

# Global Support Group/ TPS Alliance

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OIL AND GAS DIVISION

# GSG / TPS Alliance at Glance

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At Global Support Group and TPS Alliance and its partners, we provide through our partners performance-driven solutions and technical services to support our customers throughout the complete lifecycle of their assets in upstream, midstream and downstream oil & gas, energy industries.

GSG / TPS with its partners has long-standing relationships with customers based on our ability to deliver consistently successful outcomes, combining our global experience, innovative ideas and solutions, and a flexible approach, from specialist consultancy services, to project-based delivery or through long-term contracts.

GSG / TPS Alliance and its partners is operating in Algeria, United States, Canada, Australia, Mexico, Venezuela, Ecuador, Brazil, Saudi Arab, Tunisia, UAE, Oman, Italy, Tajikistan, Mauritania, Egypt and Pakistan.

# Drilling Rigs

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GSG / TPS Alliance and its partners have more than 30 years of operating experience, our Drilling group specializes in high altitude directional drilling while leaving a small footprint on drilling site. We have the capacity to drill up to 23,000 ft. Our Drilling group offers our customers a wide range of rigs for all types of exploration activities.

We offer the most efficient drilling services and speedy rig moves. Our Drilling group has the capacity to drill all types of wells; Oil, Natural Gas and Geo-Thermal, with the maximum depth of 25,000 ft. We have down-hole experts and tools to satisfy any and all directional needs for the operator.

We offer streamline drilling services all while delivering well cost savings to our customers via constant improvements in drilling efficiency and safety. We believe that our success is based on our efforts to apply new technology, ideas and processes in order to deliver high quality products to our customers.



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## **Part 1 Product Overview**

Part 2 Product Features

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Part 4 Installation Process

Part 5 Product Series

## Efficient, Safe and Environmental Friendly

The **Beyond Rig™** is an integrated solution which aims to improve the rig's overall performance, reduce the operating cost and rig up/down time.

With electromechanical and modular design, it achieves a highly integrated automatic operation and fast move.

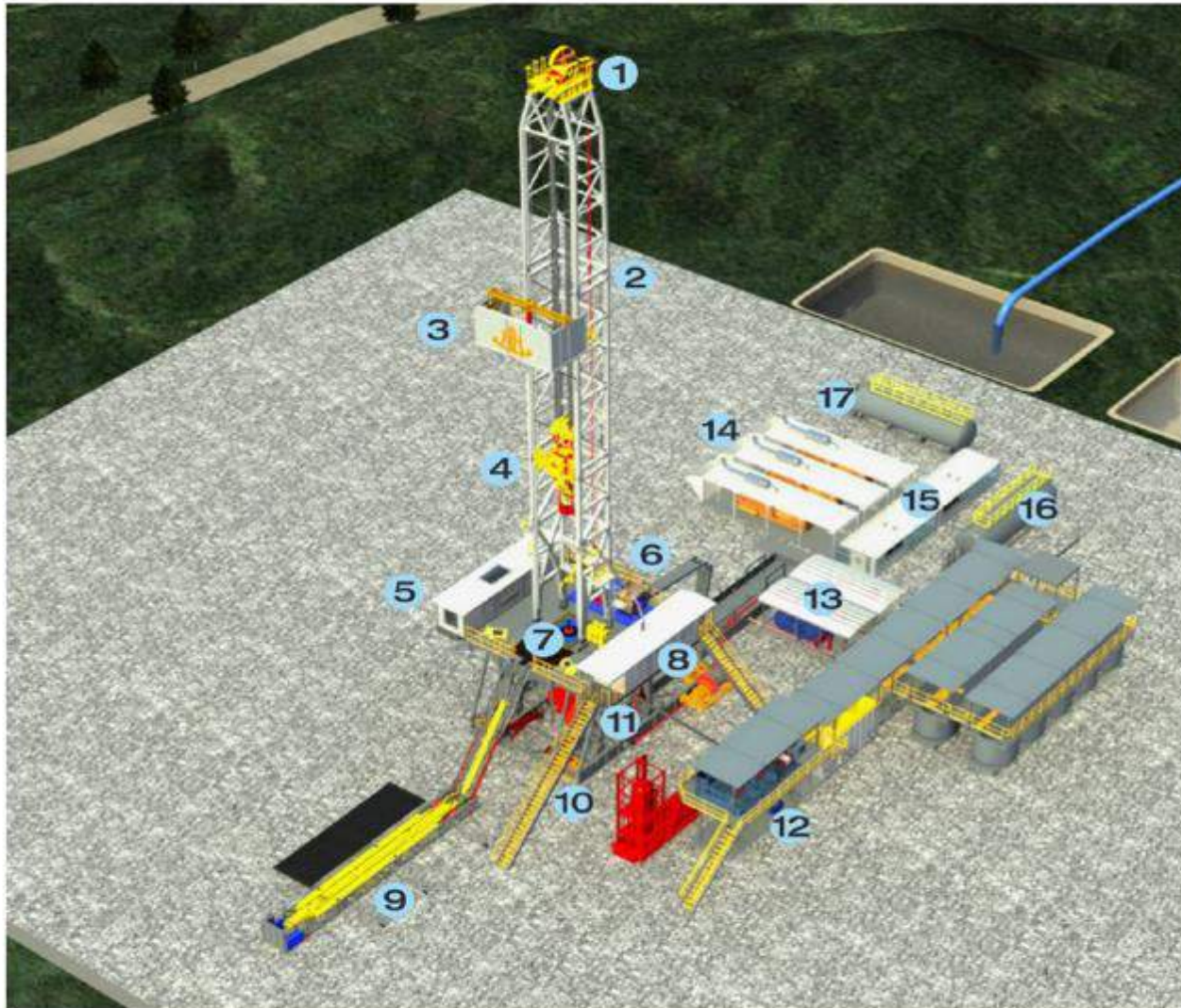


# 1.1 Technical Parameters



Max.Static Hook Load	3400kN/750Klbs w/12 lines
Mast Height	43.5m/142.7Ft
Rig Floor Height	9m/30Ft.
Setback Capacity	2270kN/500Klbs
Drawworks Rated Power	1500HP
Wire Rope Diameter	1-¼" /Φ32mm
Rotary Table Opening	37-½"
Mud Pump No.×Power	2×1600HP
Top Drive	45000 N-m/33190ft-lbs @106rpm
Mud System	Four(4) Round-bottomed Mud Tanks Total Mud Capacity: 1585bbl

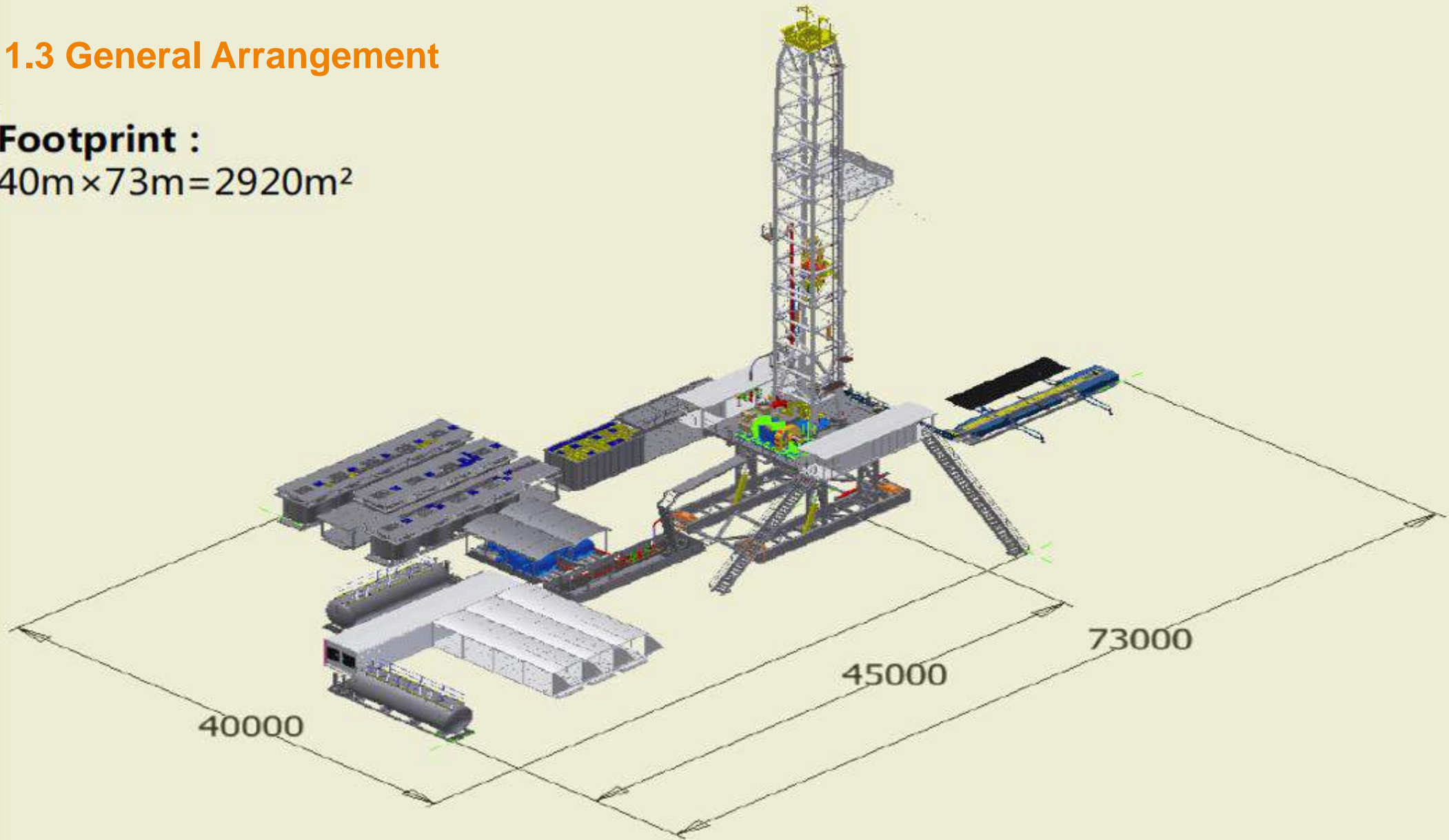
## 1.2 Key Components



- ① Crown Block
- ② Mast
- ③ Pipe Racking System
- ④ Integrated Top Drive
- ⑤ Driller's Cabin
- ⑥ Drawworks
- ⑦ Iron Roughneck
- ⑧ Doghouse
- ⑨ Power Catwalk
- ⑩ Skidding system
- ⑪ Substructure
- ⑫ Solid Control System
- ⑬ Mud Pump Sets
- ⑭ GenSets House
- ⑮ VFD/MCC System
- ⑯ Water Tank
- ⑰ Oil Tank

### 1.3 General Arrangement

**Footprint :**  
 $40\text{m} \times 73\text{m} = 2920\text{m}^2$





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## 2.1 Driller's Control System

- Integrated CCTV — The six touch screens in driller's cabin can be switched to video output.
- Integrated Operation System — Top drive, catwalk, pipe racking, power slip, iron roughneck, and stabbing arm can be operated from both touch screen and driller's console.





## 2.2 Electrical Drive System

- High Reliability: Siemens VFD.
- Auto-switching channels: S7-400 duo-PLC redundant systems, automatically switch to other channels when communication fails.
- Multiple touch screen: Four by driller's chair, two by the console, back up with each other.
- High Automation : Automatic equipment operated locally and remotely.

## 2.3 Application of Direct Drive

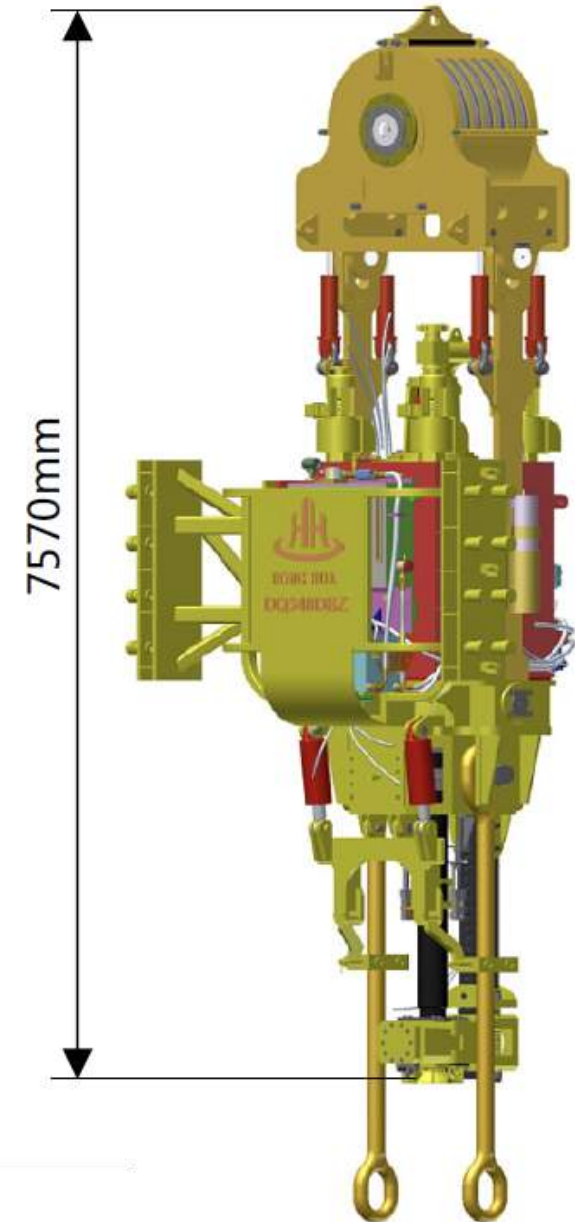
### — Integrated Top Drive

#### Technical Parameters

Drilling Power	680HP
Hoisting Capacity	3400kN/350 Short Tons
Speed	0 ~ 220RPM
Continuous Drilling Torque	45000 N·m/33190ft-lbs@106rpm
Max. Breakout Torque	70,000 N·m/51,629ft-lbs

#### Features

- Integrated with traveling block.
- All power and control provided directly through specially developed AC motor with increased efficiency and durability
- No gearbox, fewer transmission failure points.
- Guide beam built in mast, no installation required.
- Lubricated with grease, easy maintenance and low cost.



## 2.4 Application of Direct Drive Draw works

### Technical Parameters

Max.Input Power 1380kW ( 1850HP )

Hoisting Capacity 750,000 lbs. on 12 lines

Brakes Primary dynamic braking  
and caliper disc brakes

### Features

- No gearbox, less transmission failure.
- Simplicity of design for lower maintenance
- Specially engineered direct AC motor drive to drum shaft, increased hoisting performance.
- Auxiliary hydraulic drive system lifts the maximum weight of drill string when traction motor fails.



## 2.5 Application of Direct Drive — Mud Pump



### Technical Parameters

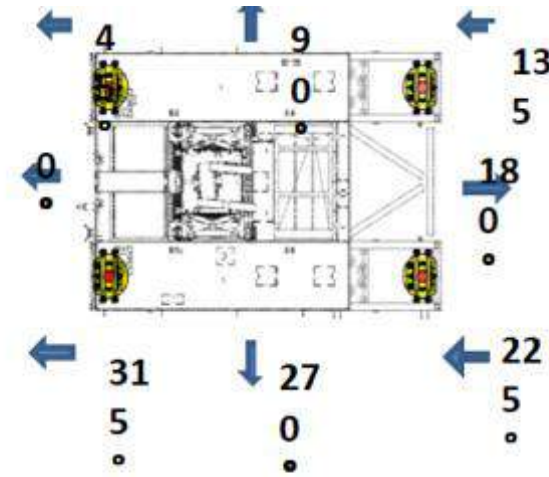
Rated Power	1193kW ( 1600HP )
Rated Strokes	120 SPM
Max.Discharge Volume	720GPM ( 7" liner )
Max.Working Pressure	7500PSI

### Features

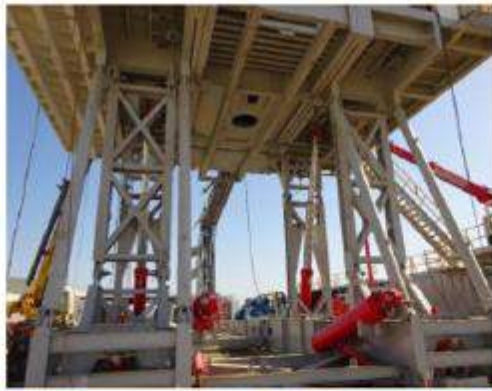
- Directly driven through pinion shaft by specially designed single AC motor.
- Higher reliability, more compact unitization, and lighter weight.
- Lower noise and vibration.
- Reduced pinion shaft loading, extended bearing life.

## 2.6 Walking System

- Built in base substructure , no need to remove when transported.
- No rig-down, walking in 8 directions with maximum lifting capacity of 600 tons.
- Move with full setback for pad drilling.
- Walking speed of 40 feet per hour.



## 2.7 Mast, Substructure Hydraulic Lifting System

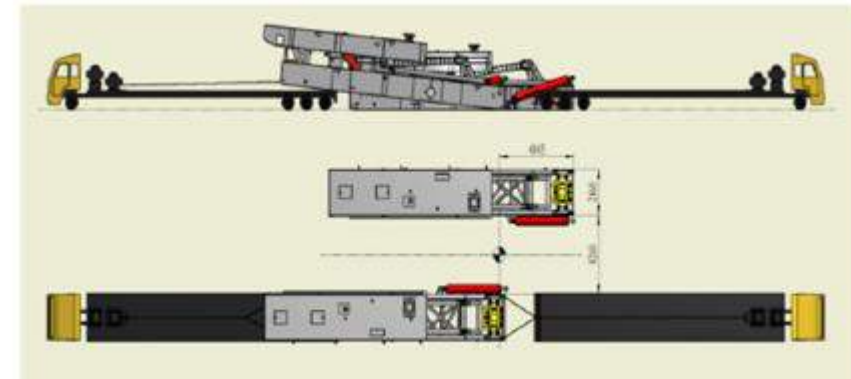
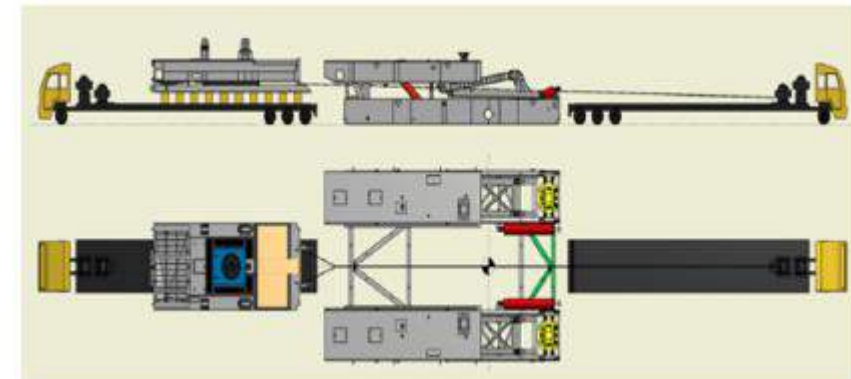
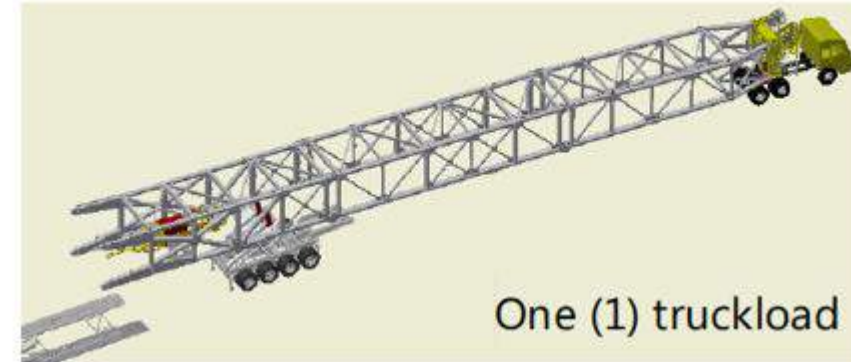


- Mounted at ground level, raised with hydraulic cylinders.
- Mast lifting cylinder can be retrieved and stored in the substructure.



## 2.8 Modular Transportation

- Three section cantilever mast with top drive transported by one trailer.
- Substructure transported by winch truck.



## Mast, substructure and Integrated Top Drive Modules (Racking board transported separately)

Three(3) truckloads



Bot Section

(L14.9m×W4.15m×H4.6m, 35t)

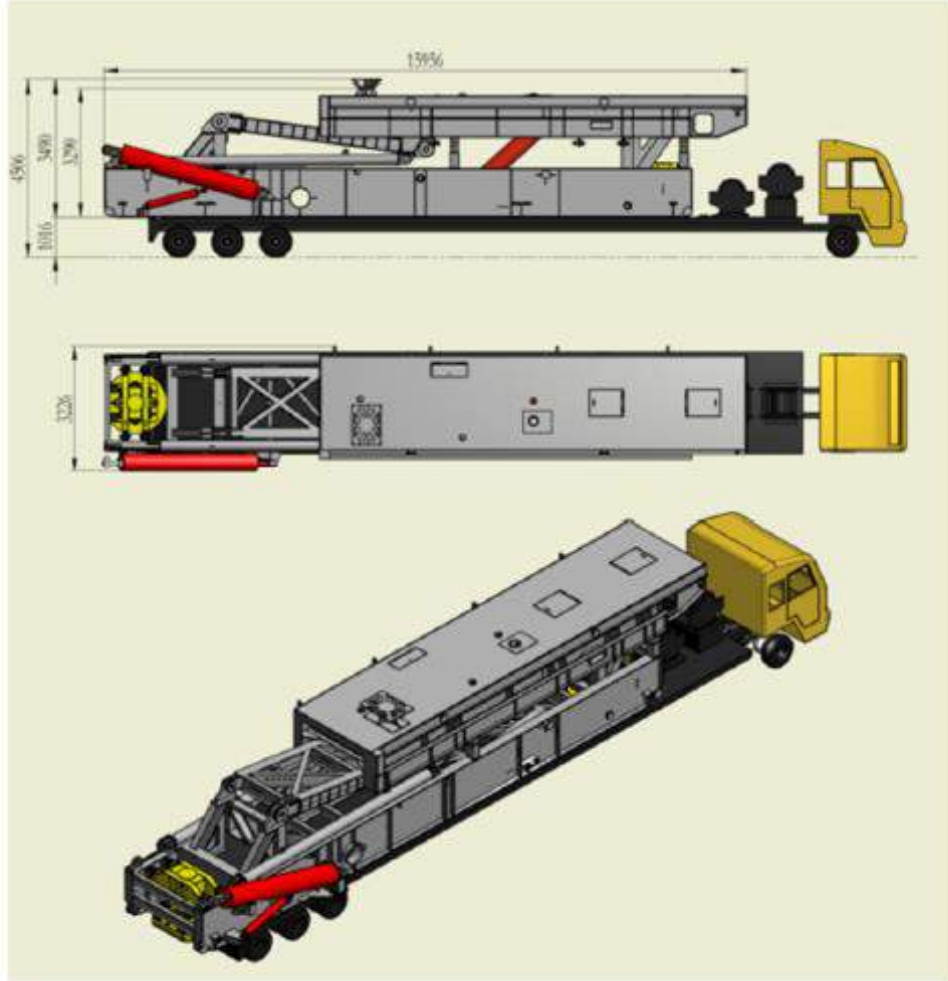
Mid Section

(L15.1m×W4.15m×H4.6m, 13t)

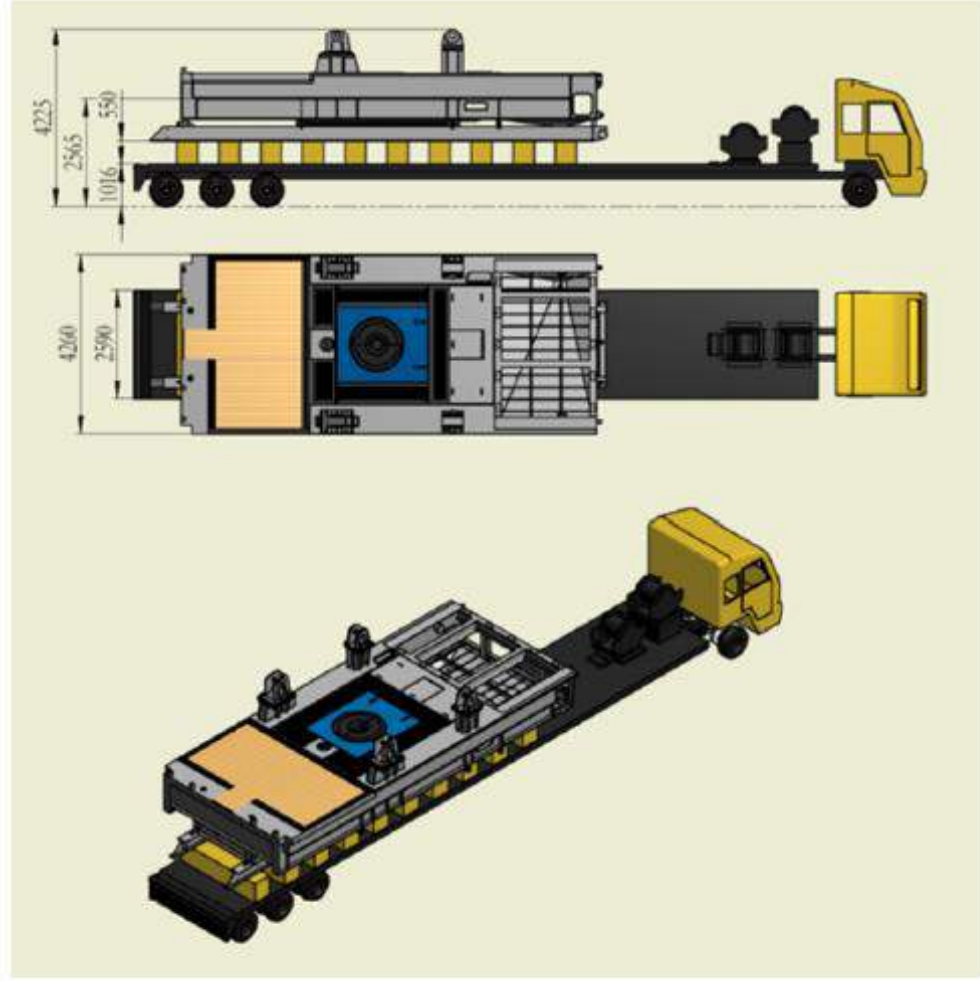
Top Section

(L18m×W4.15m×H4.6m, 30t)

## Substructure Modules (3 truckloads)



Left, Right base Modules  
( L16m×W3.3m×H4.5mm, 55t )



Mid Base Module  
( L7.6×W4.3×H4.3mm, 31t )

## 2.9 Solid Control System

- Round-bottomed tanks for better circulation and more efficient mud flow.
- Shakers, cleaner and degasser are mounted on one equipment skid hydraulically lifted to work position.
- Agitators and mud guns are under tank floor.



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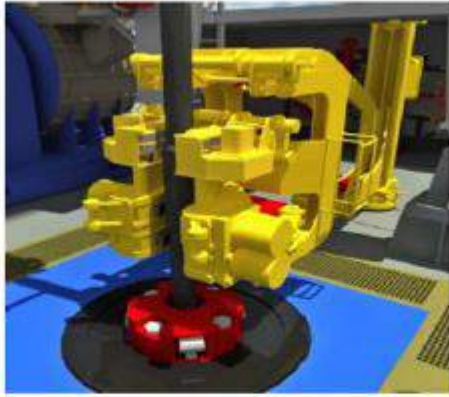
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- Reduced risk of accidents.
- Reduced personnel cost and workload.

## 3.1 Power Catwalk

### Technical Parameters

Max.Tubular Length	30ft
Tubular OD Range	3" ~ 20"
Max.Tubular Weight	10,000lbs
Rig Floor Height Range	25ft-35ft
Cycle Time	30s

### Features

- All moving components are driven by hydraulic cylinders, less transmission parts.
- No connecting to drill floor.
- Rapid set-up and tear-down.
- Self contained Power Pack with electric motor and hydraulic pump combination.



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## Installation Process



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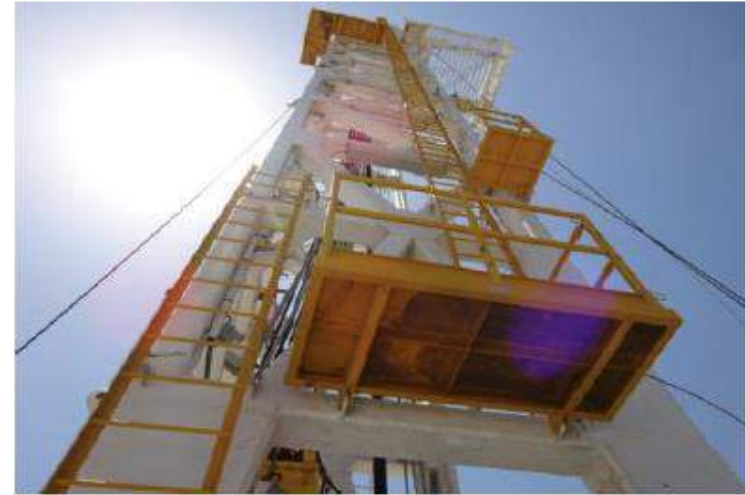
**Part 5 Product Series**

## Continuous Improvement

Specs and Features	Beyond Rig 1	Beyond Rig 2
Max.Static Hook Load	3150kN	3400kN
Transportation Modules	35 loads	27 loads with less rig-up and rig-down time
Rig Crew Members	8	5
Drive of Capital Equipment (Drawworks/Mud Pumps/Top Drive/Rotary Table)	Conventional drive with gear box or belt	Direct Drive without transmission, increased drilling performance
Top Drive Installation and Transportation	Separated	Integrated and transported with mast
Walking System	4 directions	8 directions
Automated Pipe Handling System	Separated	Highly integrated with rig system, more efficient and increased safety
Mud Tanks	Conventional square	Round-bottomed with more operation efficiencies and larger clear floor

## Beyond Rig Series

Max. Static Hook Load	500,000 lbs on 10 lines	750,000 lbs on 12 lines	1,000,000 lbs on 12 lines
Drawworks Horsepower	1000HP	1500HP	2000HP
Mud pump	2 sets 1600HP Direct Drive	2 sets 1600HP Direct Drive, 7500psi	2 sets 2400HP Direct Drive, Quintuplex, 7500psi
Mast Height	141 ft	142.7 ft	147.6 ft
Drill Floor Height	24.6 ft	29.5 ft	34.4 ft
Clear Height Under Floor	20.7 ft	25.6 ft	29.8 ft



# Thank You

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