

CS2000 DHR

TECHNICAL SPECIFICATION



ISO9001



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CS-2000 DHR DRILLING RIG
TRUCK MOUNTED VERSION

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CS-2000 DHR DRILLING RIG **TRUCK MOUNTED VERSION**

TECHNICAL SPECIFICATION

1. GENERAL

CS-2000 DHR Drilling rig is heavy duty drilling rig with simple design providing excellent performance at minimum maintenance for percussion drilling with down the hole hammer, rotary drilling with mud, reverse drilling, crown core drilling and reverse circulation drilling with optional drive head.

This rig adapts powerful engine & hydraulic pump, carries out various drilling task efficiently.

With robust structure of mast, it grants very stable & strong power in pull back & pull up operation.

Wide space on the frame with simple design provides easy maintenance.

The rig would be transferred to 'transport mode' during driving position.

2. OVERALL DIMENSIONS

Overall Length	:	15.1M
Overall Width	:	2.5M
Overall Height	:	4.3M
Weight	:	28 Ton

3. RATED DRILLING CAPACITY

In favorable condition

- For DTH Hammering	:	1500 ~ 2000 meters
(drill pipe : ϕ 114 ~ ϕ 200mm)		
- For Rotary Drilling	:	2500 meters
(Tricone bit, coring)		
- For Auger Drilling	:	CFA 300 meters
(Flight Auger : ϕ 200mm)		



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4. CARRIER

- **HYUNDAI NEW-POWER TRUCK CARGO 19 TON**

Model	:	Power Tech 440
Cab type	:	Sleeper Cab
Drive System	:	LHD, 8 x 4
Wheel Base	:	Extra Long
Engines Power	:	440Ps / 214kg*m

- **DIMENSIONS(mm)**

Wheel Base	:	8,300
Overall Length	:	12,620
Overall Width	:	2,495
Overall Height	:	3,145
Wheel tread Front	:	2,040
Wheel tread Rear	:	1,845
Overhang Front	:	1,925
Overhang Rear	:	2,855
Min. Ground Clearance	:	275

- **WEIGHT(kg)**

Curb Vehicle Weight	:	12,750
Max. Gross Vehicle Weight	:	37,800
On the Front Axle Load	:	14,200
On the Rear Axle Load	:	23,600

- **CALCULATED PERFORMANCE**

Max. speed km/h	:	104
Max. Gradeability Tan	:	0.422
Min. Turning Radius m	:	11.7

- **ENGINE**

Model	:	D6CB
Number of Cylinder	:	6in-line
Max. Power/Torque (ps/kgm)	:	440/214

- **TRANSMISSION**



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Model	:	ZF16S151
Type	:	10 forward and 2 reverse speed

- **BRAKE**

Service Brake	:	Full air with dual circuit
Parking Brake	:	Spring loaded type chamber
Exhaust Brake	:	Air operated, butterfly valve type

- **OTHERS**

Battery	:	24V-150AH
Rear Axle Ratio	:	3.909
Tire	:	11.00 x 20 – 16PR
Suspension	:	Taper-Laminated leaf springs
Fuel Tank	:	400 liter

5. RIG FRAME

Rig frame is an independent interface base between the truck chassis and all of drilling equipments in order to avoid any deformation or flexion of the whole system. Rig frame mounts every rig components with four(4) hydraulic outriggers (two on front, two on rear), made of high resistance electrically welded steel.

6. MAST

- **FEATURES**

- Mast has strong lattice structure made of high grade R.H.S(Rectangular Hollow Section) square tubular steel, assures safe & easy handling for 12meter long drill pipes & drill strings.



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- Mast is self standing & lying by hydraulic cylinders controlled on control panel.
- There are several wire sheaves at top & bottom of the mast for the operation of pull-back & pull-down.
- Especially, the mast has steering device on the top in order to control positioning of drill strings.

● **SPECIFICATIONS**

Total Load Capacity	:	100Ton
Length	:	14m
Upper Part	:	4 sheaves mount
Hydraulic cylinder	:	2ea

7. TOP HEAD DRIVE

- Head box is made of electrically welded high grade steel.
- Output shaft with 4-1/2" API PIN connected under the shock absorber.
- Rotation provided through oil bath gear and bearing with air proof
- Lock-up device
- Feed operation is provided by traverse cylinder
- For the down the hole hammer is standard, Can be changed for the other works.

● **SPECIFICATIONS**

Pull-up Capacity	:	Max 75,000 kgf
Pull-down Capacity	:	Max 45,000 kgf
Max. Torque	:	1,700 kgf*m
Rotation Speed	:	0~60 r.p.m
Output Shaft Connection	:	4-1/2" API , 140 mm
Swivel Connection	:	2" or 2-1/2"
Feed Speed	:	20m/min

● **OPTIONAL ATTACHMENT**



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Sub Drive Head (3 shift gear)

1 ST Gear	:	300rpm / 3,400N*m
2 ND Gear	:	600rpm / 1,700N*m
3 RD Gear	:	1,200rpm / 850N*m

8. POWER UNIT

ENGINE : PU222TI(800PS/2100rpm)
HYDRAULIC POWER UNIT
AIR COMPRESSOR UNIT

9. HYDRAULIC SYSTEM

- This rig is totally operated by hydraulics.
- Hydraulic system is open loop system with 3 hydraulic pumps.
- Hydraulic power is generated by deck mounted diesel engine for following operation

● OPERATION

- Pull up – pull down
- Rotation of the top head drive
- Hydraulic clamp
- All hydraulic cylinder
- Main & Service winch
- Other operation

● MAIN COMPONENTS

- Hydraulic Pump : KAWASAKI K3Vx180 or Equivalent
- Hydraulic Cooler : Air fan driven by hydraulic motor
- Hydraulic Tank Capacity : 600ℓ
- Heavy Duty Filter : 10μ grade
- Heater with independent generator (It is very important in winter times)
- Motors
- Valves
- Distributor
- Gauges



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- Rigid and flexible pipes & hoses
- Other necessary accessories in other to assure the efficient working condition.

10. CLAMP

- Hydraulic double clamp works for Holding and unscrewing the drill pipes and drill casing or drill collars, stabilizer and drill strings with hydraulic cylinder.

Opening	:	Ø 320 mm
Max. Torque	:	6,000 kgf*m
Max. Unscrewing Torque	:	4,000 kgf*m

11. WINCH

- **MAIN WINCH**

Main winch serves strong additional power for pull-back operation especially for trouble shooting like jamming in drilling.

It works for handling heavy equipments.

It combine with the sheaves on the mast

Working Capacity	:	15 Ton
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- **SERVICE WINCH**

Service winch works with jib boom & sheaves mounted at top of the mast.

Working Capacity	:	1.2 Ton
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- **WIRE LINE WINCH(OPTION)**



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Wire line winch is fast throw up & down for core working.

Working Capacity	:	1 Ton(Bare Drum)
Working Speed	:	110m/sec(Bare Drum)
Breaking strength	:	2,120kgf

12. OUTRIGGER

- **FUNCTION**

- Stabilize the rig itself
- Keep the horizon & leveling during operation
- Sustain the power in pull-back operation

- **FEATURES**

- Each outrigger moves independently
- Non return valve attached
- Square structure outside
- Non slip floor shoe

- **SPECIFICATIONS**

Stroke	:	500mm
Capacity	:	60Ton(each)
Jack	:	4ea

13. CONROL PANEL

Control panel console contains all engine drill gauges, controllers. It makes the driller control all operation easily at the platform located on Side of mast.

- **MAIN INDICATORS**

- Engine Throttle
- Engine start and stop
- Oil pressure. cooling water temperature
- Electrical charge
- Hydraulic pressure
- Hydraulic temperature



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- Emergency stop
- All control lever including for outrigger
- Main indicator

14. CONNECTION MANIFOLD BLOCK

Connection manifold block locates at side of mast in order to connect the fluid (air or mud) to top head drive for each operation.

This manifold block has 4 ports operated independently by valves for each drilling application.

● **FORT SIZE**

Air Port	:	2" connector
Mud Port	:	2" connector
Foam Port	:	1/2" connector
Lubricate Port	:	3/8" connector

15. LIGHTING & ELECTRICAL SYSTEM

- 24V
- Water proof, low volt light on mast and frame adjustable

16. WATER INJECTION PUMP

Main purpose	:	Foam drilling or cleaning
Control & Operation	:	Controlled by control panel & Hydraulically driven
Capacity	:	73ℓ /min
Pressure	:	Max. 50 bar

17. LUBRICATOR

Air line lubricator assures positive displacement of lubricator oil automatically



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for D.T.H(Down The Hole) Hammer operation by venturi system

Tank Capacity : 40ℓ

18. Air Compressor

Capacity : Max.900cfm
 Pressure : Max.350psi
 Service Tank, Oil separator

19. STANDARD TOOLS

NO	DESCRIPTION		Q'TY
1	Art. 351mm 150 chisel		1ea
2	Art. 351mm 200 chisel		2ea
3	Art. 100m first aid kit		2ea
4	Mod. 25/EUR/80 tire inflating gun 11/A		1ea
5	Magnetic air lever 50cm long		1ea
6	Hexagon socket wrench set		1ea
7	Combination wrench set		1ea
8	Ball l-wrench set		1ea
9	Open jaw wrench	14mm	2ea
		19mm	2ea
		22mm	2ea
		24mm	2ea
		27mm	2ea
		30mm	2ea
		32mm	2ea
		36mm	2ea
10	Pipe wrench	10"	2ea





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		18"	1ea
11	Chain wrench	20"	4ea
12	Snap ring pliers	Out diameter : SS230	2ea
		In diameter : Hs230	2ea
13	Grease gun	100cc	1ea
14	Grease high pressure hose		2ea
15	Standard locking pliers		1ea
16	Line color drivers	107 x 100	1ea
		107 x 200	1ea
		107 x 100	1ea
		107 x 250	1ea
		107 x 300	1ea
17	Hammer driver	8 x 200	1ea
18	Ball peen hammer	8 ounce	1ea
		32 ounce	2ea

20. PART LIST

PART ID	ITEM	DESCRIPTION	QTY
A. Hydraulic System			
A-1	Pump	A-1-① K3V180DT class	
A-2	Control Valve	A-2-① Proportional valve (3/4" 2port)	2ea
		A-2-② Directional valve (3/4" 4port)	2ea
		A-2-③ Directional valve (1/2" 4port)	2ea
A-3	Acc	A-3-① Relief Valve (1")	3ea
		A-3-② Divide valve (1" → 3/4")	1ea
A-4	Filter	A-4-① 2" pt 10μ	3ea
A-5	Ball Valve	A-5-① 2" pt	4ea





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A-6	Nipple	A-6-① 2" pt	4ea
A-7	Socket		
A-8	Hose		
A-9	Cylinder	A-9-① Back Stay (Φ150Telescope)	2ea
		A-9-② Travel Cylinder (Φ200 Φ150 rod)	2ea
		A-9-③ Clamp (Φ170 Φ100 rod)	2ea
		A-9-④ Puller (Φ100 Φ70 rod)	1ea
		A-9-⑤ Movement (Φ140 Φ70 rod)	2ea
A-10	Motor	A-10-① Power Motor (SHM16-1400)	2ea
		A-10-② Main Winch (140cc/rev)	2ea
		A-10-③ Service Winch (100cc/rev)	2ea
		A-10-④ Pump Drive Motor(60cc/rev)	1ea
B. Engine			
B-1	Engine	B-1-① DOOSAN PU222TI(800PS/2100RPM)	
B-2	Part	As per enclosure	1set
C. Winch			
C-1	Main	C-1-① Center gear & Bearing	1set
		C-1-② Idle gear & Bearing	1set
C-2	Service	C-2-① Center gear & Bearing	1set
		C-2-② Idle gear & Bearing	1set
D. Mast			
D-1	Travel Roller		8ea
D-2	Roller Bearing		16ea
D-3	Roller Pin		8ea
D-4	Guide Roller		4ea
D-5	Guide Bearing		8ea
D-6	Guide pin		4ea





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D-7	Wire tension Bolt		4ea
D-8	Wire tension Nut		4ea
D-9	Main Sheave	D-9-① Roller	2ea
		D-9-② Bearing	4ea
		D-9-③ Pin	2ea
D-10	Service Sheave	D-10-① Roller	2ea
		D-10-② Bearing	4ea
		D-10-③ Pin	2ea
E. Rotary Head			
E-1	Motor Shaft	E-1-① Motor Bearing	1ea
E-2	Gear	E-2-① Main	1ea
		E-2-② Pinion	1ea
E-3	Bearing	E-3-① Ball	2ea
		E-3-② Taper	2ea
E-4	Retainer		2ea
E-5	Spindle	E-5-① $\Phi 130$ in hole $\Phi 40$	
E-6	Swivel	E-6-① Bearing	2ea
		E-6-② Packing	10ea
		E-6-③ Spindle	1ea
		E-6-④ Nipple	1ea
		E-6-⑤ Retainer	2ea
E-7	Shock Absorber	E-7-① Retainer	2ea
		E-7-② U-Packing	4ea
		E-7-③ Spindle	1ea
		E-7-④ Case	1ea
		E-7-⑤ Joint	1ea
F. Outrigger			
F-1	Up. Down	F-1-① Cylinder ($\Phi 170$ $\Phi 130$ rod)	4ea





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		F-1-② In case (200 x 200)	4ea
		F-1-③ Out case (220 x 220)	4ea
		F-1-④ Nipple (1/2")	4ea
G. Hydraulic Tank			
G-1	TANK		1ea
G-2	Drain Valve	3/4"	2ea
G-3	In Put Valve	2"	2ea
G-4	Filter		3ea
H. Panel			
H-1	Pressure Gauge	H-1-① Power pump press gauge	2ea
		H-1-② Power operating pressure gauge	2ea
H-2	Engine Gauge	H-2-① Volt meter	1ea
		H-2-② oil pressure gauge	1ea
		H-2-③ oil temperature	1ea
		H-2-④ Cooling Water temperature gauge	1ea
I. Truck			
I-1	Truck	I-1-① Hyundai 19ton cargo truck	
		I-1-② Output 440PS	
		I-1-③ Torque 214 kg·m	

<< SPARE PART LIST >>

NO	DESCRIPTION	QTY
1	Power head Motor	1set
2	Feed Sheave Bearing	1set
3	Hydraulic Oil Filter	1SET
4	Engine Air & Fuel Filter	1SET



