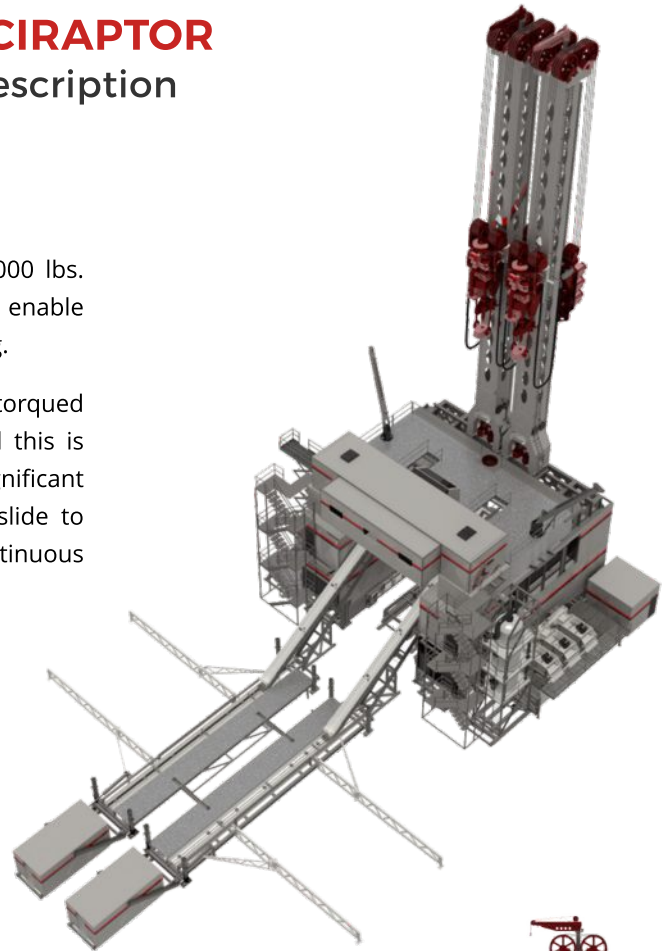


THE VELOCIRAPTOR

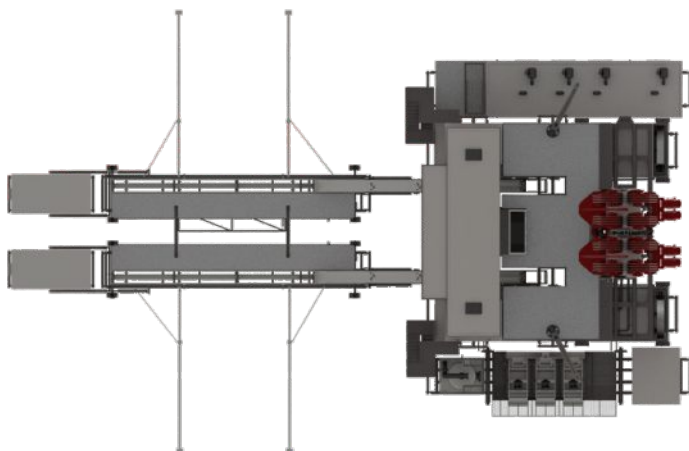
General Description

The Velociraptor is an 800,000 lbs., upgradeable to 1,000,000 lbs. (2,000 HP), hook load rig incorporating two range III Masts to enable the simultaneous Connection system (SCS®) method of drilling.

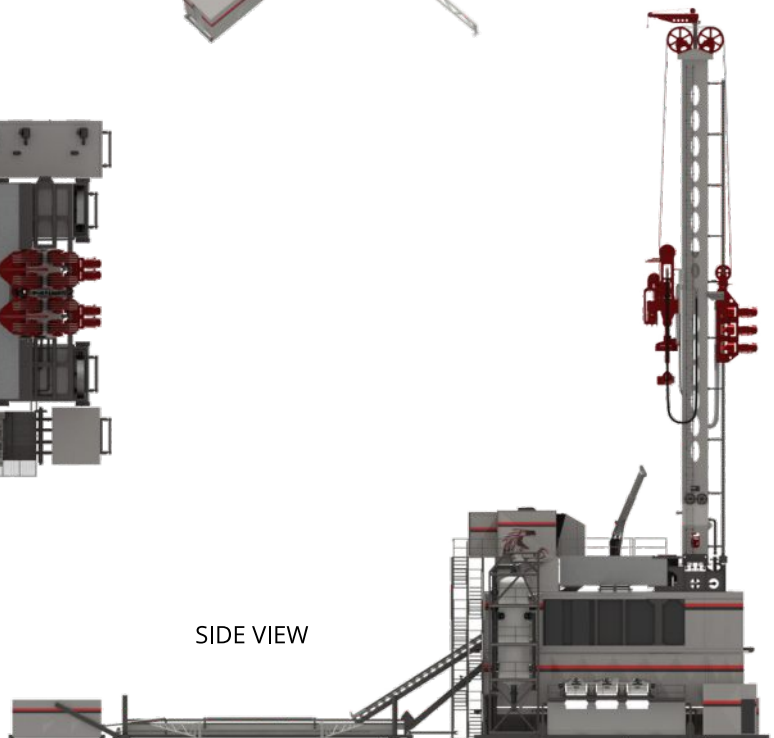
The SCS® allows drilling tubulars to be handled, made up, and torqued completely out of line with the well bore in one mast. All this is completed while a second mast continues to drill. Without significant interruption in pump flow or drilling, the masts laterally slide to present a ready to go tubular to the well bore for near continuous drilling.



PLAN VIEW



SIDE VIEW



Control System

Raptor rig provides Truly Automated Rig Control with it's TARC® (Truly Automated Rig Controls) proprietary system. The bulk of operational procedures are truly hands off, controlled by a PLC with a touchscreen operator interface, and with simple and robust methods of integrating interlocks and procedural steps. This vastly reduces the possibility of human error. TARC® is structured as an open architecture platform. This allows the integration of third-party data with TARC® to provide better drilling resolution, ROP, and integration with customer's head office drilling groups.

Mast

The drilling rig utilizes two masts each of a single tube design. The masts slide traverse to present one of two top drives to the well bore at a time. This facilitates the off critical path staging of tubulars to allow connection times measured in seconds. Near continuous tripping is achieved via this patented Simultaneous Connection System (SCS®).

Configuration	(2) High Strength Steel single Tube design
Pull-back Capacity	800,000 lbs.
Pull-down Capacity	100,000 lbs.
Length Capacity	Single joint range 3 tubulars up to 36" in diameter Provision for casing driving tool

Draw Works Carriage

The draw works carriage travels along a rack and pinion system on the back of the mast to hoist the top drive on the front of the mast. This configuration provides nearly perfect compressive loading of the mast, minimizing deflection and thus miss alignment of tubular threads during the automated connection sequence.

Configuration	800,000 lbs pull back Crown saver and floor saver, 1-1/8" Line
Capacity	800,000 lbs. pull back 100,000 lbs. pull down 349 ft./min. max travel speed

Top Drive

Two completely independent top drives allow the assembly of tubulars completely offline from the main drilling path the minimizes connection time dramatically. The thread make/break function is fully automated allowing tubular connections to be handled precisely and without operator error to the exact manufacturers specifications of the connection. The floating spindle eliminates thread damage due to excessive forces on the threads.

Features	Automated thread make/beak complete w/ automated backup clamp
Capacity	Static Hoist Capacity, 500 Ton API Continuous Torque Rating, 72,000 ft. lbs. @ 100 RPM Breakout Torque Rating, 123,000 ft. lbs.
Drive	(2) electric motors, 600HP each Electrical rating, CSA Class 1, Zone II
Floating Spindle.....	6-5/8 Reg thread Float travel (hydraulic assist) ± 6"

Substructure

The substructure is a self-erecting box on box design requiring no cranes for rig up. Major components are housed within the box on box structure to allow the rig to move well to well without disassembly. These include:

- Drill Floor
- Degasser
- Walkers
- Transfer Tank
- Drilling Manifold
- VFD
- Drill Floor
- HPU
- MPD manifold (if required)
- Hydraulic Power Unit
- Control Cab
- Flow line
- Gantry Crane
- Spacer Floor

Drill Floor	Clear height, 32 ft. Floor Height, 41 ft. Inside Width, 26 ft. Integral "drip pan" to prevent fluid spillage Integral flow line and flow line handler (2) 100,000 lbs. capacity make and break posts c/w hydraulic winches & cable
Rotary Table	Diameter, 37-1/2" Capacity, 800,000 lbs. static Drive, Hydraulic motor
Slip handler	Hydraulic, automated, hands off operation Size range 3-1/2" to 20"D tubulars
BOP gantry	50 Ton BOP trolley gantry system for handling of up to 21-1/4 BOP stack

Walking System

The walking system is integral to the lower substructure. The system is of a continuous walking that does not lift the rig for each step reducing well to well skidding times significantly. The walkers are capable of traveling in any direction for up to 250 feet. The rig moves well to well with all peripherals attached such as the catwalks, generators, mud transfer tank, degasser.

Umbilical Trailer

High pressure Mud line.....	5" x 7500 psi
Low pressure Mud line.....	6" x 150 psi

Catwalks

The rig utilizes two catwalks (joined) to facilitate pipe handling for the Simultaneous Connection System (SCS®).

Tubular Capacity	Up to range 3 singles to 36" in diameter
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Well Control

BOP Handler	50 Ton capacity Provision for storage manipulation of up to 21-1/4" BOP stack w/ annular
13-5/8 BOP	13-5/8" 5,000 psi WP Annular BOP 13-5/8" 10M double ram type preventer Pipe and shear ram c/w booster 13-5/8" 10M single ram type preventer. Pipe ram. 13-5/8" 10M Drilling spool 5,000 psi WP w/ (2) opposite flanged side outlets 3-1/16"
Accumulator	Accumulator integral with substructure CTI 10-Station, nitrogen backup. Shared tank and system w/ main HPU

High Pressure Mud System

Near continuous mud flow is achieved via the drilling manifold which diverts the mud flow during the brief connection time to eliminate the ramping down of pumps during the connection. This system also readily facilitates the addition of a Managed Pressure manifold. Both manifolds are fully automated with hydraulically operated valves controlled by the rig PLC.

General5" ID 7,500 psi
Pumps(2) HH 2,400 HP quintaplex 7,500 psi
Pump Discharge5" ID 7,500 psi with 4" 7,500 psi mud valves

Low Pressure Mud System

Mud SystemCapacity 900bbl (active)
3 linear motion shale shakers
Transfer Tank (Scalper).....Capacity 133bbl (active)
2 liner motion shale shakers
Water/Fuel Tanks.....300 bbls water tank, 100 bbls fuel

Generators

Generators, excluding the Mud pump generators, are all housed within the substructure allowing rig well to well skidding without extension of power lines. Multiple smaller Generators are "power on demand" controlled. Generators only engage when sufficient power draw is encountered. This maximizes fuel savings and minimizes generator wear and tear. This also allows single Gen failure with minimal impact on overall rig performance.

Diesel Generators.....4,400 total KW Volvo Penta TAD1673 Engines – Tier 4

Miscellaneous

Degasser6 ft. Diameter x 22.3 ft. Vessel
H₂S/Sour Gas, 8 in. inlet and 12 in. return flow line
TubularsAs Required
Doghouse.....Size: 50' x 14'6" complete with (2) slide outs
Controls: All drillers controls are HMI touch screen controlled
TongsManual Tongs: (2) tongs w/ a torque rating of 100,000 ft./lbs. From 2-3/8" through 10" tubulars
Iron Rough NeckConfigurations: 3 jaw hydraulic with hydraulic spinners
Torque: 110,000 ft.-lbs. Break
Size Range: 3-1/2" - 15' diameter
ElectricalAll electrical equipment in Hazardous zone 1 and 2 areas as per API 500 or 505
Hazardous Zones.....All equipment certified to be used in accordance with Hazardous zones defined in API RP 500 or 505