

# Land Rig Portfolio



**NOV** Rig  
Technologies

## Introduction

Thanks to both our customers' feedback and our team's continual improvement of existing technology and development of new solutions, we offer a fleet of land drilling rigs to help you overcome today's drilling challenges.

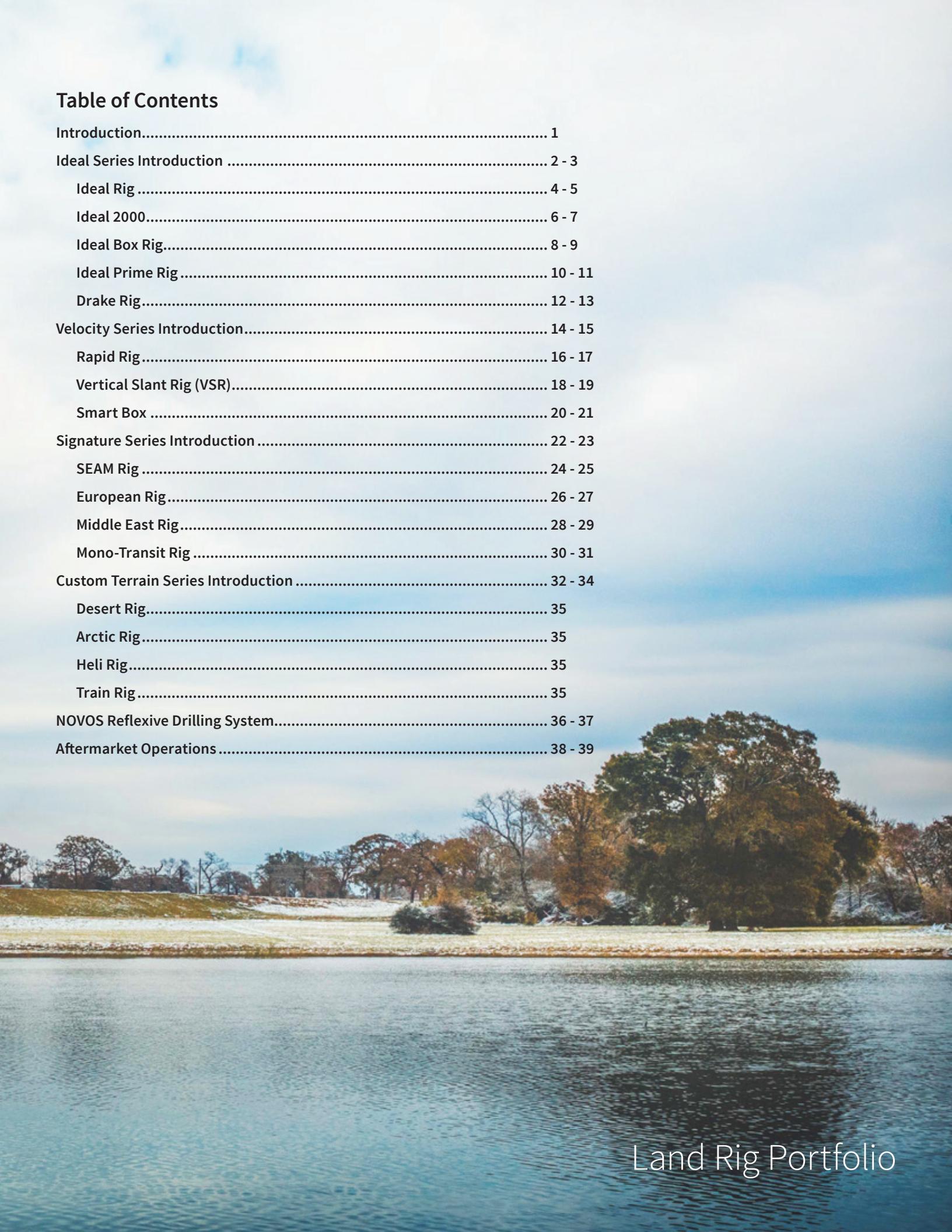
Our Land Rig Portfolio provides summaries of each land rig's standard equipment suite and main features. Each rig listed can also be configured to better accommodate your needs. Let us support you with the world's most advanced drilling solutions as we continually challenge the standards in the following realms:

- Technology and innovation
- Rig modularity
- Quality and performance



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Land Rig Portfolio

## Ideal Series

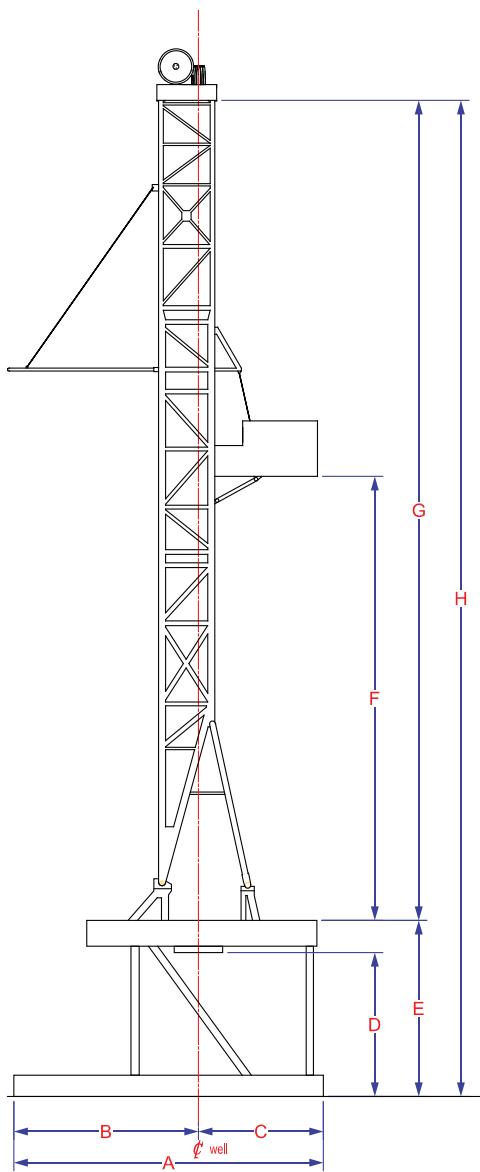
### Ideal, Ideal 2000, Ideal Box, Ideal Prime, Drake

The Ideal™ Rig Series defines reliability and versatility. This versatile series with straight-leg mast design includes some of our most popular, field-proven rigs. Comprised of the Ideal, Ideal 2000, Ideal Prime, Drake, and Ideal Box Rigs, the Ideal Series has evolved alongside the drilling industry to accommodate a wide array of your drilling demands, integrating improvements in technology and engineering with proven designs and equipment.

Ideal Series	A	B	C	D	E	F	G	H
<b>Ideal Rig</b>	52 ft 5 in. (15.97 m)	34 ft 3 in. (10.44 m)	18 ft 2 in. (5.53 m)	21 ft 8 in. (6.6 m)	25 ft (7.62 m)	85 ft (25.91 m)	142 ft (43.28 m)	167 ft (50.9 m)
<b>Ideal 2000</b>	67 ft 4 in. (20.53 m)	41 ft 6 in. (12.65 m)	25 ft 10 in. (7.84 m)	24 ft (7.3 m)	28 ft (8.53 m)	83 ft - 89 ft ***	142 ft (43.28 m)	170 ft (51.81 m)
<b>Ideal Box</b>	55 ft (16.76 m)	36 ft (10.97 m)	19 ft (5.79 m)	21 ft 8 in.-to 31 ft 8 in. (6.6 to 9.65 m)	25-to 35 ft (7.62-to 10.67 m)	85 ft (25.91 m)	142 ft (43.28 m)	167-to 177 ft (50.90-to 53.95 m)
<b>Ideal Prime</b>	62 ft 11 in. (19.17 m)	42 ft 5 in. (12.92 m)	20 ft 6 in. (6.25 m)	23 ft (7.01 m)	28 ft (8.53 m)	85 ft (25.91 m)	142 ft (43.28)	170 ft (51.81 m)
<b>Drake Rig</b>	46 ft 8 in. (14.22 m)	34 ft 2 in. (10.41 m)	12 ft 6 in. (3.81 m)	18 ft (5.49 m)	22 ft (6.71 m)	85 ft (25.91 m)	136 ft (41.45 m)	158 ft (48.16 m)

#### Notes

- Ideal Rig base box measurement excludes attached drawworks skid base and pin-on Steel Toe™ walking foot, pinned to V-door side of substructure base box.
- The Ideal Prime base box measurement excludes pin-on Steel Toe walking foot, pinned to V-door side of substructure base box.



\*DSGD-425 is standard drawworks, ADS-10SD with upgrade kit to 2000 is optional.

\*\*Racking board capacity:

280 stands of 7 1/4-in. tool joint, 5 1/2-in. DP with eight 8-in. drill collars.

320 stands of 6 5/8-in. tool joint, 5 1/2-in. DP with no drill collars.

304 stands of 6 5/8-in. tool joint, 5-in. DP with eight 8-in. drill collars.

336 stands of 6 5/8-in. tool joint, 5-in. DP with no drill collars.

\*\*\*Ideal 2000 racking board height is adjustable, it ranges from 83 to 89 ft with 1-ft increments.

## Conventional Substructures and Drilling Masts — Ideal Series

Rig Model	AC Ideal Rig	Ideal 2000	Ideal Box	Ideal Prime	Drake Rig
<b>Hook capacity</b>	375 ton (340.2 mt)	500 ton (453.6 mt)	375 ton (340.2 mt)	375 ton (340.2 mt)	250 ton (226.8 mt)
<b>Mast type</b>	Cantilever (straight leg)	Cantilever (straight leg)	Cantilever (straight leg)	Cantilever (straight leg)	Cantilever (straight leg)
<b>Mast height</b>	142 ft (43.3 m)	142 ft (43.3 m)	142 ft (43.3 m)	142 ft (43.3 m)	136 ft (41.5 m)
<b>Base width</b>	12 ft (3.66 m)	21 ft 8 in. (6.60 m)	12 ft (3.66 m)	21 ft (6.40 m)	20 ft (6.10 m)
<b>Raising method</b>	Cylinder raised	Cylinder raised	Cylinder raised	Cylinder raised	Cylinder raised
<b>Applicable drawworks (no. of lines)</b>	ADS-10SD (12)	DSGD-425 (12)*	ADS-10SD (12)	DSGD-375 (12)	DSGS-375 (8)
<b>Substructure type</b>	Slingshot-cylinder	Slingshot-cylinder	Box-on-box	Slingshot-cylinder	Slingshot-cylinder
<b>Pipe set-back capacity</b>	500,000 lb   250 ton (226.8 mt)	780,000 lb   390 ton (353.8 mt)	500,000 lb   250 ton (226.8 mt)	575,000 lb   287.5 ton (260.8 mt)	350,000 lb   175 ton (158.8 mt)
<b>Casing capacity</b>	750,000 lb   375 ton (340 mt)	1,00,000 lb   500 ton (453.6 mt)	750,000 lb   375 ton (340 mt)	750,000 lb   375 ton (340 mt)	500,000 lb   250 ton (226.8 mt)
<b>Pipe racking capacity (stands)</b>	5-in. DP: (208)   8-in. DC: (8)	5-in. DP: (304)   8-in. DC: (8)**	5-in. DP: (208)   8-in. DC: (8)	5-in. DP: (224)   8-in. DC: (6)	5-in. DP: (144)   8-in. DC: (6)
<b>Floor height</b>	25 ft (7.6 m)	28 ft (8.5 m)	25, 28, 30, or 35 ft (7.6, 8.5, 9.1 or 10.6 m)	28 ft (8.5 m)	22 ft (6.7 m)
<b>Cellar/clearance height</b>	21 ft 8 in. (6.6 m)	24 ft (7.3 m)	24 ft [based on 28 ft drill floor] (7.3 m)	24 ft (7.3 m)	18 ft (5.4 m)
<b>Rotary table opening</b>	37.5 in.	37.5 in.	37.5 in.	37.5 in.	37.5 in.
<b>Standard crown sheave groove</b>	1½ in.	1 ¾ in.	1¾ in.	1¾ in.	1¼ in.



# Ideal Rig



## Mast and substructure

- Hydraulically raised mast and substructure with ground level assembly to ensure efficiency and safety
- Hydraulic raising cylinders with remote controls to keep personnel at a safe distance during operation



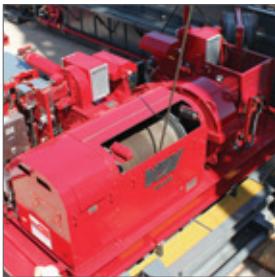
## Amphion and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up and redundant power network; protects the system against power loss



## Top drive — TDS-11SA

- AC electric VFD-controlled drilling for safer operations
- Dependable torque and power
- Compact size and lightweight
- 800-horsepower maximum continuous
- Hoisting capacity — 500-ton, API-8C, PSL-1
- 37,500 ft-lb (50 842 Nm) continuous



## Drawworks — ADS-10SD

- AC motors perform main braking; motors in conjunction with the VFDs are capable of stopping and holding maximum hookload at zero speed indefinitely
- No HPU or brake water cooling system required
- Air-cooled friction-plate emergency/parking brake

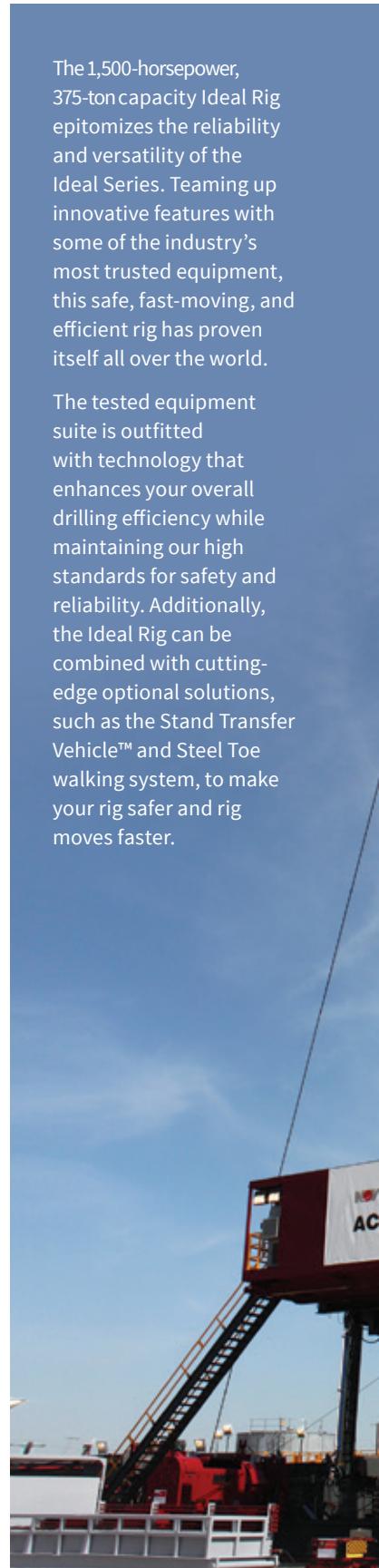


## BOP — Model 6012 ram 13% in. 10,000 psi

- Rugged, powerful, and capable of operating in harsh environments
- Hydraulically actuated doors for ease of service and ram replacement
- Proven performance in the field
- Manufactured from forged materials that meet H<sub>2</sub>S Service in accordance with NACE MR0175
- Proven trim package is standard and includes Xylan™ coating in the through bore, ram cavities, and all wellbore wetted surfaces
- Hard coatings on dynamic sealing surfaces
- Only two hydraulic connections required per ram
- Optional large-bore shear bonnets and boosters
- Optional Model 6000 shear ram

The 1,500-horsepower, 375-ton capacity Ideal Rig epitomizes the reliability and versatility of the Ideal Series. Teaming up innovative features with some of the industry's most trusted equipment, this safe, fast-moving, and efficient rig has proven itself all over the world.

The tested equipment suite is outfitted with technology that enhances your overall drilling efficiency while maintaining our high standards for safety and reliability. Additionally, the Ideal Rig can be combined with cutting-edge optional solutions, such as the Stand Transfer Vehicle™ and Steel Toe walking system, to make your rig safer and rig moves faster.





#### BOP transporter

- BOP can move, test, and set at well center without breaking down stack to ease rig-up
- Remote controls allow the stack to move while keeping personnel out of danger



#### Mud pumps — FD-1600, Triplex

- Quick access to fluid ends to ease maintenance
- Rugged construction and field-proven
- 1,600 horsepower at 120 spm
- Dual-motor drive
- Optional Mission™ Fluid King two-piece 7,500-psi fluid ends



#### Iron roughneck — ST-80CL

- Integrated spin and torque function and advanced controls maximize safety and efficiency
- Compact size and lightweight
- Adaptable for a wide variety of applications
- 60,000 ft-lb makeup and 80,000 ft-lb breakout torque
- 4½-to 8½-in. tubular connection range



#### Pipecat laydown system

- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated
- Transfers tubulars from catwalk level to drill floor
- Wireless radio control or local control
- Manual V-door ramp functionality



#### STV (optional)

- Derrickman removed from diving board for increased safety and accelerated training with driller
- Intuitive, user friendly, ergonomic controls
- Greater consistency in tripping speed
- Two-camera control system
- Manual racking possible
- Easily transports in and out of mast via transport skid



#### Steel Toe walking system (optional)

- Enhanced mobility, safer operations
- Critical equipment remains stationary or mounted in place on rig during walking operations
- Optional wireless controls maintain crew safety during walking operations
- Wellheads cleared with ease
- Rig can walk in X or Y direction
- Walking speed of 60 ft/hr
- Rig can walk 120 ft along one linear axis without using transfer tank

# Ideal 2000 Rig



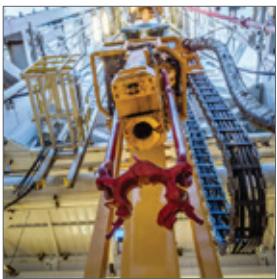
## Mast and substructure

- Triples
- Mast type: Cantilever
- Mast raising system: Cylinder
- Mast height: 142 ft
- Slingshot-cylinder substructure
- Setback capacity: 780,000 lb



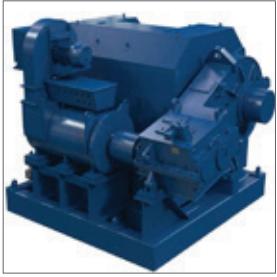
## Amphion and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- VFD: Split VFD + LER



## Top drive — TDS-11HD

- 500-ton capacity
- Two 600-horsepower motors
- 58,800 ft-lb of continuous drilling torque at 110 rpm



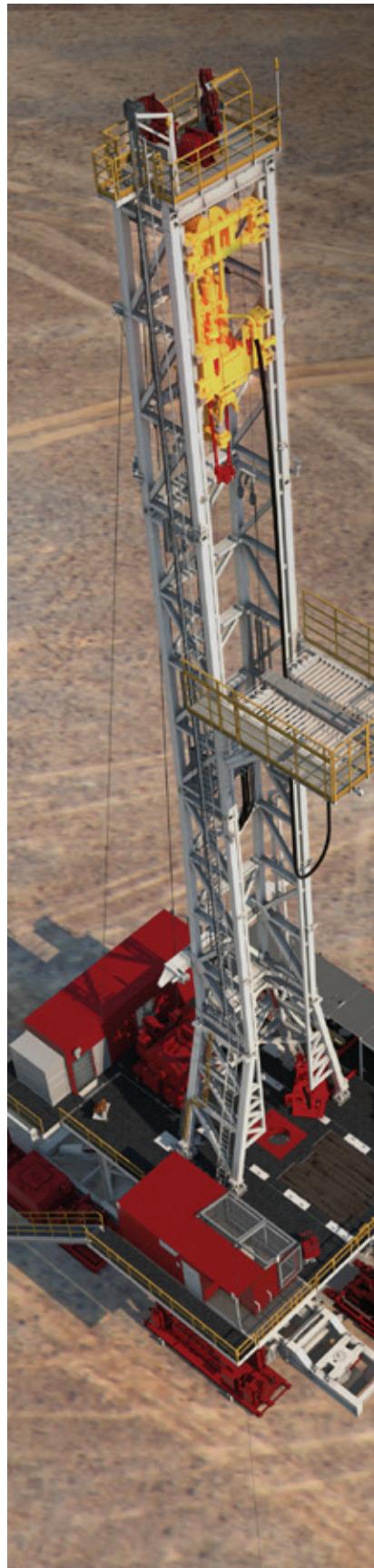
## Drawworks — DSGD-425

- 2,000 horsepower
- Hoisting capacity of 1 million lb on 12 lines



## BOP — NOV T3 6012

- Bore size: 13½ in.
- Working pressure: 10,000 psi



Our new Ideal 2000 land rig is a fully integrated, configurable land rig designed to meet the needs of today's increasingly complex drilling conditions. The NOVOSTM-enabled rig has 2,000 horsepower and increased setback capacity, allowing it to drill deeper wells and longer laterals.

In addition, an upgraded equipment suite provides more power and torque in both drilling parameters and pipe-handling requirements, meaning you're never unprepared for challenging situations.



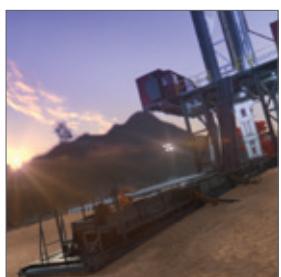
#### Mud pumps — FD-1600

- Forged steel cylinders are identical and interchangeable
- One-piece piston rod
- Discharge strainer
- Pistons/piston rods are removed and replaced through the front of the pump
- Suction desurfer built into the suction manifold for reduction of pressure surges
- One-piece interchangeable eccentric straps
- Rugged Fabriform™ construction
- Low weight-to-horsepower ratio
- Gear and pinion are machined from alloy steel forgings



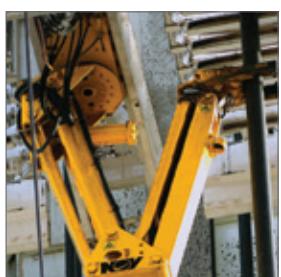
#### Iron roughneck — ST-95

- 25% more torque than ST-80
- 75,000 ft-lb of makeup torque
- 95,000 ft-lb of breakout torque
- Accommodates 5½ to 5¾ in. drill pipe
- Meets market need of tubular range, efficiency, and torque requirements



#### Pipecat™ FX laydown system (optional)

- Adjustable design reaches drill floor heights ranging from 20 to 35 ft
- Deck height under 48 in. requires no harness
- Lifts up to 8,000 lb
- Optic sensors ensure safe operation
- Simple drill floor height adjustments
- Variable delivery points from 0 to 184 in. over drill floor
- Modular design enables easy transport



#### STV (optional)

- Derrickman removed from diving board for increased safety and accelerated training with driller
- Intuitive, user friendly, ergonomic controls
- Greater consistency in tripping speed
- Two-camera control system
- Manual racking possible
- Easily transports in and out of mast via transport skid

# Ideal Box Rig



## Mast and substructure

- Conventional box-on-box substructure
- Hydraulic mast raising cylinders with remote controls to keep personnel at a safe distance during operation



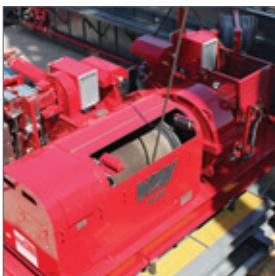
## Amphion and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up and redundant power network; protects the system against power loss



## Top drive — TDS-11SA

- AC electric VFD-controlled drilling for safer operations
- Dependable torque and power
- Compact size and lightweight
- 800-horsepower
- 500-ton hoisting capacity
- 37,500 ft-lb (50 842 Nm) continuous



## Drawworks — ADS-10SD

- AC motors perform main braking; motors in conjunction with the VFDs are capable of stopping and holding maximum hookload at zero speed indefinitely
- No HPU or brake water cooling system required
- Air-cooled friction-plate emergency/parking brake



## BOP — Model 6012 ram 13% in. 10,000 psi

- Rugged, powerful, and capable of operating in harsh environments
- Hydraulically actuated doors for ease of service and ram replacement
- Proven performance in the field
- Manufactured from forged materials that meet H<sub>2</sub>S Service in accordance with NACE MR0175
- Proven trim package is standard and includes Xylan coating in the through bore, ram cavities, and all wellbore wetted surfaces
- Hard coatings on dynamic sealing surfaces
- Only two hydraulic connections required per ram
- Optional large-bore shear bonnets and boosters
- Optional Model 6000 shear ram
- BOP hoists transport BOP to well center assembled

Incorporating a classic design with a modern rig, the 1,500-horsepower, 375-ton capacity Ideal Box Rig encompasses the Ideal Rig's tested and trusted equipment suite, packaged with the familiar box-on-box substructure.

Like the Ideal Rig, the Ideal Box rig is also versatile and reliable, providing you with the power and technology to conquer your drilling challenges. The box-on-box substructure is especially suited for regions which require winterization.





#### Mud pumps — FD-1600, Triplex

- Quick access to fluid ends to ease maintenance
- Rugged construction and field-proven
- 1,600-horsepower at 120 spm
- Dual-motor drive
- Optional Mission Fluid King two-piece 7,500-psi fluid ends



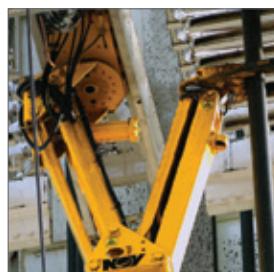
#### Iron roughneck — ST-80CL

- Integrated spin and torque function and advanced controls maximize safety and efficiency
- Compact size and lightweight
- Adaptable for a wide variety of applications
- 60,000 ft-lb makeup and 80,000 ft-lb breakout torque
- 4½ to 8½ in. tubular connection range



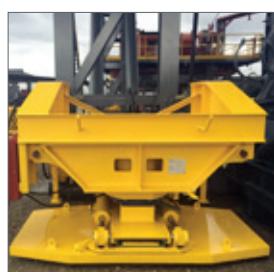
#### Pipecat laydown system (optional)

- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated
- Transfers tubulars from catwalk level to drill floor
- Wireless radio control or local control
- Manual V-door ramp functionality



#### STV (optional)

- Derrickman removed from diving board for increased safety and accelerated training with driller
- Intuitive, user friendly, ergonomic controls
- Greater consistency in tripping speed
- Two-camera control system
- Manual racking possible
- Easily transports in and out of mast via transport skid



#### Steel Toe walking system (optional)

- Enhanced mobility, safer operations
- Critical equipment remains stationary or mounted in place on rig during walking operations
- Optional wireless controls maintain crew safety during walking operations
- Wellheads cleared with ease
- Rig can walk in X or Y direction
- Walking speed of 60 ft/hr
- Rig can walk 120 ft along one linear axis without using transfer tank

# Ideal Prime Rig



## Mast and substructure

- Mast shoes connect easily; unique pin design allows mast to pin into sub without precise alignment for easier and faster rig-up
- Greater setback capacity to rack more drill pipe for deeper wells and longer lateral drilling
- Spill containment system helps prevent environmentally hazardous spillage
- Higher drill floor fits taller BOP stack
- Substructure and mast hydraulic cylinders with same part number for easier tracking and reduced need for spares inventory
- Hydraulic raising cylinders with remote controls to keep personnel at a safe distance during operation



## Amphion and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up and redundant power network; protects the system against power loss



## Top drive — TDS-11SH

- Most powerful top drive for its size enables faster, deeper drilling
- AC electric VFD-controlled drilling for safer operations
- 1,100 horsepower
- 500-ton rotating and hoisting capacity
- 51,000 ft-lb continuous drilling torque at 125 rpm



## Drawworks — DSGD-375

- AC motor performs main braking; motor in conjunction with the variable frequency drives is capable of stopping and holding the maximum hookload at zero speed indefinitely
- Dual-speed gear box offers better tripping efficiencies at lower hookloads
- No HPU or brake water cooling system required
- 1,500 continuous horsepower
- 375-ton capacity
- Two air-cooled caliper disc brakes



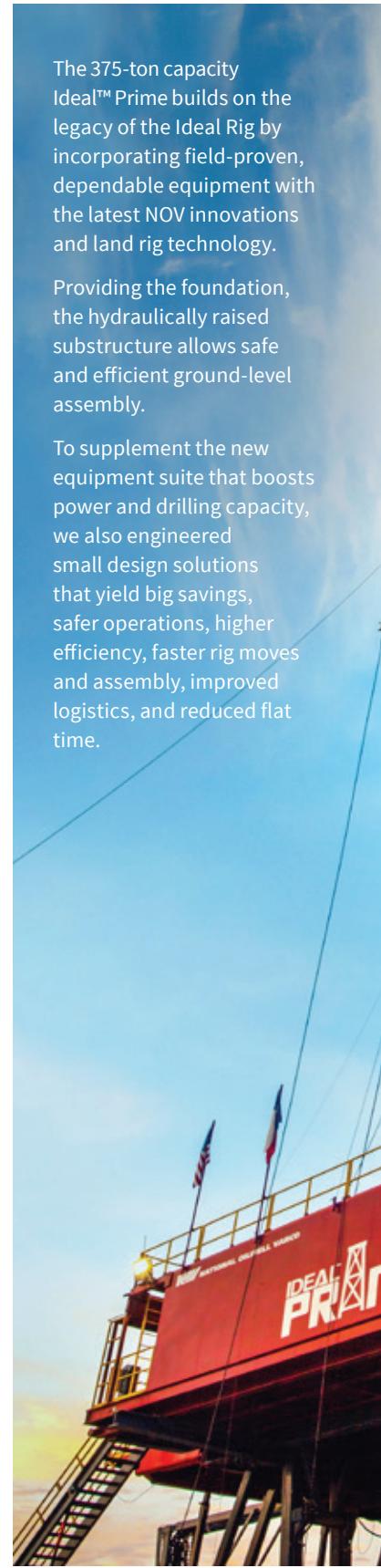
## BOP — Model 6012 ram 13% in. 10,000 psi

- Rugged, powerful, and capable of operating in harsh environments
- Hydraulically actuated doors for ease of service and ram replacement
- Proven performance in the field
- Manufactured from forged materials that meet H<sub>2</sub>S Service in accordance with NACE MR0175
- Proven trim package is standard and includes Xylan coating in the through bore, ram cavities, and all wellbore wetted surfaces
- Hard coatings on dynamic sealing surfaces
- Only two hydraulic connections required per ram
- Optional large-bore shear bonnets and boosters
- Optional Model 6000 shear ram
- BOP hoists transport BOP to well center assembled

The 375-ton capacity Ideal™ Prime builds on the legacy of the Ideal Rig by incorporating field-proven, dependable equipment with the latest NOV innovations and land rig technology.

Providing the foundation, the hydraulically raised substructure allows safe and efficient ground-level assembly.

To supplement the new equipment suite that boosts power and drilling capacity, we also engineered small design solutions that yield big savings, safer operations, higher efficiency, faster rig moves and assembly, improved logistics, and reduced flat time.





#### Mud system

- Round-bottomed tanks allow for better circulation and more efficient mud flow
- Reliable Brandt™ shakers maintain constant G regardless of load
- FD-1600 mud pumps — single motor drive, optional Mission Fluid King two-piece 7,500-psi fluid ends
- Three-cylinder, single-action, piston-type mud pump



#### Iron roughneck — ST-100

- Greater torque and power for eXtreme™ torque connections and deeper drilling requirements
- Integrated spin and torque function and advanced controls maximize safety and efficiency
- 100,000 ft-lb makeup and 120,000 ft-lb breakout torque
- 4-to 9¾-in. tubular connection range



#### Pipecat FX laydown system (optional)

- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated
- Transfers tubulars from catwalk level to drill floor
- Wireless radio control or local control
- Manual V-door ramp functionality



#### STV (optional)

- Derrickman removed from diving board for increased safety and accelerated training with driller
- Intuitive, user friendly, ergonomic controls
- Greater consistency in tripping speed
- Two-camera control system
- Manual racking possible
- Easily transports in and out of mast via transport skid



#### Steel Toe walking system

- Enhanced mobility, safer operations
- Critical equipment remains stationary or mounted in place on rig during walking operations
- Wireless controls maintain crew safety during walking operations
- Wellheads cleared with ease
- Rig can walk in X or Y direction
- Walking speed of 60 ft/hr
- Rig can walk 120 ft along one linear axis without using transfer tank

# Drake Rig



## Mast and substructure

- Hydraulically raised substructure with ground-level assembly to ensure efficiency and safety
- Unique substructure design accommodates tight road restrictions during transportation
- Top drive and traveling block stay in mast during transport to ease rig-up
- Hydraulic mast and substructure raising cylinders with remote controls to keep personnel at a safe distance during operation
- Drawworks and driller's cabin lifted off truck with substructure hydraulic cylinders to ease rig-up



## Amphion and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up, and redundant power network; protects the system against power loss



## Top drive — TDS-11SA

- AC electric VFD-controlled drilling for safer operations
- Dependable torque and power
- Compact size and lightweight
- 800 horsepower
- 500-ton hoisting capacity
- 37,500 ft-lb continuous drilling torque at 125 rpm



## Drawworks — DSGD-375

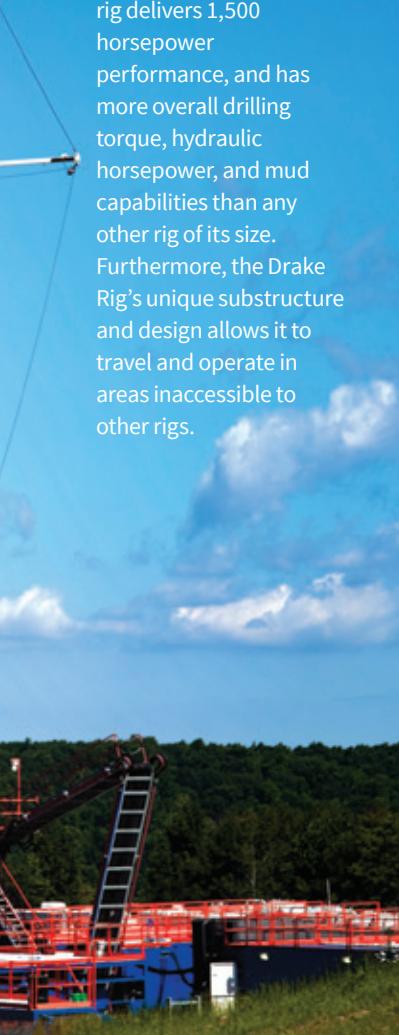
- AC motor performs main braking; motor in conjunction with the VFDs is capable of stopping and holding the maximum hookload at zero speed indefinitely
- Dual-speed gear box offers better tripping efficiencies at lower hookloads
- No HPU or brake water cooling system required
- 1,500 continuous horsepower
- 260-ton capacity on 8 lines
- Two air-cooled caliper disc brakes



The 250-ton capacity Drake Rig adds measured value to your operation through the benefits of a design that enables efficient rig-up and moving, integrates proven AC technology, and utilizes advanced drilling controls.

Originally packaged for the Northeast Shale region, we designed the Drake Rig to take on your challenges of extended reach horizontal drilling.

This 1,000-horsepower rig delivers 1,500 horsepower performance, and has more overall drilling torque, hydraulic horsepower, and mud capabilities than any other rig of its size. Furthermore, the Drake Rig's unique substructure and design allows it to travel and operate in areas inaccessible to other rigs.



#### BOP — Model 6012 ram 11 in. 3,000/5,000 psi

- Proven performance, rugged, powerful and capable of operating in harsh environments
- Hydraulically actuated doors for ease of service and ram replacement
- Manufactured from forged materials that meet H<sub>2</sub>S Service in accordance with NACE MR0175
- Proven trim package is standard and includes Xylan coating in the through bore, ram cavities, and all wellbore wetted surfaces
- Hard coatings on dynamic sealing surfaces
- Only two hydraulic connections required per ram
- Optional large-bore shear bonnets and boosters and optional Model 6000 shear ram
- BOP hoists transport BOP to well center assembled



#### Mud pumps — FD-1600, Triplex

- Quick access to fluid ends to ease maintenance
- Rugged construction and field-proven
- 1,600-horsepower at 120 spm
- Dual-motor drive
- Optional Mission Fluid King two-piece 7,500-psi fluid ends



#### Iron roughneck — ST-80C

- Integrated spin and torque function and advanced controls maximize safety and efficiency
- Compact size and lightweight
- Adaptable for a wide variety of applications
- 60,000 ft-lb makeup and 80,000 ft-lb breakout torque
- 4 1/4-to 8 1/2-in. tubular connection range



#### Pipecat laydown system (optional)

- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated
- Transfers tubulars from catwalk level to drill floor
- Wireless radio control or local control
- Manual V-door ramp functionality



#### Steel Toe walking system (optional)

- Enhanced mobility, safer operations
- Critical equipment remains stationary or mounted in place on rig during walking operations
- Optional wireless controls maintain crew safety during walking operations
- Wellheads cleared with ease
- Rig can walk in X or Y direction
- Walking speed of 60 ft/hr
- Rig can walk 120 ft along one linear axis without using transfer tank

## The Velocity Series

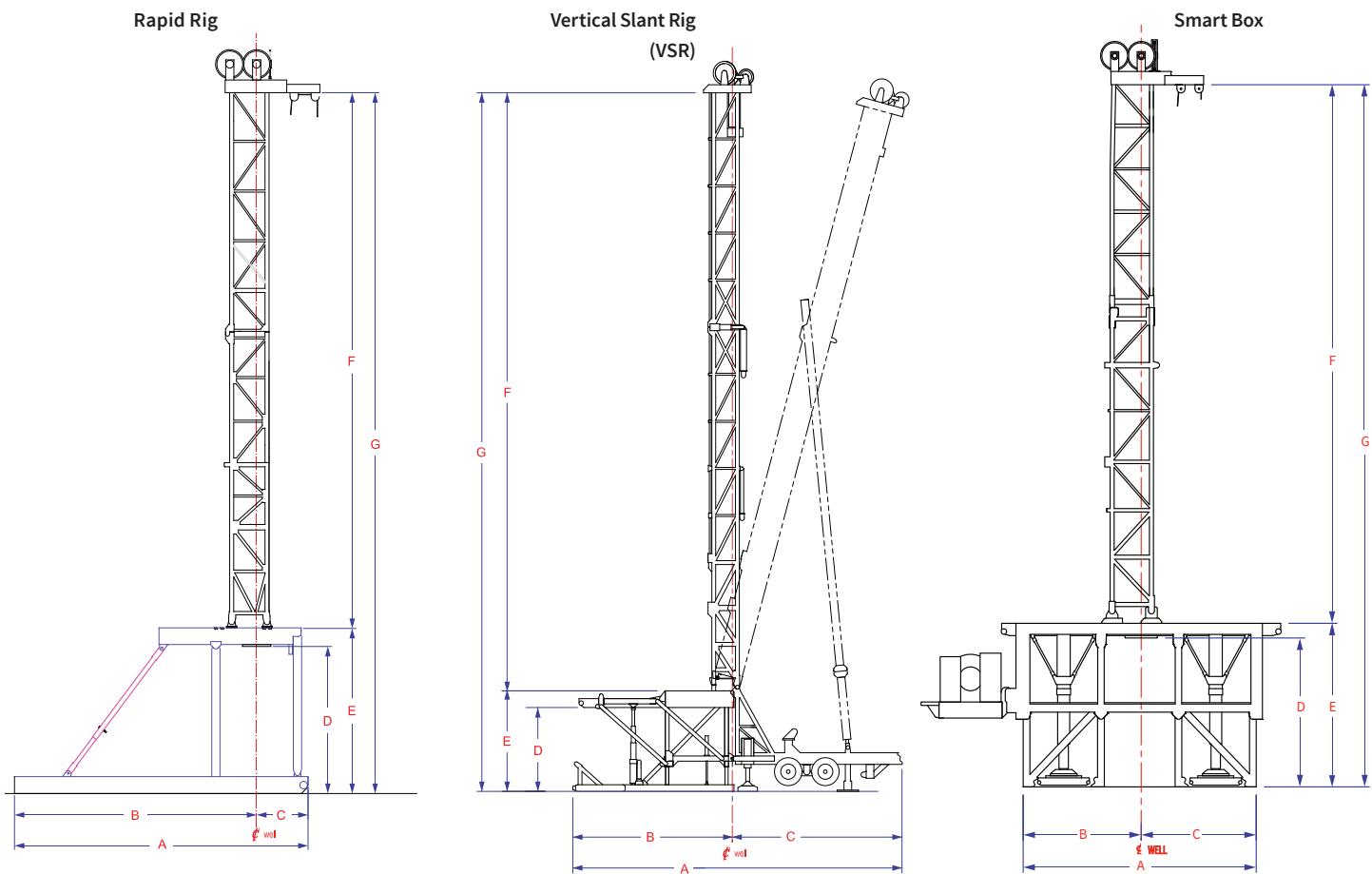
### Rapid, Vertical Slant, Smart Box

Our Velocity Rig Series offers fast-moving “super singles” rigs designed with fewer transport loads, allowing for quick transport between rig sites. The Velocity Series sets the standard for speed.

Velocity Series	A	B	C	D	E	F	G
<b>Rapid Rig</b>	36 ft 10 in. (11.23 m)	30 ft 6 in. (9.30 m)	6 ft 4 in. (1.93 m)	18 ft (5.49 m)	20 ft (6.10 m)	80 ft (24.38 m)	100 ft (30.48 m)
<b>Vertical Slant (VSR)</b>	20 ft 6 in. (6.25 m)	19 ft 4 in. (5.89 m)	1 ft 2 in. (0.36 m)	12 ft 6 in. (3.81 m)	14 or 20 ft (4.27 or 6.10 m)	76 ft (23.16 m)	90 or 96 ft (27.43 or 29.26 m)
<b>Smart Box</b>	28 ft 11 in. (8.81 m)	14 ft 8 in. (4.46 m)	14 ft 3 in. (4.35 m)	17 ft 8 in. (5.38 m)	20 ft (6.10 m)	85 ft (25.9 m)	105 ft (32 m)

#### Notes

- All Velocity Series rigs are equipped with pipe-handling systems, which eliminate the need for a racking board and setback area.



## Conventional Substructures and Drilling Masts — Velocity Series

Rig Model Specifications	Rapid Rig	Vertical Slant (VSR)	Smart Box
<b>Hook capacity</b>	250 ton (226.79 mt)	100 or 150 ton (90.71 or 136.07 mt)	250 ton (226.79 mt)
<b>Mast type</b>	Telescopic	Telescopic	Range III singles
<b>Mast height</b>	80 ft (24.38 m)	75 ft 4 in. (23.16 m)	85 ft (25.9 m)
<b>Base width</b>	7 ft (2.13 m)	6 ft 4 in. (1.93 m)	12 ft (3.66 m)
<b>Raising method</b>	Cylinder raised	Cylinder raised	Cylinder raised
<b>Applicable drawworks (no. of lines)</b>	SSGD-250 (8)	D700AC (6)	SSGD-250 (6 or 8)
<b>Substructure type</b>	Slingshot-cylinder	Swing-up, box-in-box	Box-in-box
<b>Casing capacity</b>	500,000 lb   250 ton (226 mt)	280,000 lb   140 ton (127 mt)	500,000 lb   250 ton (226 mt)
<b>Floor height</b>	20 ft (6.1 m)	14 or 20 ft (4.2 or 6.1 m)	20 ft (6.1 m)
<b>Cellar/clearance height</b>	18 ft (5.4 m)	12 ft 6 in. or 18 ft (3.8 m)	17 ft 8 in. (5.38 m)
<b>Drill floor opening</b>	37½ in.	27½ in.	27½ in.
<b>Standard crown sheave groove</b>	1¼ in.	1⅛ in.	1⅛ in.



# Rapid Rig



## Mast and substructure

- Hydraulically raised mast and substructure with ground-level assembly to ensure efficiency and safety
- Telescoping mast to assist with rig-up and minimize footprint
- Top drive, iron roughneck, and traveling block stay in mast during transport to shorten rig-up time



## Amphon and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up and redundant power network; protects the system against power loss



## Top drive — TDS-10RR

- Remains mounted in mast with block keeping drill line reeved in place during transport
- Portable design allows for faster rig-up and rig-down
- Link Tilt system allows elevator to "tilt" out and meet pipe for quicker maneuvering of pipe to well center
- 250-ton hoisting capacity
- 20,000 ft-lb continuous torque at 90 rpm
- 350 horsepower



## Drawworks — SSGD-250

- Simple design allows for easy operation and maintenance
- Small footprint and light weight allows for easy moving between rig locations
- AC motor performs main braking; motor in conjunction with the VFDs is capable of stopping and holding the maximum hookload at zero speed indefinitely
- No external HPU or brake water cooling system required
- 1,500 horsepower
- 250-ton capacity



## BOP — Model 6012 ram 11 in. 5,000 psi

- Rugged, powerful, and capable of operating in harsh environments
- Hydraulically actuated doors for ease of service and ram replacement
- Proven performance in the field
- Manufactured from forged materials that meet H<sub>2</sub>S Service in accordance with NACE MR0175
- Proven trim package is standard and includes Xylan coating in the through bore, ram cavities, and all wellbore wetted surfaces
- Hard coatings on dynamic sealing surfaces
- Only two hydraulic connections required per ram
- Optional large-bore shear bonnets and boosters
- Optional Model 6000 shear ram
- BOP Transporter allows BOP to be moved, tested, and set at well center without breaking down stack to ease rig-up



The 250-ton capacity Rapid Rig is an efficient “super singles” land rig delivering maximum speed, safety, and performance in a compact, road-legal drilling package.

The Rapid Rig's efficient size and self-deploying design allows for ease of transport and faster on-site rig-up. The Rapid Rig's compact components and AC-powered primary systems further reduce environmental impact at the wellsite.



#### Mud pumps — F-1000, Triplex

- Rugged Fabriform construction
- Design engineered for optimum performance under severe drilling conditions
- 1,000 horsepower at 140 spm
- Low weight-to-horsepower ratio



#### Iron roughneck — ST-80R

- Integrated spin and torque function and advanced controls maximize safety and efficiency
- Compact size and lightweight
- Adaptable for a wide variety of applications
- 60,000 ft-lb makeup torque and 80,000 ft-lb breakout torque
- 4 1/4-to 8 1/2-in. tubular connection range



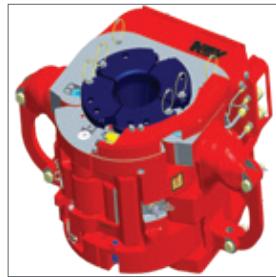
#### Pipe erector

- Tubulars automatically fed into the central erector arm, which stands pipe up next to floor to be captured and held vertically by mousehole funnels
- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated
- Local control



#### Power slips — PS-21

- Manual operations at well center eliminated
- Installation flush with the drill floor creates a safer work environment
- Reacts up to 45,000 ft-lb of torque
- Standard equipped with a centering device
- Handles all drill pipe, collars, tubing, and casing sizes up to 14-in. OD



#### BX elevator

- Hydraulically actuated elevator designed to improve rig safety and efficiency
- Ability to be interlocked with PS-21 as an additional safety feature
- Double-door design provides optimal balance and performance
- Changeable bushings allow one elevator frame to handle all pipe sizes and type requirements

## Vertical Slant Rig (VSR)



### Mast and substructure

- Default is vertical, but capable of slant operation up to 45°
- Small footprint to accommodate small site areas
- Advanced hydraulics system allows mast to be positioned perfectly over wellbore at whatever angle is required
- Telescoping mast travels with top drive, torque wrench, and pipe handler to shorten rig-up time
- Substructure quickly loads onto a separate trailer for easy transportation



### Amphion and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up, and redundant power network; protects the system against power loss



### Top drive — TDS-150

- Most powerful 150-ton AC top drive on the market
- Pull-down capacity of 80,000 lb
- Slant drilling capability — available to run on mast rails with integrated block
- 150-ton dynamic and static capacity
- Dual 250-horsepower AC induction motors
- 24,700 ft-lb continuous torque and 36,500 ft-lb intermittent torque at 100 rpm



### Drawworks — D700 AC

- Unique AC motor performs main braking; motor in conjunction with the VFDs is capable of stopping and holding maximum hookload at zero speed indefinitely
- No HPU or brake water cooling system require
- 700 horsepower
- 150-ton hoisting capacity
- Two caliper disc brakes

The 150-ton capacity VSR provides quicker access to the pay zone, which translates to cost savings and the ability to drill more wells.

Ideal for shallow-well drilling, the VSR is a versatile rig that can navigate between slant increments, better positioning the rig to meet your drilling needs. The VSR is designed to be fully mobile, so whether you're operating at a slant or drilling vertically, the VSR meets your capability needs.





#### **BOP — Model 6012 ram 11 in. 3,000/5,000 psi**

- Proven performance, rugged, powerful and capable of operating in harsh environments
- Hydraulically actuated doors for ease of service and ram replacement
- Manufactured from forged materials that meet H<sub>2</sub>S Service in accordance with NACE MR0175
- Proven trim package is standard and includes Xylan coating in the through bore, ram cavities, and all wellbore wetted surfaces
- Hard coatings on dynamic sealing surfaces
- Only two hydraulic connections required per ram
- Optional large-bore shear bonnets and boosters and optional Model 6000 shear ram
- BOP hoists transport BOP to well center assembled

#### **Mud pumps — F-1000, Triplex**

- Rugged Fabriform construction
- Design engineered for optimum performance under severe drilling conditions
- 1,000-horsepower at 140 spm
- Low weight-to-horsepower ratio

#### **Mud pumps — 8-P-80, Triplex (optional)**

- High strength and lightweight for easy portability
- Multiple liner sizes allow pressures and volumes to handle circulation requirements in deep drilling applications
- 800-horsepower at 160 spm

#### **Hydraulic torque wrench**

- Compact and lightweight
- Capable of operating at an angle
- Simple operation; ideal for quick, repetitive procedures
- 27/8-to 14 5/8-in. tubular connection range
- Makeup/breakout torque up to 0-100,000 ft-lb

#### **Pipe-handling system**

- Pipe brought directly to well center
- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated

## Smart Box Rig



### Mast and substructure

- Box-in-box
- Drill floor height: 20 ft
- Setback capacity: none
- Moving system: walking (lift and roll)



### Amphion and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up, and redundant power network; protects the system against power loss



### Top drive — TDS-10SH

- Capacity: 250 tons
- Continuous drilling torque: 22,288 ft-lb at 88 rpm | 42,690 ft-lb at 182 rpm



### Drawworks — SSGD-250

- 1,500 horsepower (continuous)
- Hoisting capacity: 382,000 lb on 6 lines | 500,000 lb on 8 lines

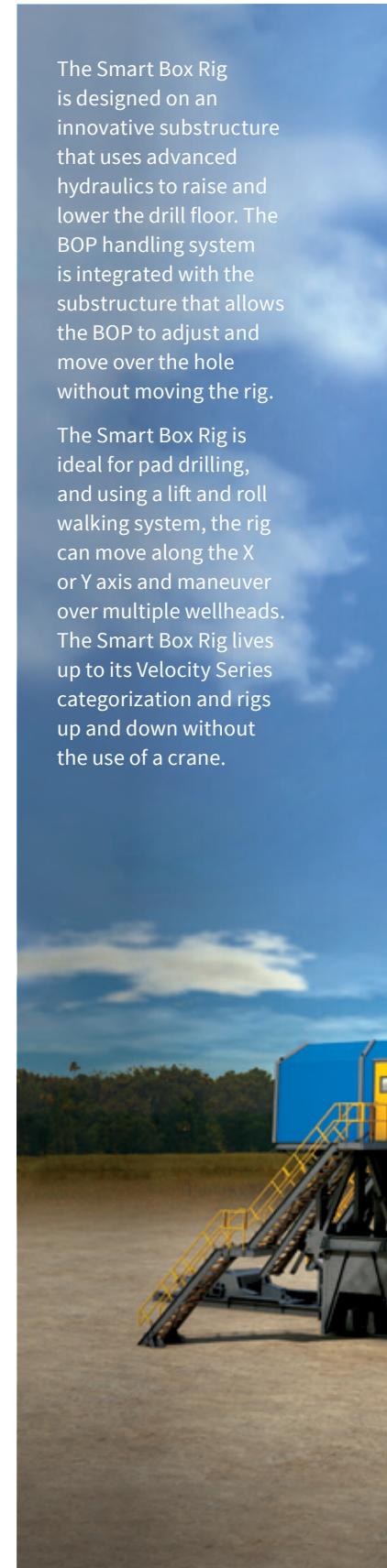


### BOP — Model 6012 ram 11 in. 5,000 psi

- Rugged, powerful, and capable of operating in harsh environments
- Hydraulically actuated doors for ease of service and ram replacement
- Proven performance in the field
- Manufactured from forged materials that meet H<sub>2</sub>S Service in accordance with NACE MR0175
- Proven trim package is standard and includes Xylan coating in the through bore, ram cavities, and all wellbore wetted surfaces
- Hard coatings on dynamic sealing surfaces
- Only two hydraulic connections required per ram
- BOP Transporter allows BOP to be moved, tested, and set at well center without breaking down stack to ease rig-up

The Smart Box Rig is designed on an innovative substructure that uses advanced hydraulics to raise and lower the drill floor. The BOP handling system is integrated with the substructure that allows the BOP to adjust and move over the hole without moving the rig.

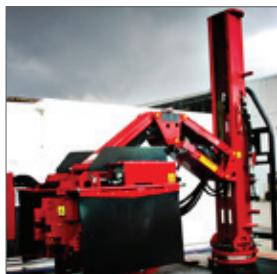
The Smart Box Rig is ideal for pad drilling, and using a lift and roll walking system, the rig can move along the X or Y axis and maneuver over multiple wellheads. The Smart Box Rig lives up to its Velocity Series categorization and rigs up and down without the use of a crane.





#### Mud pumps — F-1000

- 1,000 horsepower
- One-piece piston rod
- Discharge strainer
- Liner, piston, and piston rod are removed and replaced through the front of the pump
- The suction desurfer is built into the suction manifold for reduction of pressure surges
- F-1000 cylinders are electroless nickel-plated to retard corrosion



#### Iron roughneck — ST-80

- Spin speed: 75 rpm (nominal on 5-in. DP)
- Spin torque: 1,750 ft-lb (2,373 Nm)
- Maximum makeup torque: 60,000 ft-lb (81,500 Nm)
- Maximum breakout torque: 80,000 ft-lb (108,500 Nm)



#### Power slips — PS-21

- Manual operations at well center eliminated
- Installation flush with the drill floor creates a safer work environment
- Reacts up to 45,000 ft-lb of torque
- Standard equipped with a centering device
- Handles all drill pipe, collars, tubing, and casing sizes up to 14-in. OD

## The Signature Series

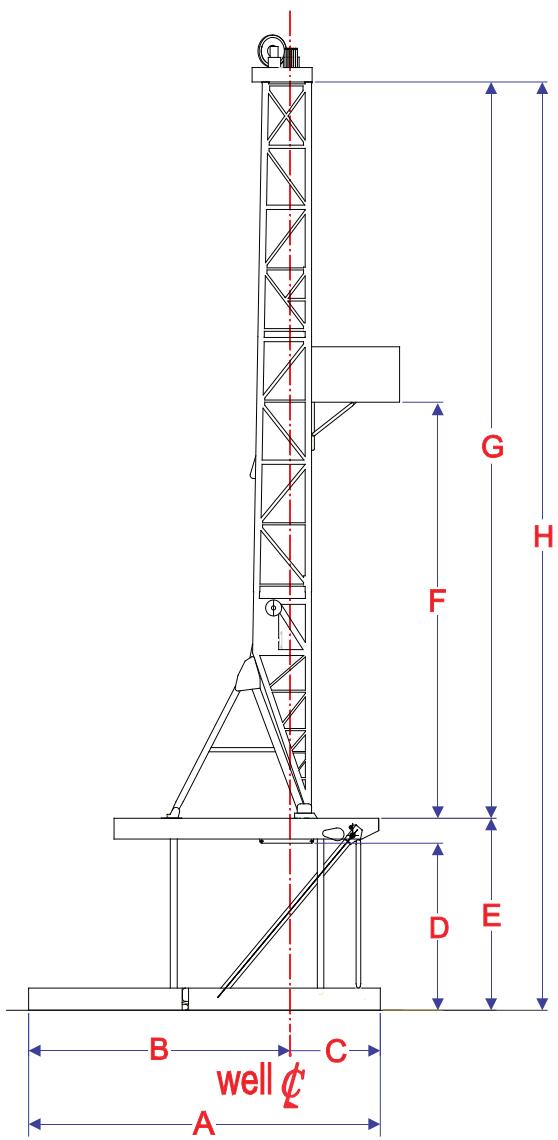
### European, Middle East, Mono-Transit, SEAM

Our Signature Series rigs are built to specific market requirements and your unique needs. The result of many engineering hours, these rigs are configured to operate optimally in geographic arenas with stringent regulations, or unrelenting, rugged environments.

Signature Series	A	B	C	D	E	F	G	H
<b>SEAM 1000</b>	49 ft 6 in. (15.09 m)	37 ft 2 in. (11.33 m)	12 ft 4 in. (3.76 m)	21 ft 8 in. (6.60 m)	25 ft (7.62 m)	85 ft (25.91 m)	142 ft (43.28 m)	167 ft (50.90 m)
<b>SEAM 1500</b>	57 ft 4 in. (17.48 m)	29 ft 7 in. (9.02 m)	27 ft 9 in. (8.46 m)	26 ft 8 in. (8.13 m)	30 ft (9.14 m)	85 ft (25.91 m)	142 ft (43.28 m)	172 ft (52.42 m)
<b>SEAM 2000</b>	54 ft 7 in. (16.63 m)	42 ft 2 in. (12.85 m)	12 ft 5 in. (3.78 m)	26 ft 8 in. (8.13 m)	30 ft (9.14 m)	85 ft (25.91 m)	142 ft (43.28 m)	172 ft (52.42 m)
<b>European 1500</b>	57 ft 4 in. (17.48 m)	29 ft 7 in. (9.02 m)	27 ft 9 in. (8.46 m)	26 ft 8 in. (8.13 m)	30 ft (9.14 m)	85 ft (25.91 m)	142 ft (43.28 m)	172 ft (52.42 m)
<b>European 2000</b>	54 ft 7 in. (16.63 m)	42 ft 2 in. (12.85 m)	12 ft 5 in. (3.78 m)	26 ft 8 in. (8.13 m)	30 ft (9.14 m)	85 ft (25.91 m)	142 ft (43.28 m)	172 ft (52.42 m)
<b>ME 1800</b>	62 ft 6 in. (19.05 m)	42 ft (12.80 m)	20 ft 6 in. (6.25 m)	25 ft (7.62 m)	30 ft (9.14 m)	85 ft (25.91 m)	152 ft (46.33 m)	182 ft (55.47 m)
<b>ME 2000 DC</b>	60 ft (18.28 m)	46 ft 8 in. (14.22 m)	13 ft 4 in. (4.06 m)	30 ft (9.14 m)	35 ft (10.67 m)	86 ft 4 in. (26.31 m)	156 ft (47.55 m)	191 ft (58.22 m)
<b>ME 2000 AC</b>	60 ft (18.28 m)	46 ft 8 in. (14.22 m)	13 ft 4 in. (4.06 m)	30 ft (9.14 m)	35 ft (10.67 m)	86 ft 4 in. (26.31 m)	156 ft (47.55 m)	191 ft (58.22 m)
<b>ME 3000</b>	74 ft 2 in. (22.61 m)	49 ft 8 in. (15.14 m)	24 ft 6 in. (7.47 m)	39 ft 10 in. (12.14 m)	45 ft (13.72 m)	87 ft 6 in. (26.67 m)	160 ft (48.77 m)	205 ft (62.49 m)
<b>Mono transit</b>	61 ft 2 in. (18.65 m)	30 ft 10 in. (9.40 m)	30 ft 4 in. (9.25 m)	16 ft (4.88 m)	20 ft (6.10 m)	85 ft (25.91 m)	142 ft (43.28 m)	162 ft (49.38 m)

#### Notes

- Racking board height can be adjusted within a range of dimension F so as to accommodate varying stand heights.



## Conventional Substructures and Drilling Masts — Signature Series

Rig Model	SEAM 1000	SEAM 1500	SEAM 2000	European 1500	European 2000
Hook capacity	250 ton (226.8 mt)	350 ton (317.5 mt)	500 ton (453.6 mt)	350 ton (317.5 mt)	500 ton (453.6 mt)
Mast type	Cantilever	Cantilever	Cantilever	Cantilever	Cantilever
Mast height	142 ft (43.3 m)	142 ft (43.3 m)	142 ft (43.3 m)	142 ft (43.3 m)	142 ft (43.3 m)
Base width	21 ft (6.40 m)	21 ft (6.40 m)	25 ft (7.62 m)	21 ft (6.40 m)	25 ft (7.62 m)
Raising method	Sling-line raised	Sling-line raised	Sling-line raised	Sling-line raised	Sling-line raised
Applicable drawworks (no. of lines)	DSGD-250 (8)	DSGS-375 (8, 10, 12)	DSGS-500 (8, 10, 12)	DSGS-375 (8, 10, 12)	DSGD-500 (8, 10, 12)
Substructure type	Slingshot-winch	Slingshot-winch	Slingshot-winch	Slingshot-winch	Slingshot-winch
Pipe set-back capacity	325,000 lb   162.5 ton (147.4 mt)	500,000 lb   250 ton (226.8 mt)	500,000 lb   250 ton (226.8 mt)	500,000 lb   250 ton (226.8 mt)	600,000   300 ton (330.7 mt)
Casing capacity	450,000 lb   225 ton (204.1 mt)	700,000 lb   350 ton (317.5 mt)	950,000 lb   475 ton (430.9 mt)	700,000 lb   350 ton (317.5 mt)	950,000 lb   475 (430.9 mt)
Pipe racking capacity (stands)	DP: 5 in. (180) DC: 6½ in. (8)	DP: 4½ in. (132) DC: 6½ in. (8)	DP: 5 in. (196) DC: 8¼ in. (8), 10 in. (2)	DP: 5 in. (180) DC: 6½ in. (8)	DP: 4½ in. (132) DC: 6½ in. (8)
Floor height	25 ft (7.62 m)	30 ft (9.14 m)	30 ft (9.14 m)	30 ft (9.14 m)	30 ft (9.14 m)
Cellar/clearance height	21 ft (6.4 m)	26 ft (7.92 m)	26 ft 1 in. (8.92 m)	n.a.	n.a.
Rotary table opening	37½ in.	37½ in.	37½ in.	37½ in.	37½ in.
Standard crown sheave groove	1¼ in.	1¾ in.	1½ in.	1¾ in.	1½ in.

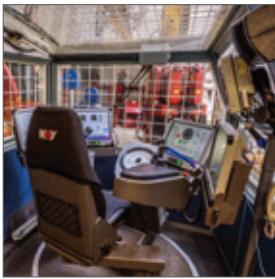
Rig Model	ME 1800	ME 2000 DC	ME 2000 AC	ME 3000	Mono-Transit
Hook capacity	412.5 ton (374.2 mt)	500 ton (453.6 mt)	500 ton (453.6 mt)	777.5 ton (705.3 mt)	375 ton (340.2 mt)
Mast type	Cantilever	Cantilever	Cantilever	Cantilever	Cantilever
Mast height	152 ft (46.3 m)	157 ft (47.85 m)	157 ft (47.85 m)	160 ft (47.9 m)	142 ft (43.3 m)
Base width	25 ft (7.62 m)	30 ft (9.14 m)	30 ft (9.14 m)	30 ft (9.14 m)	12 ft 6 in. (3.81 m)
Raising method	Cylinder raised	Cylinder raised	Cylinder raised	Sling-Line raised	Cylinder raised
Applicable drawworks (no. of lines)	110-UDBE (12)	1320-UDBE (12)	ADS-10SD (12)	ADS-30D (14)	DSGD-375L (8, 10, 12)
Substructure type	Slingshot-cylinder	Slingshot-cylinder	Slingshot-cylinder	Slingshot-winch	One piece telescoping
Pipe set-back capacity	550,000 lb   275 ton (249.4 mt)	800,000 lb   400 ton (362.9 mt)	800,000 lb   400 ton (362.9 mt)	1,000,000 lb   500 ton (453.6 mt)	460,000 lb   230 ton (208.7 mt)
Casing capacity	750,000 lb   375 ton (340.1 mt)	1,000,000 lb   500 ton (453.5 mt)	1,000,000 lb   500 ton (453.5 mt)	1,500,000 lb   750 ton (680.3 mt)	700,000 lb   350 ton (317.5 mt)
Pipe racking capacity (stands)	DP: 5 in. (190) DC: 6½ in. (8), 8¼ in. (6), 10 in. (2)	DP: 5 or 5½ in. (285) DC: 8 in. (8), 9½ in. (4)	DP: 5 or 5½ in. (285) DC: 8 in. (8), 9½ in. (4)	DP: 5½ in. (264) DC: 10 in. (9), 14 in. (1)	DP: 5 in. (196) DC: 8 in. (8)
Floor height	30 ft (9.1 m)	35 ft (10.6 m)	35 ft (10.6 m)	45 ft (13.7 m)	30 ft (9.1 m)
Cellar/clearance height	25 ft (7.62 m)	30 ft (9.14 m)	30 ft (9.14 m)	35 ft (10.6 m)	17 ft 7 in. (5.3 m)
Rotary table opening	37½ in.	37½ in.	37½ in.	47½ in.	37½ in.
Standard crown sheave groove	1⅓ in.	1½ in.	1½ in.	1¾ in.	1¼ in.

# SEAM Rig



## Mast and substructure

- Dreco™ Slingshot substructure with ground level assembly to ensure efficiency and safety
- Modular load design for quick rig-up/down and transportation between wellsites



## Amphion and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up and redundant power network; protects the system against power loss



## Top drive — TDS-11SH

- Most powerful top drive for its size enables faster, deeper drilling
- AC electric VFD-controlled drilling for safer drilling
- 1,100 horsepower
- 500-ton rotating and hoisting capacity
- 51,000 ft-lb continuous drilling torque at 125 rpm



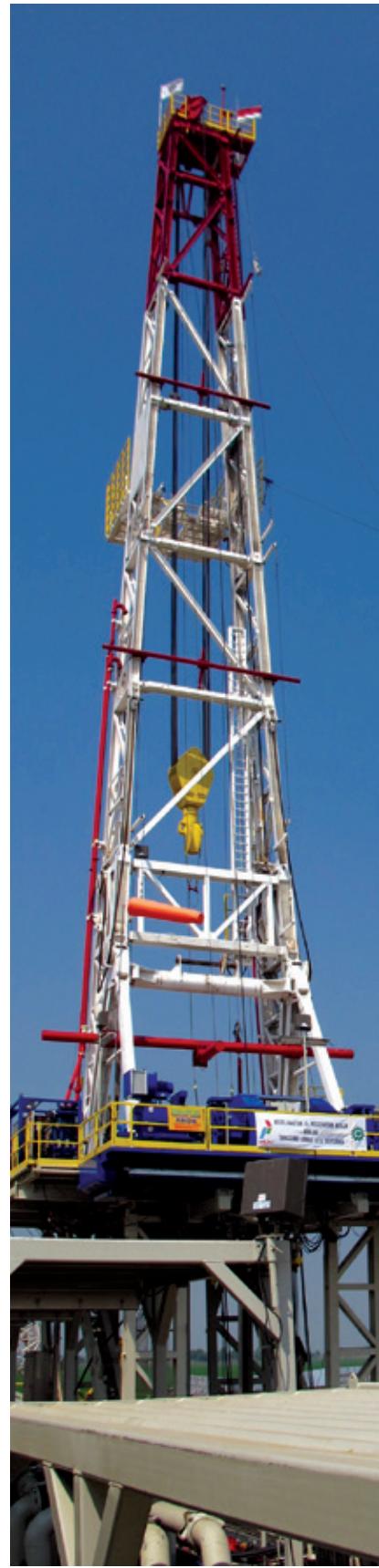
## Drawworks — DSGD-375

- AC motor performs main braking; motor in conjunction with the VFDs is capable of stopping and holding the maximum hookload at zero speed indefinitely
- Dual-speed gear box offers better tripping efficiencies at lower hookloads
- No HPU or brake water cooling system required
- 1,500 continuous horsepower
- Two air-cooled caliper disc brakes



## BOP — Model 6012 ram 13% in. 10,000 psi

- Rugged, powerful, and capable of operating in harsh environments
- Hydraulically actuated doors for ease of service and ram replacement
- Proven performance in the field
- Manufactured from forged materials that meet H<sub>2</sub>S Service in accordance with NACE MR0175
- Proven trim package is standard and includes Xylan coating in the through bore, ram cavities, and all wellbore wetted surfaces
- Hard coatings on dynamic sealing surfaces
- Only two hydraulic connections required per ram
- Optional large-bore shear bonnets and boosters
- Optional Model 6000 shear ram
- BOP hoists transport BOP to well center assembled



The Southeast Asia Modular (SEAM) rig is a modular, fast-moving, safe, and efficient rig packaged specifically for quick site-to-site transport. Available in three distinct and powerful classes — 1,000 horsepower, 250 ton; 1,500 horsepower, 350 ton; and 2,000 horsepower, 500 ton — the AC SEAM rig is designed to enhance your overall drilling efficiency and performance while maintaining our high standards for safety and reliability. SEAM 1500 equipment suite is shown; equipment may vary based on rig horsepower options.



#### Mud pumps — FD-1600, Triplex

- Quick access to fluid ends to ease maintenance
- Rugged construction and field-proven
- 1,600-horsepower at 120 spm
- Single- and dual-motor drive configurations can both operate at full 1,600 horsepower
- Optional Mission Fluid King two-piece 7,500 psi fluid ends



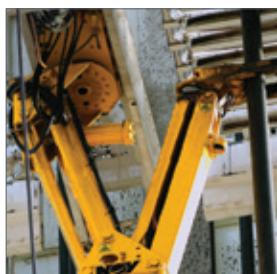
#### Iron roughneck — ST-100

- Greater torque and power for eXtreme torque connections and deeper drilling requirements
- Integrated spin and torque function and advanced controls maximize safety and efficiency
- 100,000 ft-lb makeup and 120,000 ft-lb breakout torque
- 4-to 9¾-in. tubular connection range



#### PipeCat laydown system

- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated
- Transfers tubulars from catwalk level to drill floor
- Wireless radio control or local control
- Manual V-door ramp functionality



#### STV (optional)

- Derrickman removed from diving board for increased safety and accelerated training with driller
- Intuitive, user friendly, ergonomic controls
- Greater consistency in tripping speed
- Two-camera control system
- Manual racking possible
- Easily transports in and out of mast via transport skid



#### Power slips — PS-21 (optional)

- Manual operations at well center eliminated
- Installation flush with the drill floor creates a safer work environment
- Reacts up to 45,000 ft-lb of torque
- Standard equipped with a centering device
- Handles all drill pipe, collars, tubing and casing sizes up to 14-in. OD



# European Rig



## Mast and substructure

- Dreco Slingshot substructure with ground level assembly to ensure efficiency and safety
- Compact design for smaller load sizes that meet strict European requirements while minimizing total number of loads required between locations
- Rig package meets strict CE requirements for safety, quality and environmental protection



## AmphiON and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up and redundant power network; protects the system against power loss



## Top drive — TDS-11SA

- AC electric VFD-controlled drilling for safer drilling
- Dependable torque and power
- Compact size and lightweight
- 800-horsepower
- 500-ton hoisting capacity
- 37,500 ft-lb (50 842 Nm) continuous



## Drawworks — DSGD-375

- AC motor performs main braking; motor in conjunction with the VFDs is capable of stopping and holding the maximum hookload at zero speed indefinitely
- Dual-speed gear box offers better tripping efficiencies at lower hookloads
- No HPU or brake water cooling system required
- 1,500 continuous horsepower
- Two air-cooled caliper disc brakes



## BOP — Model 6012 ram 13% in. 10,000 psi

- Rugged, powerful, and capable of operating in harsh environments
- Hydraulically actuated doors for ease of service and ram replacement
- Proven performance in the field
- Manufactured from forged materials that meet H<sub>2</sub>S Service in accordance with NACE MR0175
- Proven trim package is standard and includes Xylan coating in the through bore, ram cavities, and all wellbore wetted surfaces
- Hard coatings on dynamic sealing surfaces
- Only two hydraulic connections required per ram
- Optional large-bore shear bonnets and boosters
- Optional Model 6000 shear ram
- BOP hoists transport BOP to well center assembled

The European Rig is a fully compliant, fit-for-purpose land rig ready to work within the European Union. It satisfies many of the stringent European operating requirements by adhering to the strict CE ATEX, IP15 regulations, accommodating regional noise restrictions, catering to harsh operating and weather conditions with winterization, and transporting in loads that meet the tight transport road requirements.

To adhere to noise regulations, European rigs incorporate noise suppression provisions in generator buildings, drill floor wind-walls and the HPU skid. Additionally, these rigs are perfectly suited for pad drilling and offer the option of the Steel Toe walking system to maximize efficiency.



Available in two distinct and powerful classes — 1,500-horsepower, 350-ton and 2,000-horsepower, 500-ton — the European Rig is the complete drilling package for drilling within the European Union. European 1500 equipment suite is shown; equipment may vary based on rig horsepower options.



#### Mud system — 12-P-160, Triplex

- Multiple liner sizes allow pressures and volumes to handle circulation requirements in deep drilling applications
- 1,600-horsepower at 120 spm
- Press fit forged crankshaft design, and herringbone gears
- Single or dual-motor drives configurations available
- Two piece module design with either integral discharge connectors or separate discharge manifold and Fast Change or Blak-JAK™ Liner Retention and valve cover options
- 5,000 psi or 7,500 psi pressure ratings configurations available
- Large installed base and long-standing, field-proven, premium pump design



#### Iron roughneck — ST-100

- Greater torque and power for eXtreme torque connections and deeper drilling requirements
- Integrated spin and torque function and advanced controls maximize safety and efficiency
- 100,000 ft-lb makeup and 120,000 ft-lb breakout torque
- 4-to 9¾-in. tubular connection range



#### PipeCat laydown system

- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated
- Transfers tubulars from catwalk level to drill floor
- Wireless radio control or local control
- Manual V-door ramp functionality



#### Steel Toe walking system (optional)

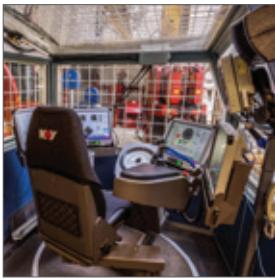
- Enhanced mobility, safer operations
- Critical equipment remains stationary or mounted in place on rig during walking operations
- Optional wireless controls maintain crew safety during walking operations
- Wellheads cleared with ease
- Rig can walk in X or Y direction
- Walking speed of 60 ft/hr
- Rig can walk 120 ft along one linear axis without using transfer tank

# Middle East Rig



## Mast and substructure

- Drawworks or hydraulically raised substructure with ground level assembly to ensure efficiency and safety
- Mast and substructure can be transported different ways: with structures reinforced and moved while erect with tires, or with substructure scoped down and mast on dolly systems designed for tough roads and desert environments
- No mast sections are disassembled and top drive remains in the mast during transport with the dolly system



## AmphiON and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up and redundant power network; protects the system against power loss



## Top drive — TDS-11SH

- Most powerful top drive for its size enables faster, deeper drilling
- AC electric VFD-controlled drilling for safer operations
- 1,100-horsepower
- 500-ton rotating and hoisting capacity
- 51,000 ft-lb continuous drilling torque at 125 rpm



## Drawworks — ADS-10SD

- AC motors perform main braking; motors in conjunction with the VFDs are capable of stopping and holding the maximum hookload at zero speed indefinitely
- No HPU or brake water cooling system required
- Air-cooled friction-plate emergency/parking brake



## BOP — LXT 13½ in. 10,000 psi (optional, subject to specifications)

- Lightweight and compact
- Compatible with the superior low force shear ram
- Easier maintenance and assembly of LXT ram
- Only two hydraulic connections required per ram
- Boltless door locking system
- LXT ram only requires single removal of two lock rods and is a one-piece block assembly
- Optional 15¼x15¼-in. booster available
- 100-ton BOP hoists transport BOP to well center assembled

Available in 1,800-horsepower DC, 2,000-horsepower DC and AC, and 3,000-horsepower AC options, the Middle East Rig delivers the horsepower you need while withstanding the high ambient temperatures and rough road conditions of the desert. To ease rig moves and reduce rig move down-time, the mast and substructure transport on dolly systems designed for harsh roads, hard rock surfaces and desert environments. High quality materials, heavy-duty construction, state-of-the-art design technology and high manufacturing standards ensure reliable performance in the strenuous desert environment. Middle East 2000 AC equipment suite is shown; equipment may vary based on rig horsepower options.





#### Mud pumps — FD-1600, Triplex

- Quick access to fluid ends to ease maintenance
- Rugged construction and field-proven
- 1,600-horsepower at 120 spm
- Dual-motor drive
- Optional Mission Fluid King two-piece 7,500-psi fluid ends
- Two high pressure equipment and piping options: 5,000 psi and 7,500 psi



#### Iron roughneck — ST-100

- Integrated spin and torque function and advanced controls maximize safety and efficiency
- Compact size and lightweight
- Adaptable for a wide variety of applications
- 60,000 ft-lb makeup and 80,000 ft-lb breakout torque
- 4½-to 8½-in. tubular connection range



#### Pipecat laydown system (optional)

- Personnel removed from danger area while picking up and laying down pipe
- Need for manual handling eliminated
- Transfers tubulars from catwalk level to drill floor
- Wireless radio control or local control
- Manual V-door ramp functionality



#### Power slips — PS-21 (optional)

- Manual operations at well center eliminated
- Installation flush with the drill floor creates a safer work environment
- Reacts up to 45,000 ft-lb of torque
- Standard equipped with a centering device
- Handles all drill pipe, collars, tubing and casing sizes up to 14-in. OD



#### BX elevator (optional)

- Hydraulically actuated elevator designed to improve rig safety and efficiency
- Ability to be interlocked with PS-21 as an additional safety feature
- Double-door design provides optimal balance and performance
- Changeable bushings allow one elevator frame to handle all pipe sizes and type requirements

# Mono-Transit Rig



## Mast and substructure

- One-piece telescoping substructure transports at only 14-ft high, but operates at a full 20 ft when assembled
- Mast hydraulic raising cylinders with remote controls to keep personnel a safe distance during operation
- Compact, trailerized load sizes
- Fast, craneless rig-up and rig-down



## Amphiон and driller's cabin

- Integrated control system for managing, controlling, and monitoring rig floor equipment for safe and efficient operations
- Configurable control screens and a CCTV screen maximize the driller's operational efficiencies and awareness
- Touch screens are user friendly, respond quickly, and allow simultaneous monitoring of multiple equipment on one screen
- Ergonomic, adjustable, climate-controlled workstation
- Multi-tool controllers, complete with battery back-up and redundant power network; protects the system against power loss



## Top drive — TDS-11SH

- Most powerful top drive for its size enables faster, deeper drilling
- AC electric VFD-controlled drilling for safer operations
- 1,100 horsepower
- 500-ton rotating and hoisting capacity
- 51,000 ft-lb continuous drilling torque at 125 rpm



## Drawworks — DSGD-375L

- AC motor performs main braking; motor in conjunction with the VFDs is capable of stopping and holding the maximum hookload at zero speed indefinitely
- Dual-speed gear box offers better tripping efficiencies at lower hookloads
- No HPU or brake water cooling system required
- 1,500 continuous horsepower
- 375-ton capacity
- Two air-cooled caliper disc brakes

The 375-ton capacity Mono-Transit Rig, manufactured for quick rig-up/down, is designed to handle the harsh weather and road conditions of Canada. Designed to have a small operating footprint, the rig travels in compact, trailerized load sizes with the substructure uniquely transporting as one load. To accommodate the Canadian winter weather, this 1,500-horsepower rig is fully winterized with removable panels for summer weather. Additionally, the substructure can be modified to accommodate the Steel Toe walking system.





#### BOP — LXT 13½ in. 5,000 psi

- Lightweight and compact
- Compatible with the superior low force shear ram
- Easier maintenance and assembly of LXT ram
- Only two hydraulic connections required per ram
- Boltless door locking system
- LXT ram only requires single removal of two lock rods and is a one-piece block assembly
- Optional 15¼x15¼-in. booster available
- The BOP handling and transport system is integrated with the substructure, which allows the BOP to adjust and move over the hole

#### Mud pumps — FD-1600, Triplex

- Quick access to fluid ends to ease maintenance
- Rugged construction and field-proven
- 1,600 horsepower at 120 spm
- Single- and dual-motor drive configurations can both operate at full 1,600 horsepower
- Optional Mission Fluid King two-piece 7,500 psi fluid ends

#### Iron roughneck — ST-100

- Greater torque and power for eXtreme torque connections and deeper drilling requirements
- Integrated spin and torque function and advanced controls maximize safety and efficiency
- 100,000 ft-lb makeup and 120,000 ft-lb breakout torque
- 4-to 9¾-in. tubular connection range

#### STV (optional)

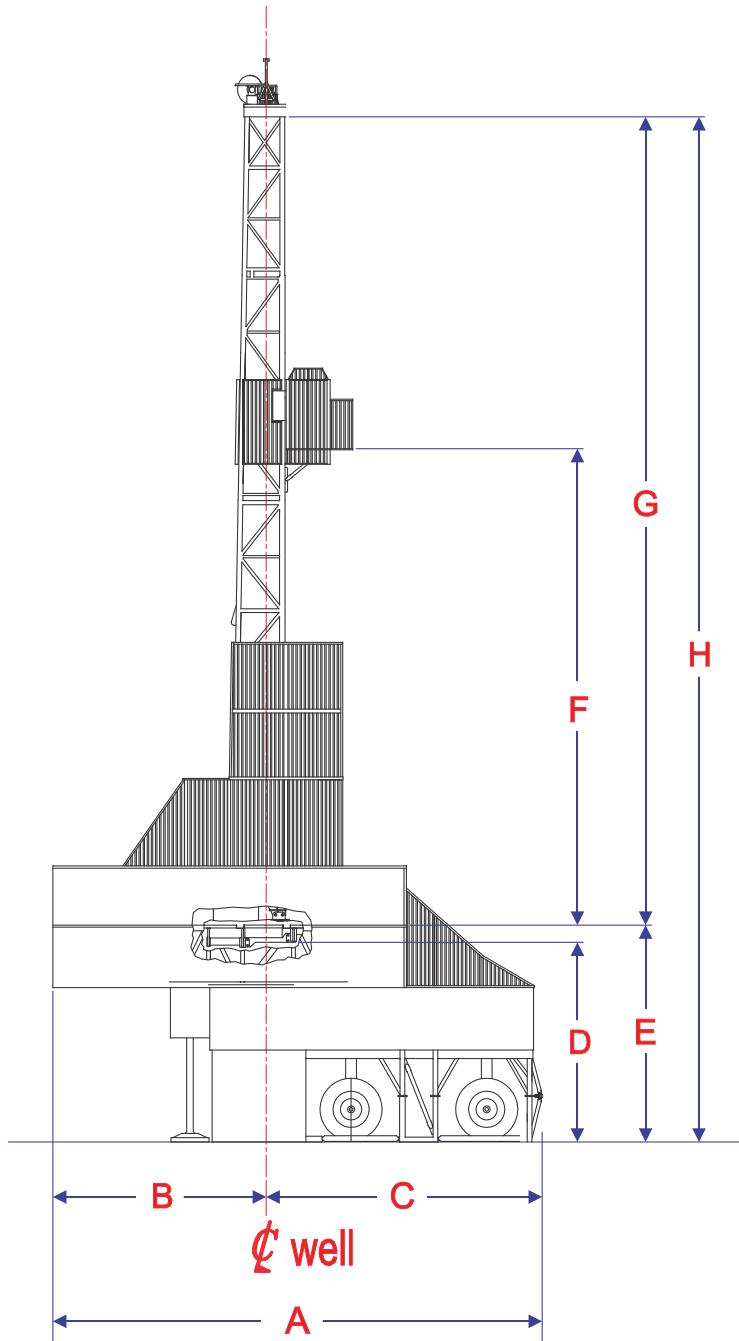
- Derrickman removed from diving board for increased safety and accelerated training with driller
- Intuitive, user friendly, ergonomic controls
- Greater consistency in tripping speed
- Two-camera control system
- Manual racking possible
- Easily transports in and out of mast via transport skid

## Custom Terrain Series

Arctic, Desert, Heli, Train

The Custom Terrain Series rigs are purpose-built to perform in demanding terrains and extreme temperature environments. With many innovative designs, these rigs continue drilling downhole no matter the conditions above ground.

Ideal Series	A	B	C	D	E	F	G	H
<b>Desert rig</b>	62 ft 6 in. (19.05 m)	42 ft (12.80 m)	20 ft 6 in. (6.25 m)	25 ft (7.62 m)	30 ft (9.14 m)	85 ft (25.91 m)	152 ft (46.33 m)	182 ft (55.47 m)
<b>Arctic box</b>	86 ft 9 in. (26.44 m)	37 ft 10 in. (11.53 m)	48 ft 11 in. (14.91 m)	26 ft 8 in. (8.13 m)	30 ft (9.14 m)	85 ft (25.91 m)	142 ft (43.28 m)	172 ft (52.42 m)
<b>Train prime</b>	57 ft 1 in. (17.40 m)	39 ft (11.89 m)	18 ft 1 in. (5.51 m)	31 ft 10 in. (9.70 m)	36 ft (10.97 m)	85 ft (25.91 m)	142 ft (43.28 m)	178 ft (54.25 m)
<b>Heli rig</b>	61 ft 2 in. (18.64 m)	39 ft 7 in. (12.06 m)	21 ft 7 in. (6.58 m)	20 ft 4 in. (6.20 m)	25 ft (7.62 m)	85 ft (25.91 m)	142 ft (43.28 m)	167 ft (50.90 m)



### Notes

- Above dimensions represent our standard offering. Contact our sales team for more information.

## Conventional Substructures and Drilling Masts — Custom Series

Rig model	Desert rig	Arctic rig	Train rig	Heli rig
<b>Hook capacity</b>	250-to 750+ ton (226.79 to 680.38+ mt)	250, 350, or 500 ton (226.79, 317.5, or 453.5 mt)	250-to 750+ ton (226.79 to 680.38+ mt)	250 ton (226.79 mt)
<b>Mast type</b>	Telescopic or cantilever	Telescopic or cantilever	Cantilever	Cantilever
<b>Mast height</b>	127+ ft (38.71+ m)	120+ ft (36.58+ m)	127+ ft (38.71+ m)	142 ft (43.28 m)
<b>Base width</b>	15 to 33 ft (4.57 to 10.06 m)	25 ft (7.62 m) - based on 350 and 375 ton	25 ft (7.62 m) - based on 350 ton	21 ft (6.40 m)
<b>Raising method</b>	Cylinder/sling-line	Cylinder/sling-line	Cylinder/sling-line	Cylinder/sling-line
<b>Applicable drawworks (no. of lines)</b>	1320-UDBE (10 to 14)	SSGD-360 (12)	DSGS-375 (12)	D700 (12)
<b>Substructure type</b>	Slingshot-cylinder/winch/drawworks	Slingshot-cylinder/winch	Slingshot-cylinder/winch	Slingshot-cylinder/winch/drawworks
<b>Pipe set-back capacity</b>	250,000 to 700,000 lb   125 to 350 ton (113.4 to 317.5 mt)	250,000 to 600,000 lb   125 to 300 ton (113.4 to 272.1 mt)	350,000 or 575,000   175 or 287.5 ton (158.7 or 260.8 mt)	n.a.
<b>Casing capacity</b>	400,000 to 1,500,000 lb   200 to 750 ton (226.7 to 680.3 mt)	750,000 lb   375 ton (340.1 mt)	700,000 lb   350 ton (323.8 mt)	600,000 lb   300 ton (272.1 mt)
<b>Pipe racking capacity (stands)</b>	DP: 3½ to 5½ in. (140 to 270) DC: 8½ to 9½ in. (up to 9)	DP: 5 in. (200) DC: 6¾ in. (22)	DP: 5 in. (180) DC: 7 in. (12), 8 in. (8)	DP: 5 ft (178) DC: 10 in. (8)
<b>Floor height</b>	20 ft to 30 ft (6.09 to 9.14 m)	20 ft or 35 ft (6.09 or 10.66 m)	25 ft or 30 ft (7.62 or 9.14 m)	20 ft or 25 ft (6.09 or 7.62 m)
<b>Cellar/clearance height</b>	19 ft to 38 ft (5.79 to 11.58 m)	25 ft 6 in. (7.77 m)	22 ft (6.70 m)	Up to 20 ft 4in. (7.72 m)
<b>Rotary table opening</b>	27½ in.	37½ in.	37½ in.	27½ in.
<b>Standard crown sheave groove</b>	1½ to 1¾ in.	1¼ to 1¾ in.	1¾ in. (based on 350 ton)	1½ in.

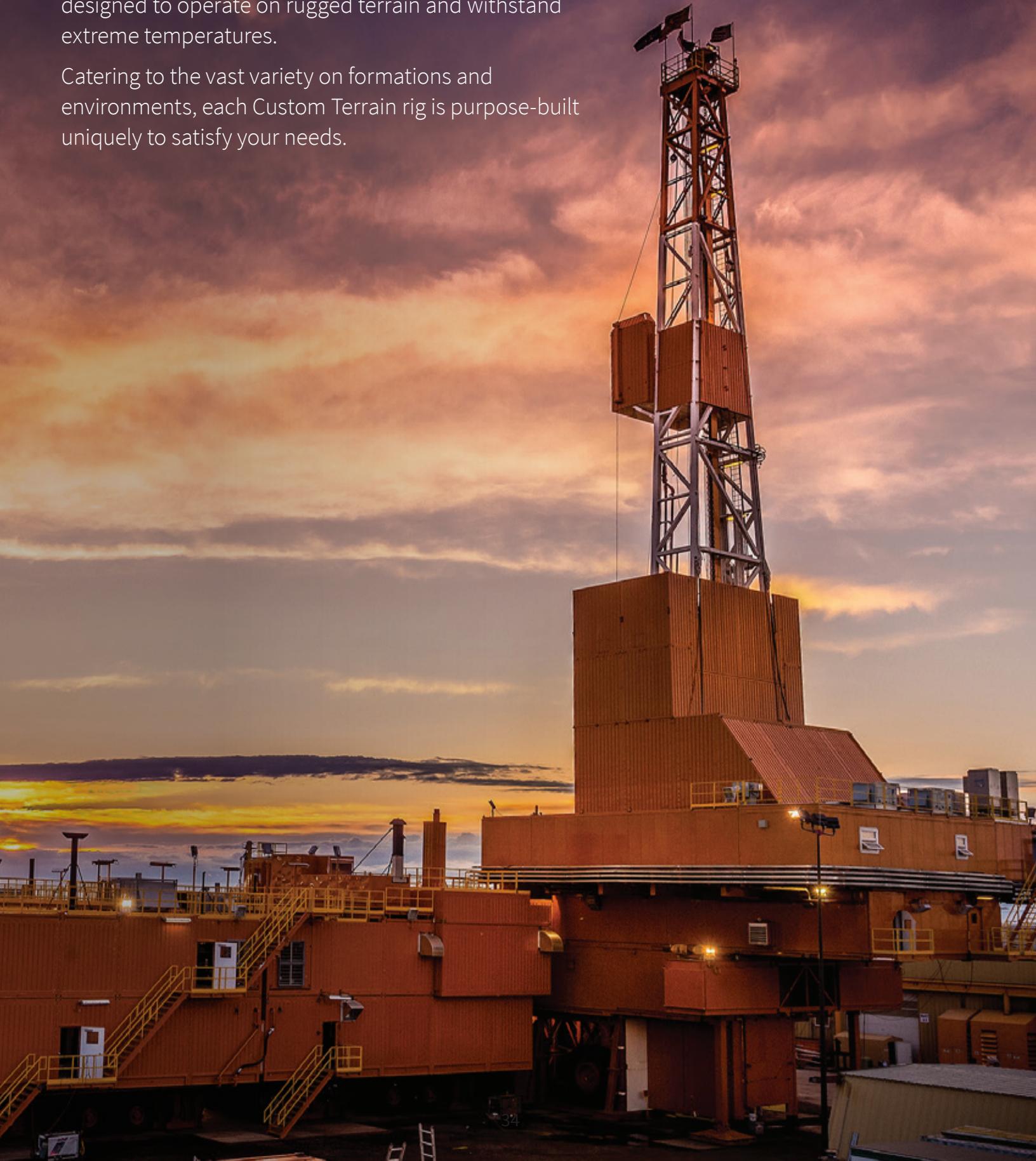


## Custom Terrain Series Rigs

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The Custom Terrain Rig series rigs are specifically designed to operate on rugged terrain and withstand extreme temperatures.

Catering to the vast variety on formations and environments, each Custom Terrain rig is purpose-built uniquely to satisfy your needs.





## Desert Rig

The Desert Rig is designed to take on the challenges of quick moving desert operations, high ambient temperatures and difficult transportation logistics.

### **Efficient rig-up/down and reduced transit time between wellsites**

- Maximized load sizes with use of primary mover
- Reduced footprint and compact load size via rig's ability to fold, bend, or collapse
- Incorporation of drilling equipment during transit. BOP equipment is integrated into substructure during relocation.
- Use of pinned connections instead of bolted connections
- Unique substructure and trailer-mounted equipment

### **Ruggedness**

- Rig design suited for high-ambient, desert temperature environments
- Durable equipment suite, high-quality materials, heavy-duty construction, state-of-the-art design technology, and ISO 9001 manufacturing standards

### **Enhanced safety**

- The Desert Rig is packaged with all the safety features and reliability you expect from us
- Integrated control system with our disc brake electronic autodriller and wrap-around operator station automates many potentially hazardous tasks and improves visibility



## Arctic Rig

The Arctic Rig takes on cold weather environments through rig winterization with warming equipment and enclosed work areas.



## Heli Rig

The Heli Rig is uniquely designed for use when road transportation to a remote location is not an option. True to its name, the Heli rig is transportable by helicopter and is ideal for isolated jungle locations.



## Train Rig

When a traditional rig moving technique is not an option, the Train Rig can move on the pad using rails, ensuring mobility and drilling efficiency.

## NOVOS Reflexive Drilling System

### What is a reflexive drilling system?

A reflexive drilling system is designed to perform a series of actions when prompted, just as human reflexes respond when acted upon by a specific stimulus. The NOVOS reflexive drilling system is easily scalable and can augment existing people and processes for greater control, consistency, and enhanced performance, or expand all the way to full closed-loop automation.



NOVOS provides unmatched control, consistency, and value as the industry's only reflexive drilling system, automating repetitive drilling activities and optimizing your drilling program.

NOVOS benefits contractors by allowing drillers to focus on consistent process execution and safety, and benefits operators by optimizing drilling programs.

NOVOS provides control and consistency for any operation. It allows drillers to automate repetitive drilling activities, such as coming off and on bottom, friction tests, downlinking, taking surveys, and making fully hands-free offshore connections. The result is greater consistency, with every driller — regardless of individual experience level — able to achieve the same improved performance time and time again.

## NOVOS advantages

### Precise control

Set the exact parameters to meet the needs of your drilling program, from circulation to weight on bit and everything in between, and the NOVOS system performs at the push of a button.

### Unmatched consistency

Regardless of who's at the controls, the NOVOS system offers the same performance, again and again, eliminating NPT and protecting your equipment.

### Increased performance

With more consistency comes greater performance. Because the reflexive system automates repetitive tasks, you'll achieve better average performance throughout the entire drilling lifecycle, regardless of the experience level of the driller.

### Infinite customization

With additional off-the-shelf apps that can be tailored to your needs or completely custom designs, the NOVOS system can be updated to meet specific needs with just a bit of software.

### Minimal interruption

The whole system can be installed with minimal interruption and requires limited additional hardware.

## Open application platform

Custom apps can help configure the NOVOS system specifically for your crew and processes. Simple, easy-to-understand software development tools help create custom applications for drilling operations on our automation platform. Sample code and supporting technical notes and documentation help you build applications tailored for your drilling program.

**Surface DrillShark™:** Automates drilling parameter selection using unique algorithms to maximize ROP while minimizing mechanical specific energy of the drilling system.

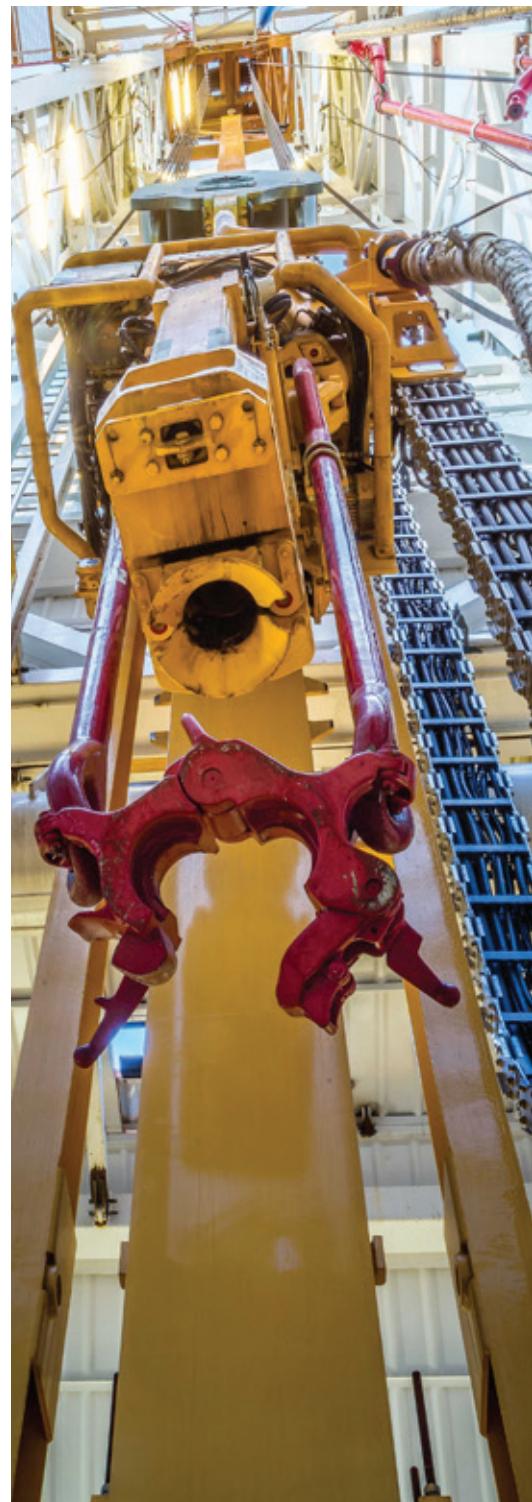
**SoftSpeed™ II:** Stick-slip prevention uses automated vibration dampening to mitigate torsional vibration and reduce stick-slip oscillations during drilling operations.

**Tag Bottom:** Users can configure how NOVOS lowers the bit into the formation, including drawworks velocity, ROP, and any parameters used for finding the bottom of the hole. NOVOS automatically looks for stable weight before ramping off-bottom rpm to on-bottom rpm.

**Drill:** Autodriller automatically adjusts the drilling setpoints.

**Downlinking:** Automates the process of downlinking to a directional drilling tool.

**Autodriller Gains Control:** Allows driller to control Amphion gains manually.



## Aftermarket Operations

NOV is with you every step of the way.

### Field service

Our growing staff of proven field service personnel is available 24/7 to support all NOV products. Knowledgeable field service technicians can quickly deploy to your operating site to resolve your equipment issues, whether structural, mechanical, electrical, or software-related. Our FAST solution service trucks are pre-stocked with an extensive list of NOV's top drive, iron roughneck, BOP, EDS, and Amphion replacement parts, filters, consumables, and tools to get your NOV equipment running at OEM specifications. Expert on-call technicians are ready to provide FAST, on-site service and repair.

### Training

Field technicians train extensively on NOV Rig Technologies product lines, including competency training and evaluations through our NOV technical colleges and training facilities, to ensure the highest quality service and support for your on-site equipment repairs.

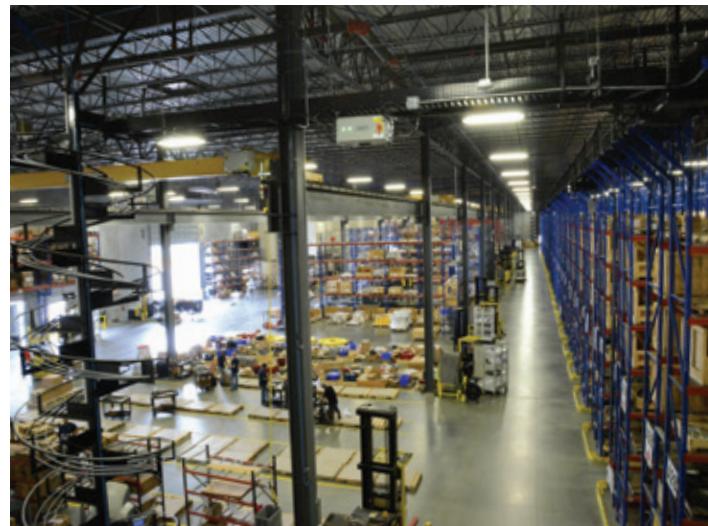
### Repair

Our highly skilled shop technicians overhaul, repair, rebuild, and re-certify a wide range of NOV equipment to the NOV Quality Assurance and OEM specifications — using only OEM parts. Our worldwide network of repair centers provides unrivaled quality customer service, on-time delivery and unmatched technical integrity. In addition, equipment exchange programs are available at various facilities. Through the used equipment refurbishment program, we provide viable, short turnaround solutions to immediate capital equipment needs, complete with data books and certificates of conformance as required.

### Technical support

One phone call to one of our technical support centers initiates a technical support team of multi-skilled backgrounds to troubleshoot and resolve your worldwide equipment needs, 24/7/365. Our team of highly skilled and experienced technical support members work together with our global pool of qualified field service technicians and subject matter experts to keep your rigs operating. The technical support team utilizes our web-based application "Tracker" to record, manage, and resolve issues.

For 24/7 Support Services: [+1 281 569 3050](tel:+12815693050)



## Comprehensive Aftermarket Operations



## NOTES

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**Corporate Headquarters**  
7909 Parkwood Circle Drive  
Houston, Texas 77036  
USA

**Rig Technologies Headquarters**  
10353 Richmond Avenue  
Houston, Texas 77042  
USA