

XY-44A CORE DRILLING RIG

I . General

XY-44A Core Drill, a new type of product with enhanced capacity, is a kind of hydraulic-driven, spindle, diamond-bit, and 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 and diamond 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. It is in reasonable structure, light weight, powerful capacity, multiuse, steady performance, high responsibility and high standardization and generalization.

II . Main Features of XY-44A drill

1. There are more speed grade (8 grades), reasonable speed range and high torque while low speed. Max. torque is up to 3200 N·m (2358 lbf·ft). The drill is adapted on core drilling with tungalloy-carbid-tipped and diamond oil as well as engineering geology exploration, hydrology well drilling and basic pile engineering.
2. With large spindle I.D. 93mm (3.66 inch), the drill is fed with double hydraulic cylinders with much longer stroke up to 600mm (23.62 inch). With strong technological adaptability, the rig can be adapted on many field, especially on large diameter drill rod drilling, (upper part coring) extracting core with wire line. 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, 000m (39.37 inch) with 71mm (2.80 inch) wire-line coring drill rod.
4. Light in weight, and in fine dismount ability, the rig can be dismantled into ten parts easily; the biggest apparatus is in 300 kg (661.5 lb). The whole drill is in 2150kg (4741 lb), it can be moved easily especially in



mountain area.

5. Clamped with Belleville spring and loosened with hydraulic cylinder, the hydraulic chuck is adopted with three-jaws self centering. It is in strong and steady clamping force.

6. Equipped with a water brake for steady and smooth deep hole drilling.

7. Supplying oil with a simplex gear pump, it is easy for installation and operation; lower in energy consumption and in low oil temperature of hydraulic system; the rig is for sure in steady drilling. The hand-operated oil pump can be put in use to hoist the drilling tools in hole upon the power engine failing to operate.

8. With compact structure and reasonable layout, with all components exposed, and with non overlapped ones, it is convenient for maintenance.

9. With low center of gravity and long traveling distance up to 460mm (18.1 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. Less in operating handles, the rig can be operated credibly and flexibly.

III. Specifications

1. Drill Capacity

1) Core Drilling

Drill Rod Varieties		Drill Rod Type	Drill Depth
		Φ43×6mm(Φ1.69×0.24 inch)	1400 m (4592feet)
Drill Rod Made in China	Planer in and out	Φ54×6 mm(Φ2.13×0.24 inch)	1000 m (3280feet)
		Φ67×6 mm(Φ2.64×0.24 inch)	830 m (2722feet)
		Φ50×5.5 mm(Φ1.97×0.22 inch)	1300 m (4264feet)
	Thickened Inner	Φ60×6 mm(Φ2.36×0.24 inch)	950 m (3116feet)
		Φ55.5×4.73mm(Φ2.19×0.19inch)	1400 m (4592feet)
	Extracting Core with Wire Line	Φ71×5 mm(Φ2.80×0.20 inch)	1000 m (3280feet)
		Φ89×5 mm(Φ3.50×0.20 inch)	800 m (2624feet)

DCDMA (Diamond Core Drill Manufacturer Association) made Drill Rod	Thickened Inner	BW	1250 m (4100feet)
		NW	1000 m (3280feet)
		HW	660 m (2165feet)
Extracting Core with Wire Line		BQ	1400 m (4592feet)
		NQ	1100 m (3608feet)
		HQ	750 m (2460feet)

2) Hydrogeology Well Drilling

Drill Rod Type	Drilling Hole Dia.	Drilling Depth
60mm(2.36 inch) (Thickened outer)	200 mm (7.87 inch)	800 m (2624 feet)
73mm(2.87 inch) (Thickened outer)	350 mm (13.78 inch)	500 m (1640 feet)
89mm(3.5 inch) (Thickened outer)	500 mm (19.69 inch)	300 m (984 feet)

3) Foundation Pile Drilling

Drilling hole dia. with 89 mm (3.50 inch) outer thickened drill rod.

Loose formation: 1000 mm (39.37 inch)

Hard formation: 600 mm (23.62 inch)

Drilling Depth: 100 m (328 feet)

2. Drilling Angel : 0° - 360°

3. Power Engine

Electromotor Y225S-4 37KW (49.62HP) 1480 r/min

Diesel engine Deutz F6L 912 82KW (110HP) 1500 r/min

4. Rotator

Type: Feeding with double oil cylinders hydraulic pressure, rotating mechanically.

Spindle I.D: 93 mm (3.66 inch)

Speed of spindle:

Speed of Power eng. (r/min)	1480 (for core drilling)
Positive Low Speed (r/min)	83, 152, 217, 316
Positive High Speed (r/min)	254, 468, 667, 970
Negative Speed (r/min)	67, 206

Max. Torque of spindle: 3.2 KN·m (2358 lbf·ft)

Spindle stroke: 600 mm (23.62 inch)

Max. Lifting force of spindle: 120 KN (26976 lbf)

Max. Thrust of spindle: 90 KN (20232 lbf)

5. Hoist

Form planetary gearing

Wire rope dia: 17.5 mm (0.69 inch) or 18.5 mm (0.73 inch)

Drum capacity for rope (170 kg/mm² equivalent to 241839 lb/inch²) :

(17.5mm steel wire rope) 110m (360.8 feet)

(18.5mm steel wire rope) 90m (295.2 feet)

Max.Lifting force (single rope): 45 KN (10116 lbf)

Lifting speed of the wire rope

Power eng speed 1000r/min 0.47, 0.86, 1.22, 1.78 m/s (1.54, 2.82, 4.00, 5.84 feet/s)

Power eng speed 1500r/min 0.70; 1.29; 1.84; 2.68 m/s (2.30, 4.23, 5.90, 8.79 feet/s)

Power eng speed 1700r/min 0.805, 1.485, 2.12, 3.08 m/s (2.64, 4.87, 6.95, 10.10 feet/s)

6. Clutch

Form: Dry single chip friction clutch

7. Gearbox

Form: sliding gearbox (4 speeds are positive and 1 is negative).

8. Oil Pump

Form: Single Gear Pump

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

Working pressure: 0—8 MPa (0-1160 psi)

Max. Pressure: 12 MPa (1740 psi)

9. Water Brake

Working speed (r/min): 700—800

Single rope compensational speed: 3—8 m/s (9.84-26.2 feet/s)

Single rope compensational load: 45 KN (10116 lbf)

10. Drill Frame

Form sliding skids type (with sliding base)

Drill backward stroke: 460 mm (18.11 inch)

11. Dimensions (L×W×H): 3030×1100×1890 mm (119.3×43.3×74.4 inch)

12. Weight of drill (without power unit): about 2150 kg (4741 lb)

13. Max. Weight of dischargeable apparatus: 300 kg (662 lb)