

# FORWARD

## C6 CORE DRILL RIG

The C6 Coring Rig is the result of a collaboration between seasoned field personnel and our own technical design team which includes Australian and German consultants.

FORWARD'S new C6 is a compact crawler mounted rig with all the user friendly functions drillers are looking for and all at their fingertips.. The rigs are built under strict quality control protocols and are rigorously tested before dispatch.

The C6 has been built with reliability in mind and is assembled using only the very best first-world components such as Sauer Danfoss pumps and PVG valves, Danfoss and Eaton hydraulic motors, Manuli Hoses and Cummins engines.

The C6 is extremely compact but has depth capabilities that are only found on much larger rigs. AND, it drives straight into a shipping container which makes it extremely economical to ship anywhere in the world.

With safety in mind, the C6 has all the features that you'd expect in a modern rig such as safety guards and emergency stop buttons on all corners of the rig, fire extinguishers and optional automatic Co2 fire suppression.





## ROTATION HEAD

- The 2 Speed Rotation Head can accept all sizes of coring rods up to PQ.
- Patented chuck jaws and hydraulic opening/spring close function insures a fail-safe operation.
- The Rotation Head is connected direct to the hydraulic feed cylinder which simplifies the whole mast design and minimizes maintenance.
- The Rotation Head also slides off to the side and opens the whole mast up to run casing or pull tubes etc.

## MAST

- The Rigid design of the mast provides superior performance and reliability even under the toughest geological conditions.
- The set-up controls are mounted at the side of the rig and can be isolated from the circuit during drilling operations.
- The Mast raise cylinders are equipped with balancing valves to increase safety.
- The folding mast allows the rig to be transported on short trailers or in a shipping container.
- The Dump Mast reaches the ground at angles up to 45degrees and ensures all the pullback forces are absorbed by the ground and not the rig.



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## CONTROL PANEL

- ▶ When the rig is shutdown or being transported the Control Panel can be locked to prevent damage or vandalism.
- ▶ Both the Rotation and Fine Feed controls are fitted with friction dampeners with positive and easy to find neutral positions.
- ▶ There is an auto alarm function for low level of hydraulic oil.
- ▶ All the gauges are conveniently located for ease of monitoring.



## HOOD

The steel hood provides adequate protection from the elements yet opens up for ease of maintenance.



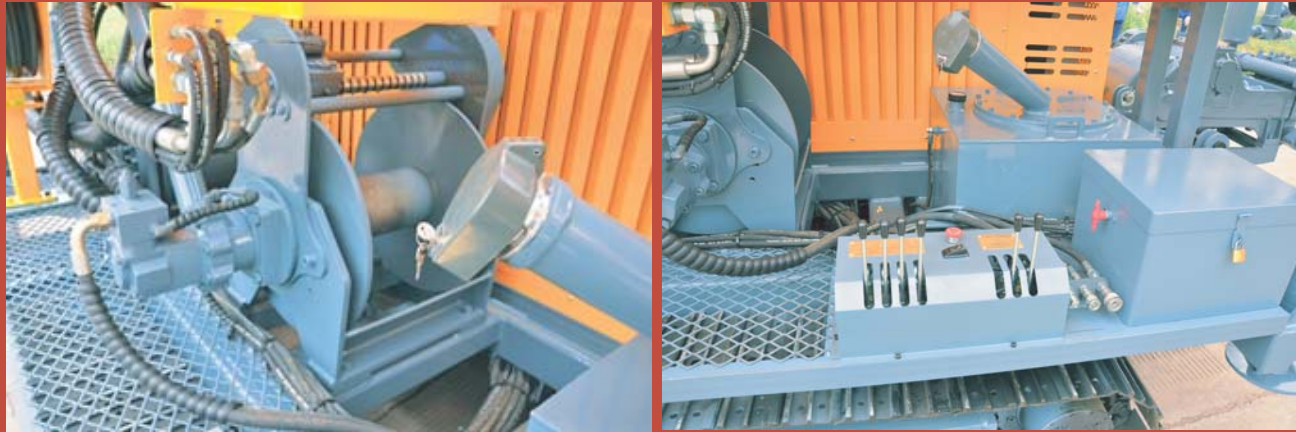
## HYDRAULIC SYSTEM

All the hydraulic pumps are genuine Variable Displacement, Pressure Compensated, Load Sensed Sauer Danfoss Piston pumps.



## MAIN HAUL WINCH

The Haul Winch is securely mounted central to the rig chassis.



### WIRELINE WINCH

The Wireline Winch has auto spooling and 2000 metres capacity.



### CRAWLER CHASSIS

The Crawler chassis is manufactured in house and has quality Korean sourced hydraulic drive motors.



### MUD PUMP

The 1000psi mud pump is conveniently located at the front of the rig for ease of maintenance but high enough to allow a descent angle of attack when traversing creek beds.

TECHNICAL SPECIFICATIONS

ROD SIZE		MUD FILLED HOLE	
Drill Rod/Core Barrel	Hole Depth (Meters)	Hole Depth (Feet)	
BRQ/BQ	2009	6590	
BRQTK/BQTK	2504	8215	
NRQ/NQ/NQ2	1534	5032	
NRQ V-WALL	1721	5646	
HRQ/HQ	1299	4261	
HRQ V-WALL	1390	4560	
PHD/PQ	980	3215	
PHD V-WALL	1100	3608	

\*The figures have been calculated based on a vertical, straight, clean down hole using a 12 000Kg hoist (single line pull). Actual drilling capacity will depend on in-hole tools, conditions, drilling techniques and equipment used.

Engine

Cummins 6CTA8.3-C240, liquid cooled, turbo charged, inter-cooled diesel engine

	Metric	U.S.
Displacement	8.3 L	506in <sup>3</sup>
Power (maximum) at 2,500 RPM	179 KW	240 HP
Emissions Certification	EU II	EU II

Torque and RPM Ratings

(hydraulic motor at maximum/minimum displacement at 2,200rpm engine setting)

	Speed (no load)	Torque (stall)
	RPM	Nm
1 <sup>st</sup> Gear	0 – 625	6560 – 3216
2 <sup>nd</sup> Gear	450 – 1250	4720– 2924

NOTE: Drill head output speed and torque are infinitely variable in each gear range as indicated. Actual rotation speed is affected by engine RPM and hydraulic motor displacement setting.

Hydraulic System

	Metric	U.S.
<b>Primary Pump</b>	Axial piston, variable displacement load sensing, pressure compensated with low pressure standby.	
Max Flow	200 L/min	58 gpm
Maximum Pressure*	32 Mpa	4 495 psi
<b>Secondary Pump</b>	Axial piston, variable displacement load sensing, pressure compensated with low pressure standby.	
Max Flow	120 L/min	34.8 gpm
Maximum Pressure*	28 Mpa	4 060 psi
<b>Tertiary Pump</b>	Axial piston, variable displacement load sensing, pressure compensated with low pressure standby.	
Max Flow	120 L/min	34.8 gpm
Maximum Pressure*	25 Mpa	4 060 psi
<b>Auxiliary Pump I</b>	Gear, matic axial clearance compensation mechanism assures high volumetric efficiency for long time	
Max Flow	25 L/min	11.6 gpm
Maximum Pressure*	20 Mpa	2 900 psi
<b>Auxiliary Pump II</b>	Gear, matic axial clearance compensation mechanism assures high volumetric efficiency for long time	
Max Flow	8 L/min	4.75 gpm
Maximum Pressure*	5 Mpa	2 900 psi

\*Factory setting

Drill Head

Stand PQ – Hollow Spindle		
Rotation Motor	Danfoss hydraulic motor – variable/reversible	
Mechanical Transmission	Funk 2 speed	
	1 <sup>st</sup> Gear	8.78:1
	2 <sup>nd</sup> Gear	2.7:1
Final Drive	Straight cut gears	
Head lateral movement	Hydraulically operation	
Hydraulic PQ Chuck	Hydraulically opened. Disk spring closed.	
	Axial holding capacity of 244 640 N (55 000 lbf)	
Drill Head Lubrication	Force fed to the bearings and oil bath for gears	
Lubricating Oil Filtration	25 micron high pressure oil filter	

Drill Mast And Feed System		
	Metric	U.S.
Feed Stroke	3.5 m	11.5 ft
Feed Pull	230 000 N	51 706 lbf
Feed Thrust	78 000 N	15 735 lbf
Rod pull	6 m	20 ft
Drilling Angle	30° off horizontal to 90° vertical down	
Drill Mast And Feed System		
	Metric	U.S.
Main Line Hoist Double speed motor		
Hook Load ( single part line)		
Bare Drum	12 000 Kg	26 445 lb
Hoisting Speed (single part line)		
High Speed (Bare Drum)	85 m/min	278 ft/min
Low Speed (Bare Drum)	50 m/min	164 ft/min
Main Hoist Cable	22mm	0.886 in
Minimum Breaking Strength	25 600 Kg	56437 Lbf
Foot Clamp Capacity	PWT	
Wireline Hoist		
Line Pull		
Bare Drum	2 000 Kg	4 444 lb
Full Drum	425 Kg	940 lb
Line Speed		
Bare Drum	121 m/min	395 m/min
Full Drum	430 m/min	1 410 m/min
Drum Capacity(6mm swaged)	2 000 m	6 65671 ft
Minimum Breaking Strength	3 420 Kg	7 540 lb
Additional Information		
	Metric	U.S.
Fuel Tank Capacity	200 L	52 US gal
Fluid Circulation Pump		
Single-Action Triplex Piston Pump, Manual shift, Pump Speed are infinitely variable.		
	Metric	U.S.
Displacement	0 - 320 LPM	0 - 84.5 gpm
Pressure	0 - 8 Mpa	0 - 1 160 psi

DIMENSIONS AND WEIGHT

Dimensions and Weight	
Weight	14 500 Kg
Transportation Dimensions (LxWxH)	6 400 x 2 250 x 2 505 mm

