

Operating Manual

For CS-350 Drilling Rig

Serial No. : 2013-002



ISO9001



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1. TECHNICAL SPECIFICATION

1-1. GENERAL

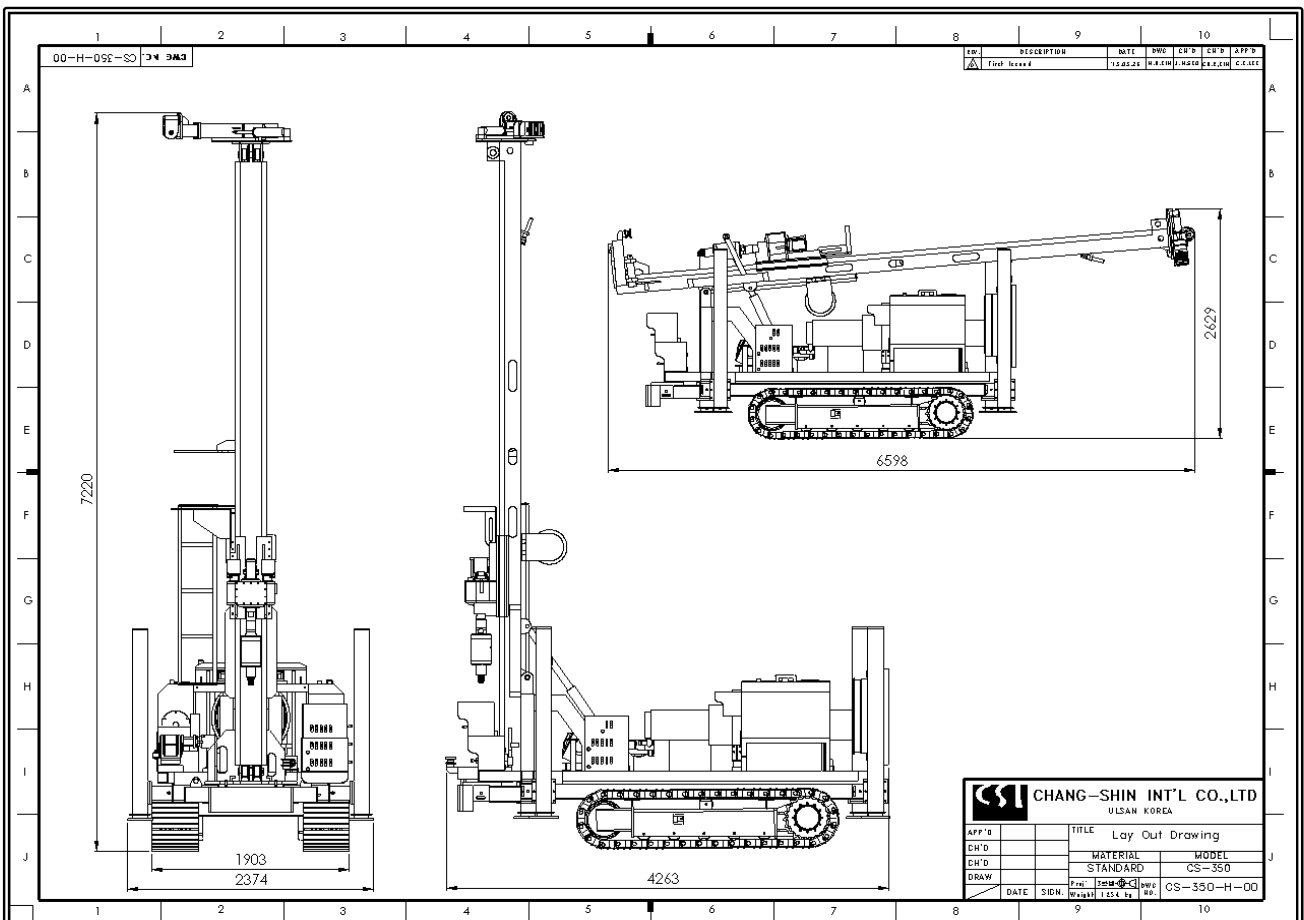
CS-350A Drilling rig is very powerful drilling rig with simple design providing excellent performance at minimum maintenance for percussion drilling with down the hole hammer, rotary drilling with mud, reverse drilling crown core drilling and reverse circulation drilling with optional drive head.

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

With strong and extensible mast, it grants very stable & strong power in pull back & pull up operation.

1-2. OVERALL DIMENSIONS

Length	Width	Height		Weight
		Mast Down	Mast Up	
6.6 M	2 M	2.7 M	7.3 M	5 Ton



1-3. RATED DRILLING CAPACITY

In favorable condition

- For DTH Hammering : Max 350 meters for 6" Hammer
- For Rotary Drilling : Max 300 meters
(Tricone bit, coring)

1-4. CRAWLER BASE

Overall Length	:	2.5 M
Overall Width	:	1.9 M
Overall Height	:	0.6 M
Rubber Track Width	:	0.4 M
Moving Speed	:	2.5 km / h

1-5. RIG FRAME

Rig frame is mounted on the crawler base frame and has four(4) hydraulic outriggers (two on front, two on rear) to avoid any deforming of the crawler. This rig frame makes possible powerful and steady drilling.

1-6. MAST

► FEATURES

- Mast has strong square box feature made of high quality mechanic structure steel plate, assures safe & easy handling for 3meter drill pipes & drill strings.
- Mast is self standing & lying by hydraulic cylinders controlled on control panel.
- There are several wire or chain sheaves at top & bottom of the mast for the operation of pull-back & pull down.
- Especially, the mast has sliding device for casing works.

► SPECIFICATIONS

Total Load Capacity	:	15 Ton
Length	:	5 M
Feeding Method	:	Hydraulic cylinder with chain

1-7. ROTARY HEAD

- Head box is made of electrically welded high grade steel.
- Output shaft with API 2-3/8" REG pin connected under the shock absorber.
- Rotation provided through oil bath gear and bearing with air proof.
- Feed operation is provided by hydraulic cylinder with chain.
- For the down the hole hammer is standard, Can be changed for the other works.

► SPECIFICATIONS

Pull-up Capacity	:	Max 12,000 kgf
Pull-down Capacity	:	Max 9,000 kgf
Max. Torque	:	280 kgf*m(100bar) / 540kgf*m(200bar / counter direction)
Rotarion Speed	:	0~60 rpm
Output Shaft Connection	:	API 2-3 / 8" REG pin
Swivel Connection	:	2"
Feed Speed	:	0 ~ 45m / min

1-8. ENGINE

- Doosan Commercial Engine / D1146

1-9. 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 Rotary Head
- Hydraulic clamp
- All hydraulic cylinder
- Main winch
- Other operations

► MAIN COMPONENTS

- Hydraulic Pump : KAWASAKI K3V63 + UCHIDA GPP1 40cc
- Hydraulic Cooler : Air fan driven by engine
- Hydraulic Tank Capacity : 200ℓ
- Heavy Duty Filter : 10μ grade
- Motors
- Valves
- Distributor
- Gauges
- Rigid and flexible pipes & hoses
- Other necessary accessories in other to assure the efficient working condition.

1-10. CLAMP & BREAK OUT

- Hydraulic clamp works for Holding and unscrewing the drill pipes and drill casing or drill collars, stabilizer and drill strings with hydraulic cylinder.
- Clamp is attached to the mast frame by welding.
 - Opening : ϕ 180 mm
 - Max. Torque : 2,300 kgf*m

1-11. WINCH

► MAIN WINCH

- The winch works with jib boom & sheaves mounted at top of the mast.
- Working Capacity : 1.2 Ton (100bar)

1-12. OUTRIGGER

► FUNCTION

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

► FEATURES

- Each outrigger moves independently.
- Pilot check valve attached for failure.
- Square structure outside.
- Non slip floor shoe.

1-13. CONTROL PANEL

Control panel contains all engine gauges, hydraulic system controllers.

It makes the driller control all operation easily at the platform located on Side of mast.

► FEATURES

- Engine Throttle
- Engine start and stop
- Oil pressure, cooling water temperature.
- Electrical charge
- Hydraulic pressure
- Hydraulic temperature
- All control lever including for outrigger
- Main indicator

1-14. 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 3 ports operated independently by valves for each drilling application.

► PORT SIZE

- | | | |
|----------------|---|------------------|
| Air Port | : | 2" connector |
| Mud Port | : | 2" connector |
| Lubricate Port | : | 1 / 4" connector |

1-15. ELECTRICAL SYSTEM

- 24V

1-16. MUD PUMP

Main purpose	:	Rotary Drilling / Water Pumping
Control & Operation	:	Controlled by control panel & Hydraulically driven
Capacity	:	107ℓ / min
Pressure	:	Max. 20 bar

1-17. LUBRICATOR

For the DTH hammer drilling, hammer oil lubricator should be used.

The lubricator is operated by high pressure air(Air driven) and oil flow is controlled by push button on the control panel.

During pushing the button hammer oil is flowed into the air line.

Tank Capacity	:	50ℓ
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