CONRAD

Zull 2000

Zull 2000 | "Most powerful reverse circulation rig in the range"

The Conrad Zull 2000 is the successor to the well-known Zull 1000 that is completely new with regard to set-up. It has been continued to be developed to obtain the most powerful rig in our product range. Its A-mast construction guarantees a very stable set-up during drilling under the most extreme conditions. This rig has been equipped in its first version for reverse circulation/airlift drilling (ZULL) where a choice can be made for either 6" or 8" double-walled airlift drill pipes. The Zull 2000 in combination with the 8" double-walled drill pipes and 8" drilling system guarantees a high production speed when drilling holes as from approx. 500 mm up to a diameter greater than 1 metre.

The drilling rig can be supplied with an externally set up drill pipe storage with a drill pipe manipulator. This system can be fixed with relation when compared to the drilling rig to ensure good drill hole alignment. The drive and operation takes place from the drilling rig. As specified in the technical specifications, this rig can be fitted out to perform all drilling methods commonly used and, therefore, the Zull 2000 can be deployed as a full combination drilling rig. The Zull 2000 can be fitted out based on customer specifications for straight flush drilling, reverse circulation/airlift drilling, percussion drilling, sonic drilling, coring and Down-The-Hole drilling.

Safety

The Zull 2000 meets all applicable health and safety standards (requirements). Meeting the rig directive and, subsequently, implementing a CE mark accompanied by an EC declaration is not enough for us. Conrad Stanen has a safety inspection performed with regard to every rig by an independent inspection body appointed for this purpose before it is delivered to the customer. This ensures that you, the customer, will receive a guarantee regarding health, safety and quality standards.

Operator convenience/comfort

Conrad Stanen has translated a lot of experiences of drilling rig operators into the operating friendliness of its designs. This ensures that productivity is increased as a whole and that it is made more pleasant for the drilling rig operator to work with the rig.

A few examples of this are:

- Full drill pipe manipulation system that ensures that drill pipes no longer have to be inserted and extracted manually (no physical load)
- A semi or fully automatic facility for the above to ensure that manual control is limited to a minimum (operating comfort)
- Radio remote control for all important drilling functions and setting up the drilling rig (good visibility of the drilling process and surrounding area).
- Automatic greasing system.
- A high engine performance that increases productivity.

The drilling rig operator can set himself or herself up in the area of the rig with his or her radio control unit in a practical and safe manner. Inserting and extracting drill pipes are automatic tasks and do not lead to physical loads. This also prevents the risk of body parts becoming trapped.

"Specific and durable"

Environment-friendliness

Conrad Stanen has placed the environment high on its list of priorities. The following is standard on our rigs:

- Biodegradable hydraulic oil.
- Drip tray construction with drainage option so that the other oils do not end up in the environment when disasters occur.
- Noise-insulating enclosure around the diesel engine.
- Integration of a high-quality exhaust gas system that meets current and future regulations with regard to emissions and noise reduction.
- Reduction of the engine speed during work. This has resulted in the application of a powerful diesel engine that operates with an optimal speed that has a fuel-lowering and noise-reducing effect.
- The hydraulic transmission has been optimised with regard to performance and sustainability.

All in all, it is our intention to engineer and produce rigs that distinguish themselves with regard to power, speed, safety and operator comfort. The rigs can be deployed within the built-up area where the applicable environmental requirements apply.

Drilling methods

The Conrad Zull 2000 can be assembled for one or a combination of the drilling principles described below.

Reverse circulation drilling | Reverse circulation drilling up to approx. 70 to 80 metres can be carried out with a reverse circulation pump and reverse circulation drilling bit diameters up to approx. 1200 mm are feasible where the details will depend on the geological conditions.

Airlift | The airlift drilling principle by using a compressor is the appropriate method to continue the reverse circulation drilling with a hole diameter of approx. 1200 mm to a depth of 1000 metres, the details of which will depend on the geological conditions.

Straight flush drilling | Holes with a diameter of approx. 350 mm can be continued up to a depth of approx. 1000 to 1200 metres by using a water, mud or foam circulation system with this drilling method, the details of which will depend on the soil conditions. When the correct drilling pipe is selected, shallower holes with larger diameters or deeper holes with smaller diameters are possible.

Percussion drilling | By equipping the Zull 2000 with a rotary table and a stroke mechanism, percussion drilling is possible up to a depth of at least 200 metres with a max. casing diameter of 420 mm.

Auger drilling | The Zull 2000 can drill with both hollow stem and full augers that have an outer leaf diameter of approximately 800 mm with the standard 6" drill head.

Counter flush drilling | For special activities the Zull 2000 can be equipped with the counter flush system for sampling for exploration objectives to name but one example.

Other drilling methods such as Down-The-Hole drilling, coring and sonic drilling are possible.

Technical specifications | Zull 2000

Diesel engine Truck PTO	Power	260 - 350 kW Spec. truck
Drillmast	Length Safe working load Height under crown sheave	10 - 13 m 600 kN 9 m
Pull back/ Pull down system through hydraulic cylinder and steel cables	Stroke Pull back Pull down Lifting speed	7,2 / 10,3 m 500 kN 150 kN 0,35 m/sec
Drill head 1 with two Hydraulic motors	Passage Torque/revolutions	150 mm 2000 daN/m / 60 rpm 1000 daN/ 120 rpm
Drill head 2 with two Hydraulic motors	Passage Torque/revolutions	200 mm 2500 daN/m / 50 rpm 1250 daN/ 100 rpm
Hydraulic hoisting winch	Line pull Steel cable Lifting speed	6000 daN 100m. Ø 16 mm 0,5 m/sec
Centrifugal mudpump (Hydraulically driven)	Rate Pressure	105 m^3/hr 30 bar
Suction pump (Hydraulically driven)	Rate Suction height	280 - 320 m^3/hr 9 mwc
Compressor (Hydraulically driven)	Rate Pressure	8 - 9 m^3/min 13 bar
Rotary table unit	Passage Torque Revolutions	420 mm 4000 daNm 20 rpm

These specifications can be changed in consultation based on customer requirements

Additional options that are possible:

- *Different drill head models*
- *Different lit of spray pump models*
- *Drill pipe manipulation system*
- *Crown sheaves construction that can be rotated / extended*
- *Automatically operated drill pipe manipulator*
- *Automatically operated restart of drilling process*
- *Percussion device*
- *Larger pull back/pull down power and speed*
- *Different types of winches*
- *Winch cable push-out arm*
- *Other rotary table units*
- *Automatic greasing system*
- *Mast dump (mast height adjustment)*