

HXY-5A Core Drilling Rig



I. General Introduction

HXY-5A CORE DRILL, the improved product based on XY-44 core drill and integrated with the advantages and characteristics of various core drills manufactured in China and abroad, is a kind of hydraulic driven, spindle, diamond bit, small diameter core drill with fairly powerful drilling force. It is mainly suitable for exploration of metal or non-metal solid mineral ore bed. It is widely applied in core drill with diamond bit or hard tungsten-carbide tipped bit in the field of geology, metallurgy, coal mine, hydrological and engineering drilling. It can also be used in the fields of superficial-zone petroleum and natural gas mining, mine workings ventilation and water discharge tunnel drilling as well as foundation pile construction in large diameter. The machine is fit for engineering works of inclined

and vertical hole drilling. It is compact in construction, rational in overall arrangement, moderate in weight, convenient in assembling and wide in range of rotation speed. Equipped with water brake, with high hoisting force, HXY-5A Core Drill is convenient to operate in low-position and with water brake application.

II. Main Features of the rig

1. There are more speed grade (8 grades), reasonable speed range, with low speed but high torque. The rig is adapted for core drilling with tongalley-carbid-tipped and diamond bit, as well as suitable for engineering geological exploration, hydrological well drilling and basic pile engineering.
2. With large spindle I.D. 93mm (3.66 inch), the rig is fed with hydraulic double cylinders with much longer stroke up to 500mm(19.69 inch). With strong technological adaptability, the rig can be adapted on many field, especially on large diameter drill rod drilling, with wire line coring (upper part coring). Thus it is more effective in improving drilling efficiency with less faulty in hole.
3. With powerful drilling capacity, the rated drilling depth comes up to 1,300m (4,264 feet) with 71mm (2.80 inch) drill rod with wire line coring.
4. Light in weight, the rig can be dismantled into 10 parts easily (the biggest one 450kg equivalent to 992 lb). The rig weighs 3,100 kg (6836 lb) (without power unit). It can be moved easily especially in mountain area.
5. The hydraulic chuck adopts one-way oil supply and equipped with hydraulic lock. The chuck is powerful and stable in clamping.

6. Equipped with water brake, the rig is steady and secure in deep hole drilling.
7. Supplying oil with a single-gear pump, it is easy for installation and application; lower in consumption of energy and a low temperature of hydraulic system oil; the rig is for sure in steady drilling. The hand oil pump may be used to hoist the drilling tools in hole upon the faulty of power engine.
8. Compact in structure and reasonable layout, and all exposed outside, non overlapped components, it is easier for maintenance and repair.
9. Low center of gravity and long traveling distance up to 460mm (18.11 inch), the rig is reliable and stable in high speed drilling.
10. It is easy to get to know the conditions in hole with an ant vibration meter in long working life. Having less operating handle, the rig can be operated credibly and flexibly.
11. Under high generalization rate, the rig is in universal parts and components up to 30 % with XY-44 drill Rig

III. Main Technical Specifications

1. Drilling Capacity (Core Drilling):

Sorts of Drill Rod		Drill Rod Spec.	Drilling Depth
Home made	Planer in and out	$\Phi 43 \times 6 \text{mm} (\Phi 1.69 \times 0.24 \text{ inch})$	1,800 m (5904 feet)
		$\Phi 54 \times 6 \text{mm} (\Phi 2.13 \times 0.24 \text{ inch})$	1,300 m (4264 feet)
		$\Phi 67 \times 6 \text{mm} (\Phi 2.64 \times 0.24 \text{ inch})$	1,100 m (3608 feet)

		inch)	
		Φ50×5.5mm (Φ1.97×0.22 inch)	1,500 m (4920 feet)
Drill Rod	Thickened inner	Φ60×6 mm (Φ2.36×0.24 inch)	1,200 m (3936 feet)
	Extracting core with wire line	Φ55.5×4.75 mm (Φ2.19×0.19 inch)	1,600 m (5248 feet)
		Φ71×5 mm (Φ2.80×0.20 inch)	1,300 m (4264 feet)
		Φ89×5 mm (Φ3.50×0.20 inch)	1,000 m (3280 feet)
DCDMA (Diamond Core Drill Manufacturer Association) made Drill Rod	Thickened inner	BW	1,500 m (4920 feet)
		NW	1,200 m (3936 feet)
		HW	900 m (2952 feet)
	Extracting core with wire line	BQ	1,800 m (5904 feet)
		NQ	1,300 m (4264 feet)
		HQ	1,000 m (3280 feet)

2. Drilling Angle: 0°~360°(90°~75°, when drilling with a drilling tower)

3. Power Unit:

(1) Electrical Motor Y250M-4 55 kw(73.8HP) 1,480 rpm

(2) Diesel Engine Deutz F6L913 97 kw(130HP) 1,600 rpm

4. Rotator:

Type: dual-cylinder hydraulic feeding mechanical rotating

I.D. of Spindle: $\Phi 93$ mm (3.66 inches)

Rotating Speed of Spindle (rpm):

Positive: Low Speed 95, 166, 249, 359

High Speed 330, 575, 865, 1246

Negative: 55191

Max. Torque of Spindle: 5,500 N·m (4053.5 lbf·ft)

Stroke of Spindle: 500 mm (19.69 inch)

Max. Lifting Capacity of Spindle: 135 KN (30348 lbf)

Max. Pressuring Force of Spindle: 100 KN (22480 lbf)

5. Hoister:

Type: Planetary gearing transmission

Steel Wire Cable Dia: 18.5 mm (0.73 inch)

Drum Capacity for Cable: 120 m (394 feet) ($\Phi 18.5$ mm equivalent to 0.73 inch steel wire rope)

Max. Lifting Force (single line): 60 KN (13488 lbf)

Lifting Speed of the Wire Cable: (Power Eng. Speed at 1,500 rpm)

0.77; 1.35; 2.03; 2.93 m/s (2.53; 4.43; 6.66; 9.61 feet/s)

6. Clutch:

Type: Dry Double Chips Friction Clutch (normally closed)

7. Gearbox:

Type: Sliding Gear Gearbox (4 positive speeds and 1 negative speed)

8. Hydraulic System:

(1) System Pressure:

Working Pressure: 8 Mpa (1160 psi)

Max. Pressure: 12 Mpa (1740 psi)

(2) Oil Pump:

Type: Double Gear Pump

Displacement: 32+12 L/min (8.5+3.2 US Gallons/min)

Working Pressure: 20 Mpa (2901 psi)

Max. Pressure: 25 Mpa (3626 psi)

9. Water Brake:

Working Speed: 700 ~ 800 rpm

Single Rope Compensational Speed: 3~8 m/s (9.8~26.2 feet/s)

Single Rope Compensational Load: 45 KN (10116 lbf)

10. Drill Frame:

Type: Sliding Skids (with sliding base)

Backward Stroke: 600 mm (23.62 inch)

Dimensions (L×W×H): 3360×1300×2045 mm (132.3×51.2×80.5 inch) (with diesel engine)

3260×1300×2045 mm(128.3×51.2×80.5 inch) (with electromotor)

11. Weight of the Rig (without power unit): 3,100 kg (6836 lb)

12. Weight of the biggest dismountable section: 450 kg (992 lb)