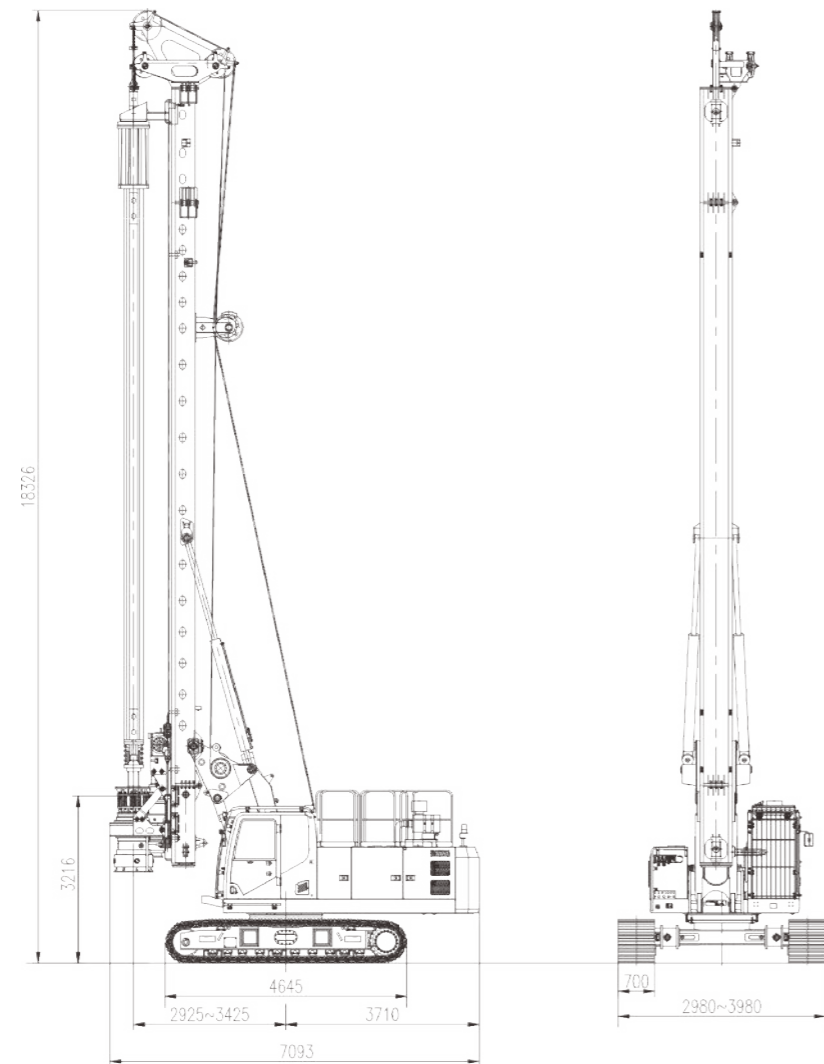
■ Transportation status SWDM160 (unit:mm)



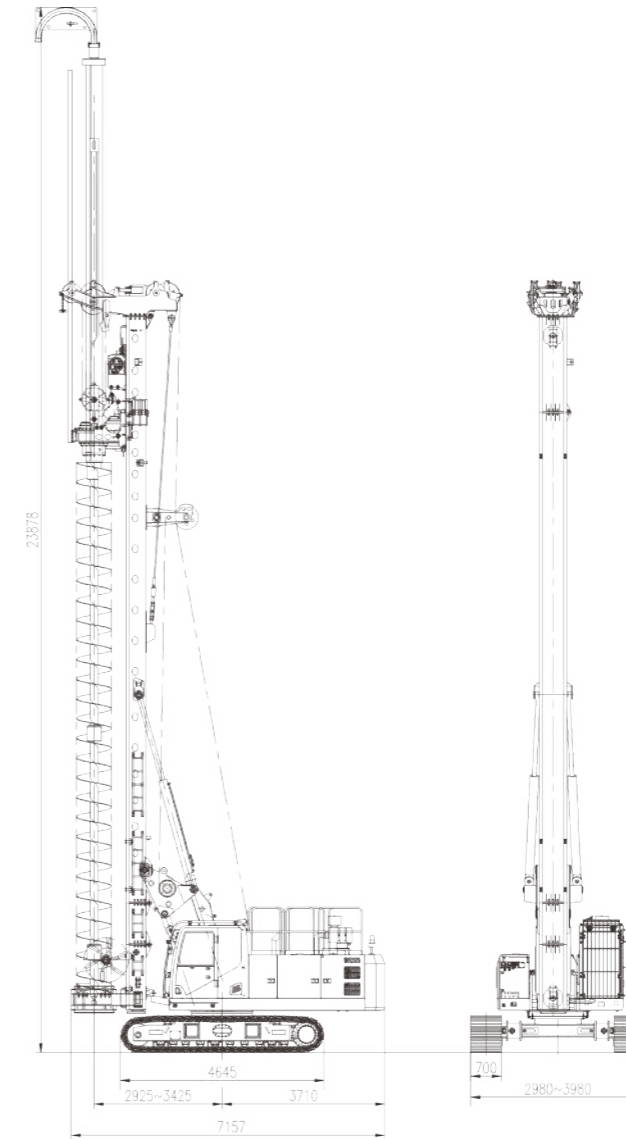
■ Transportation status SWDM160H2 (unit:mm)



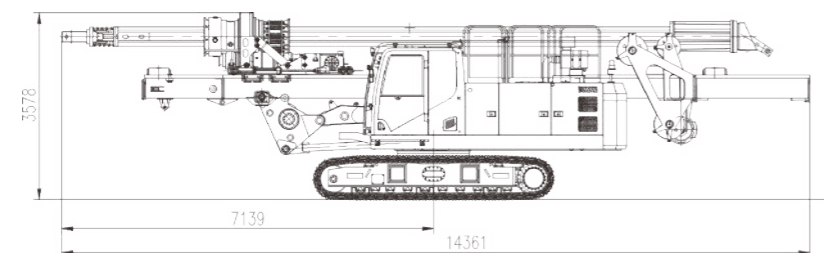
■ Operation status SWDM160A (unit:mm)



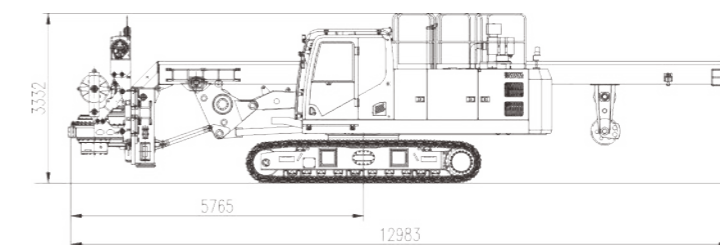
■ Operation status SWDM160B (unit:mm)



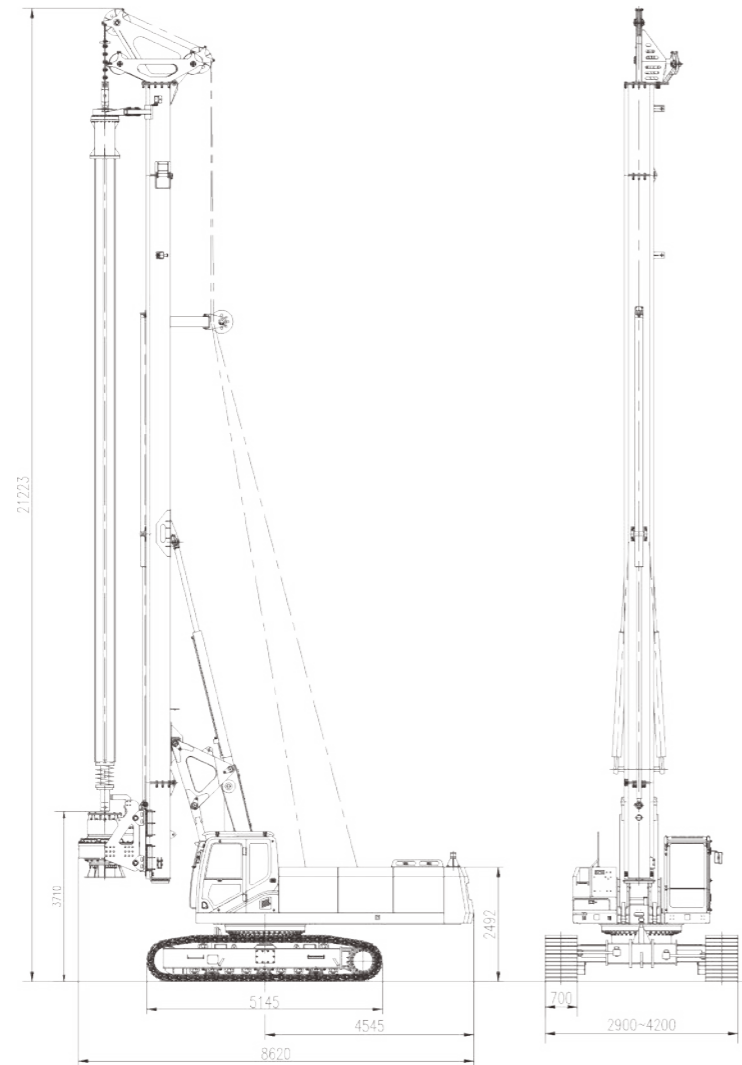
■ Transportation status SWDM160A (unit:mm)



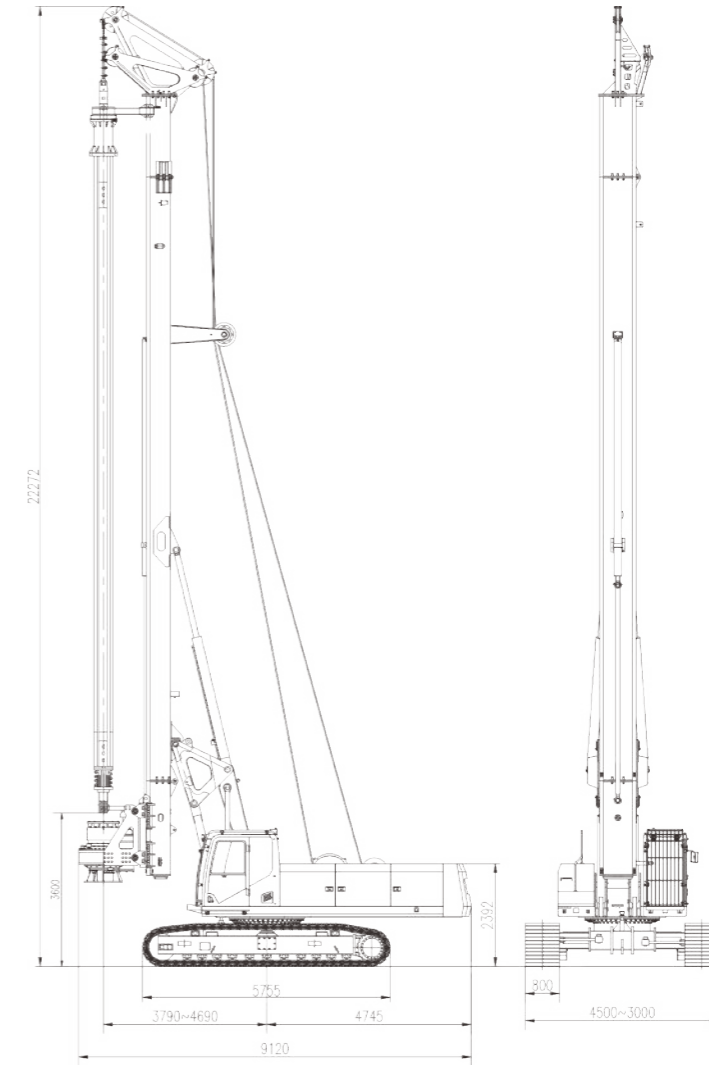
■ Transportation status SWDM160B (unit:mm)



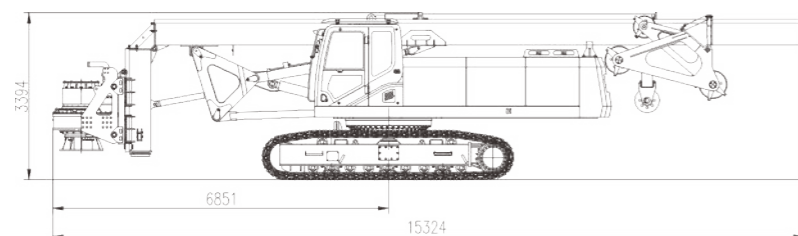
■ Operation status SWDM200 (unit:mm)



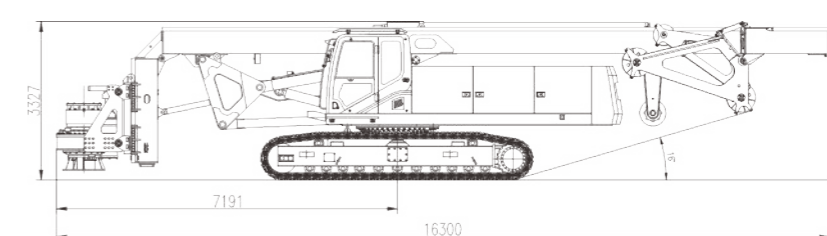
■ Operation status SWDM220-3 (unit:mm)



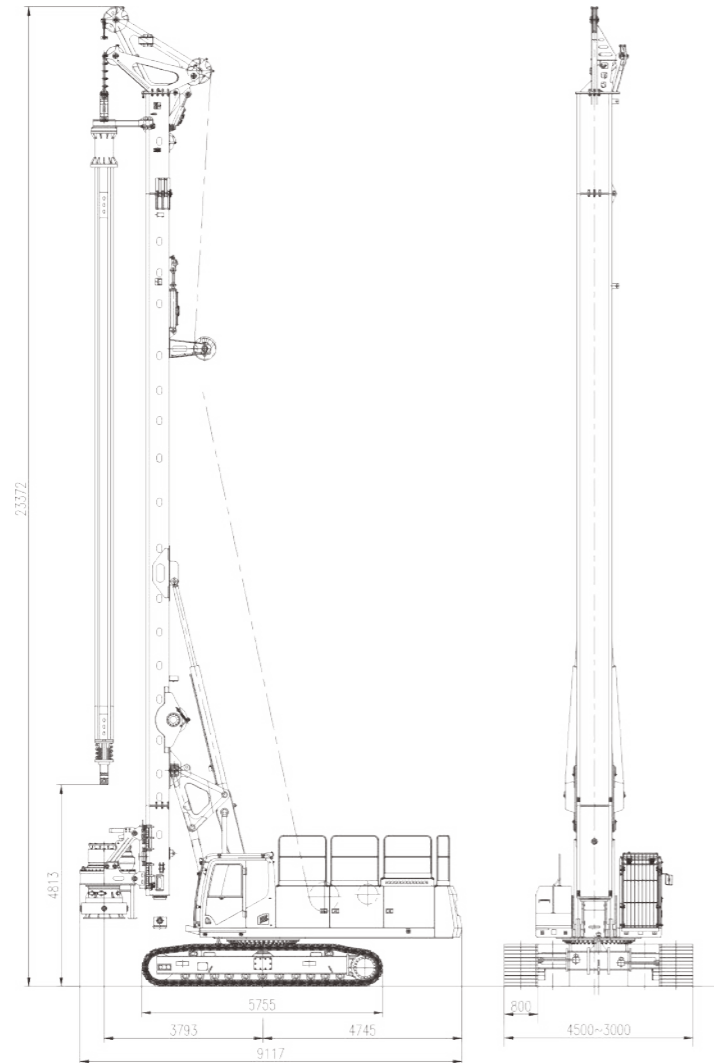
■ Transportation status SWDM200 (unit:mm)



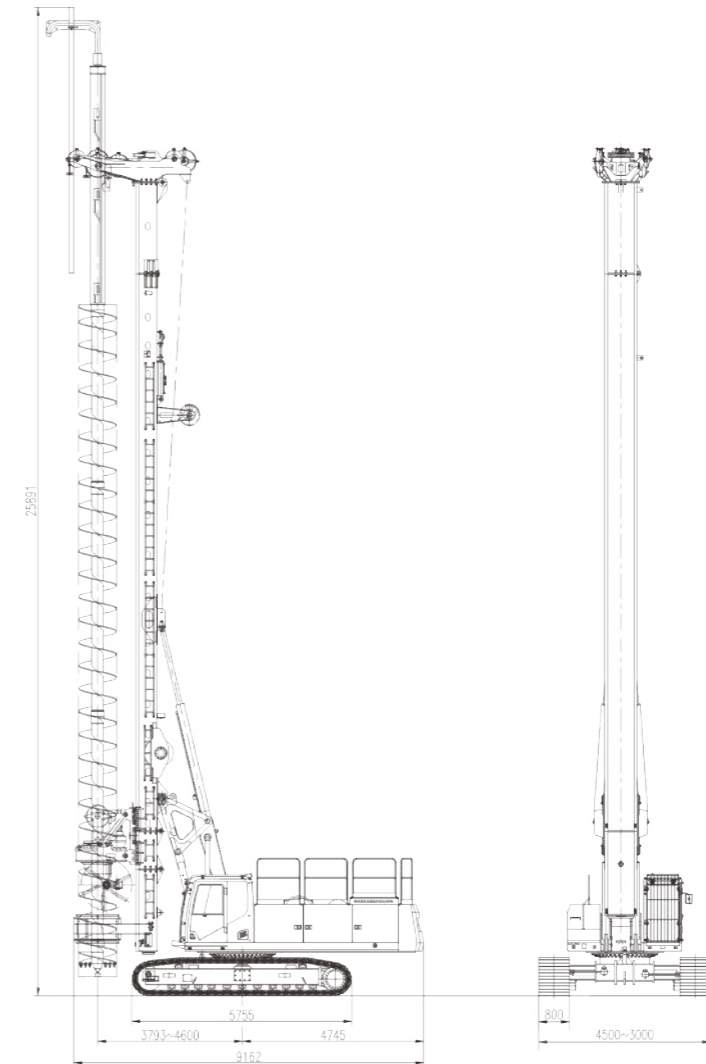
■ Transportation status SWDM220-3 (unit:mm)



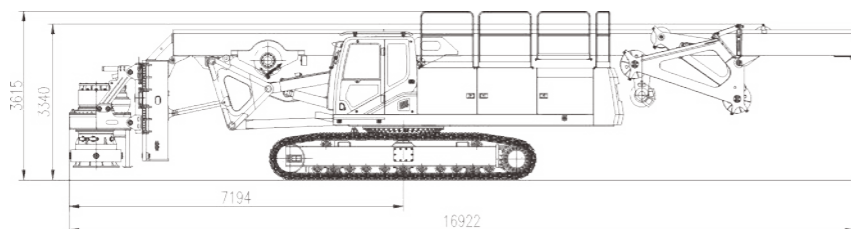
■ Operation status SWDM220A (unit:mm)



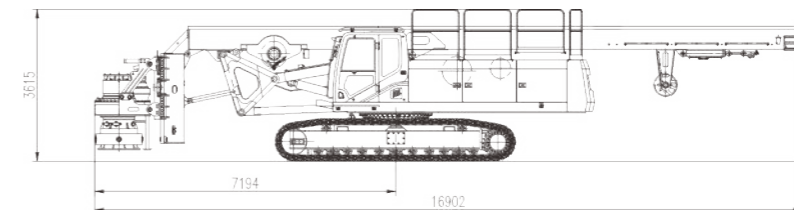
■ Operation status SWDM220B (unit:mm)



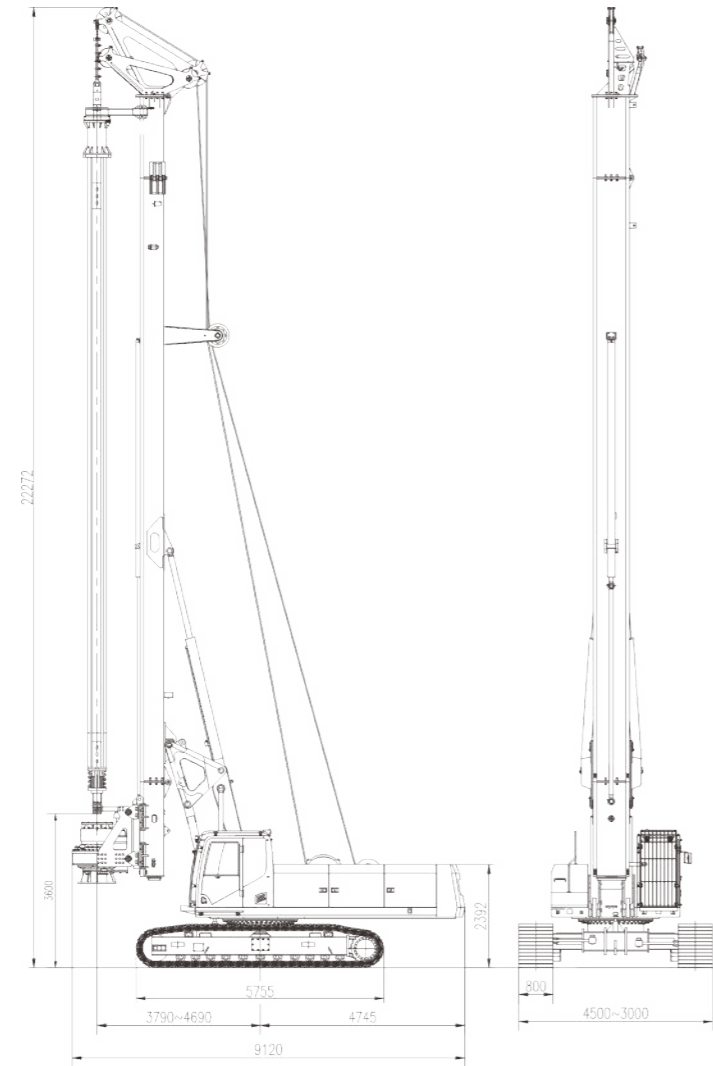
■ Transportation status SWDM220A (unit:mm)



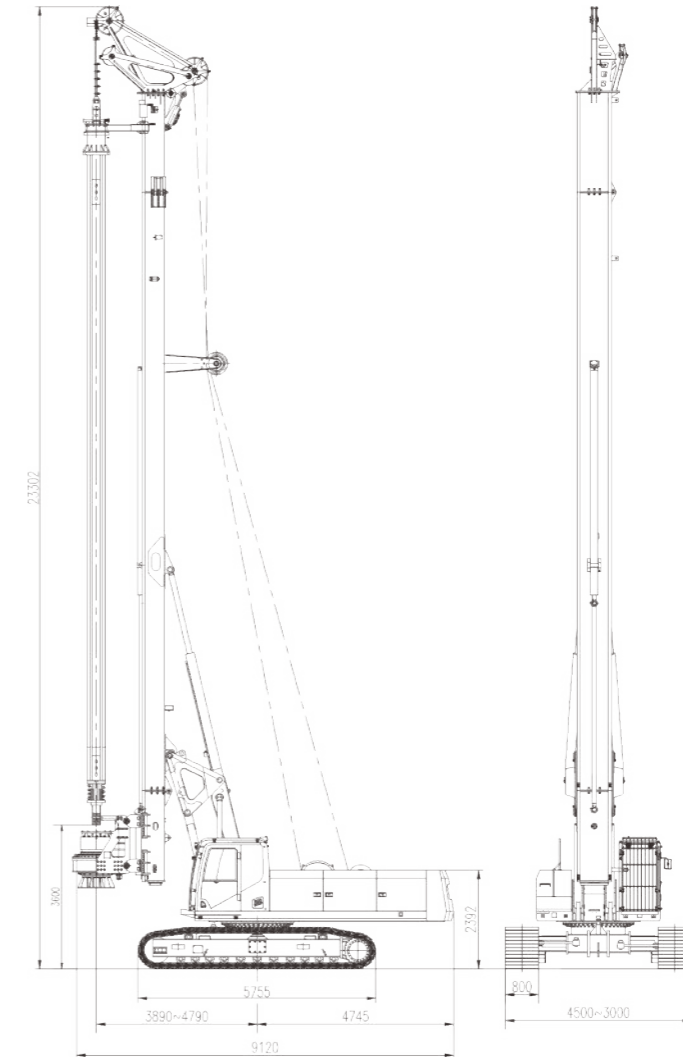
■ Transportation status SWDM220B (unit:mm)



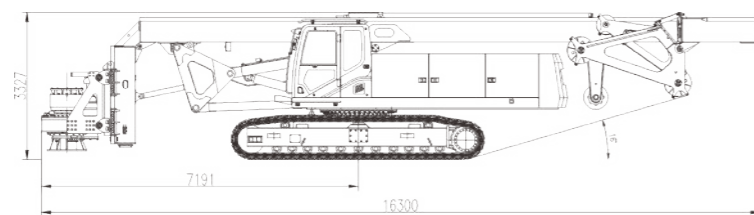
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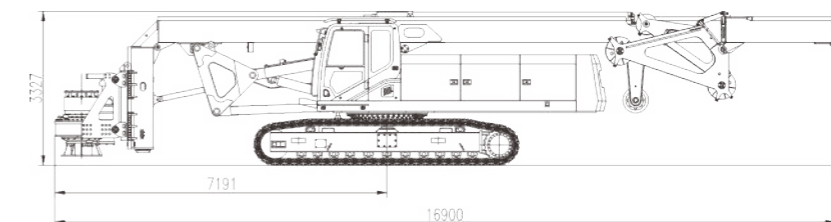
■ Operation status SWDM260 (unit:mm)



■ Transportation status SWDM240 (unit:mm)



■ Transportation status SWDM260 (unit:mm)

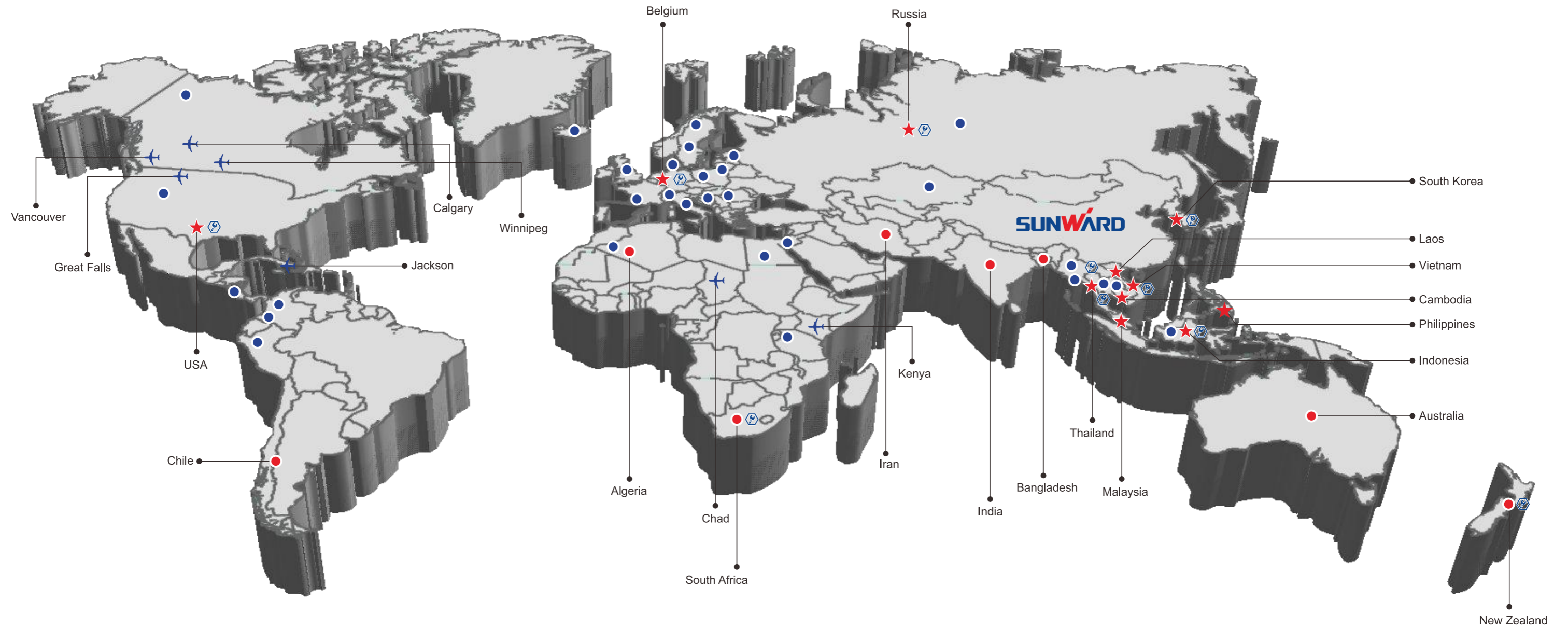


Construction Application

Sunward Rotary Drilling Rig has unique advantages in complete machine stability, control technology, steel wire rope consumption and other performance indicators, and its comprehensive performance has reached the international advanced level. Sunward rotary drilling rig is not afraid of medium (slight) weathering, hard sand layer, large gravel layer and other complicated geological conditions, and has successively participated in the construction of Panzhihua Steel Vanadium and Titanium Base, Hong Kong-Zhuhai-Macao Bridge, Harbin-Dalian Passenger Dedicated Line, Bird's Nest Stadium, Shanghai-Nanjing Railway, Shanghai-Kunming Railway, Lasa-Rikaze Railway, Lanzhou-Urumqi High-speed Railway and other major projects. At the same time, Sunward rotary drilling rigs have also been exported to Southeast Asia, Europe, America, Africa and other countries and regions in large quantities to participate in local key projects.



Distribution Network



- ★ Sunward subsidiaries
- Sunward offices
- Sunward dealers
- ⬡ Sunward spare parts centers
- ✈ AVMAX service outlets