TH60 Water Well Rigs

Rotary and DTH drilling with 40,000 lb (18,144 kg) or 70,000 lb (31,751 kg) of pullback force

Epiroc

Drilling performance and strength

Built to the highest standards, the TH60 has a long history for robust and reliable performance. This top-head drive PTO drill rig has a strong, mid-weight design that's ideal for waterwell, dewatering, geothermal, uranium drilling and many more deep-hole applications.

Contact your Epiroc representative to learn how the TH60 will benefit your operation.

Strong derrick

The lattice-design derrick offers an excellent strength-to-weight ratio. Once it has been lifted into the upright position by the two hydraulic cylinders operated from the driller's console, it is bolted in place at the bottom of the tower. Derrick locking pins are optional as well.

Tough mainframe

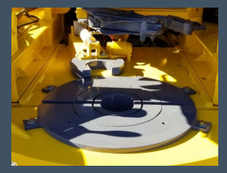
Without a rigid base, a rig is prone to flex during drilling. That can lead to premature frame failure, deviation down the hole and additional vibration on the driller's platform. For this reason, we have designed the TH60 mainframe to be one of the toughest drills in its class on the market today. We believe the additional investment in this area pays off, especially when it comes to the life of the drill.

Intelligent air regulation

The Electronic Air Regulation System (E.A.R.S.) comes standard with the TH60, allowing the operator to remain in control of both the flow and pressure. This intelligent system monitors air requirements and automatically adjusts the air inlet valve to match the demand. Advantages of this system include variable air flow to control the hole and develop the well, as well as variable pressure for better down-the-hole hammer control. Fuel consumption is also reduced as a result of controlled flow and pressure when maximum flow/ pressure is not required. As an added benefit, the sealed actuation unit prevents freezing in cold climates. Furthermore, E.A.R.S. replaces the need for air regulation air lines, eliminating freeze up issues than can occur..

A drilling legacy

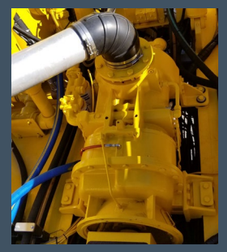
TH60's time proven designs



+ Retractable drill table
Boreholes requiring large-diameter casing are not an issue on the TH60. The retractable swing table allows for easy access when handling large-diameter tooling. The table provides a 10-3/4 in (273 mm) opening with the inner centralizer bushing removed and a full 20 in (508 mm) opening when the main bushing is removed. The front section can be unpinned and easily swung open from either side for access around the drill string.

+ Console and platform
All drilling operations are controlled from the ergonomically designed operator's console. The slim profile of the console and quick-opening side panels provide easy access for maintenance and service. In addition, the operator and helper work on large, heavy-duty steel mesh platforms that fold up for transport. A steel (or optional aluminum) insert drops in between the two fold-down platforms, converting the separate platforms into one continuous surface. (An aluminum console cover is standard, and an optional aluminum platform is available.)

+ Rotary head
Compact design and proven reliability are trademarks of the TH60 rotary head. This versatile rotary head offers maximum torque up to 8,000 ft-lb (10,848 n-m) and speeds up to 195 rpm. Four motors reduce and balance forces on the main spindle gear, resulting in longer life and wear reduction. Swivel maintenance is also made easy with the use of hammer unions and safety wires. In addition, the retractable rotary head clears the hole center, allowing access for the main winch or auxiliary hoist cable. Available in single- and two-speed versions, the TH60 has the torque and speed solution to handle the job.



+ Compressor
Epiroc offers both 900 cfm/350 psi and 1070 cfm/350 psi options on the TH60. The compressor can be engaged and disengaged from the PTO driveline with the flip of a switch from the driller's console. Uncoupling the compressor from the driveline creates significant fuel savings when the compressor is not needed while performing functions such as tripping out of the hole or setting casing.

+ Hydraulic system
Our fast, smooth on-demand power hydraulic system proves that performance and efficiency don't have to be mutually exclusive. Variable displacement pumps provide power only when the operator asks for it. Our fast, smooth, load sensing hydraulic system provides on-demand power and speed necessary to meet the most demanding drilling conditions. This design allows the simultaneous operation of fast feed and winch. The hydraulic system design allows the main feed and casing to be operated simultaneously when the engine is at maximum operating rpm. The design also provides the ability to reduce engine rpm to minimum speed yet maintain the same powerhead feed speed when tripping pipe, reducing fuel consumption, while increasing component life. The hydraulically driven cooling fan speed automatically modulates in order to maintain the predetermined target temperatures.

Optional equipment

Water injection systems

Four water injection systems are available from two reliable sources, Cat and Bean. Cat pumps have been a leader in selling precision triplex reciprocating pumps and systems for more than 40 years, while Bean (FMC) industrial reciprocating pumps have provided performance and value since their introduction in 1884.

Pump capacity (both options are available and operate at 550 psi [38 bar] maximum pressure)

CAT Piston	0 to 12 gpm (0 to 45 l/min) supplied with pulse pump for foam injection 0 to 25 gmp (0 to 95 l/min) supplied with pulse pump for foam injection
FMC Bean Piston	0 to 18 gpm (0 to 68 l/min) with foam injection 0 to 25 gmp (0 to 95 l/min) with foam injection

Down hole hammer lube injection

Capacity	7 gal (26.5 l)
Flow adjustment	Manual
Flow	1/4 to 1-4/5 gal/hr (1 to 6.8 l/hr)

Pipe spinner

Designed to reduce the time when tripping out of the hole Kelly style, the pipe spinner is mounted on the back of the rig and pivots from the helper's side of the rig. The operator swings the rod spinner and then actuates the pneumatic cylinder to clamp the drill pipe. The hydraulic control valve is then actuated in order to quickly spin the drill pipe in the forward or reverse direction.

Optional hoist sections

Two supplementary hoist options are available. These are mounted on the drill end of the derrick and are used for handling survey tools, casing, drill pipes, and other tooling.

Auxiliary winch	
Capacity	3,900 lb (17.3 kN)
Cable	3/8 in (9.5 mm) x 120 ft (36.6 m)
Line speed	220 ft/min (67 m)
Sand reel*	
Lifting capacity	3,000 lb (1,361 kg) average capacity 2,250 lb (1,020 kg) full drum capacity
Speed up/down	300 ft/min (91 m/min) average speed, no free fall
Cable capacity	5/16 in (7 mm) available in 500 ft (152 m), 1,000 ft (304 m) and 1,500 ft (457 m) lengths

* The auxiliary winch is not available with the sand reel.

Mud pumps

The TH60 can be configured with various mud pump packages including centrifugal, and duplex piston from recognized suppliers such as Gardner Denver, Centerline and Mission Magnum. Pumps range from 150 gpm to 300 gpm (9.5 l/s to 18.9 l/s), delivering up to 350 psi (24 bar); these pumps deliver ample flow and pressure to tackle the toughest job.

We also offer mud piping options, with or without hydraulics, if you choose to install your own mud pump. Options include:

	Size and description	Flow and pressure
Mission centrifugal mud pump	4 in x 3 in (102 mm x 76 mm); mounted in horizontal position near the mid jack, driller's side	300 gpm at 145 psi (18.9 L/s @ 10 bar)
Gardner Denver duplex piston pump	5 in x 6 in (127 mm x 152 mm); mounted between cab and deck	150 gpm at 310 psi (9.5 L/s @ 10 bar)
Centerline duplex pump	7 1/2 in x 10 in (191 mm x 254 mm); mounted on the deck	300 gpm @ 350 psi (18.9 l/s @ 24 bar)
Hydraulic components, controls and piping to operate an off-board hydraulic powered mud pump	5 in x 6 in (127 mm x 152 mm) or 5 1/2 in x 8 in (140 mm x 203 mm); a quick-disconnect manifold with hydraulic filter is included on the rig	

Leveling jacks

Drill end jacks (qty 2)	5 3/4 in (146mm) bore x 36 in (914 mm) stroke jacks with 18 in jack pads
Non drill end (qty 2)	5 3/4 in (146mm) bore x 48 in (1,219 mm) stroke jacks with 18 in jack pads (mounted behind cab)

Rotary head

Type	Four motor, spur-gear, rotary top head
Piping/swivel	3 in (76.2 mm) air piping with 3 in (76.2 mm) spindle ID
Standard single-speed head	5,500 ft-lbs (7,458 N-m) @ 145 rpm
Optional single-speed heads	6,250 ft-lbs (8,475 N-m) @ 134 rpm 8,000 ft-lbs (10,848 N-m) @ 105 rpm
Optional two-speed heads	High speed: 4,000 ft-lbs (5,424 N-m) @ 195 rpm Low speed: 5,500 ft-lbs (7,458 N-m) @ 145 rpm High speed: 4,650 ft-lbs (6,310 N-m) @ 180 rpm Low speed: 6,250 ft-lbs (8,475 N-m) @ 134 rpm High speed: 5,500 ft-lbs (7,458 N-m) @ 145 rpm Low speed: 8,000 ft-lbs (10,848 N-m) @ 105 rpm

Feed system

Hydraulic cylinder	5 1/2 in (127 mm) x 3 1/2 in (88.9 mm) rod OD; 165 in (4,190 mm) stroke
Cable diameter	Pullback 7/8 in (22.2 mm). Pulldown 3/4 in (19.05 mm).
Sheave diameter	Upper stationary sheaves 31 1/2 in (800.1 mm) Travelling sheaves 24 3/4 in (628.65 mm)
Drill feed	20 ft/min (6.1 m/min)
Fast feed down	150 ft/min (45.7 m/min)
Fast feed up	150 ft/min (45.77 m/min)
Cable line	30,000 lb (13,608 kg) Pulldown

Hydraulic system (capable maximum flows and pressures)

Main load sense pump (40K and 70K units)	96 gpm @ 5,000 psi (363 L/min @ 345 bar)
Fan pump (40K and 70K units)	40 gpm @ 3,000 psi (151 L/min @ 207 bar)
Auxilary load sense pump (70K units)	50 gpm @ 5,000 psi (189 L/min @ 345 bar)
Mud pump (40K and 70K units)	50 gpm @ 4,750 psi (189 L/min @ 327 bar) Optional
Rotation pump (40K and 70K units)	79 gpm @ 4,750 psi (299 L/min @ 327 bar)

Winch

Standard winch	
Lifting capacity	18,000 lb (8,165 kg) single, line bare drum (rating based on fully retracted jib)
Speed up/down	165 ft/min (50 m/min) single line, bare drum
Jib boom	Hydraulic swing and extension
Cable	150 ft (45.7 m) of 5/8 in (15.8 mm) rotation resistant cable and a 20-ton (18,144 kg) rod hook
Controls	Driller and helper side
Optional winch	
Lifting capacity	30,000 lb (13,608 kg) single, line bare drum (over centerline only)
Speed up/down	150 ft/min (45 m/min) single line, bare drum
Jib boom	Hydraulic swing and extension
Cable	150 ft (45.7 m) of 7/8 in (22 mm) rotation resistant cable and a 20-ton (18,144 kg) rod hook
Controls	Driller and helper side

Technical specifications

Carousel

Configurations
9 pieces of 3-1/2 in (89 mm) OD quantity x 20 ft (6.1 m) drill pipe
7 pieces of 4-1/2 in (114.3 mm) OD quantity x 20 ft (6.1 m) drill pipe With this configuration there is a 14 in (356 mm) clear space inside the derrick
7 pieces of 3-1/2 in (89 mm) OD quantity x 20 ft (6.1 m) drill pipe
6 pieces of 4-1/2 in (114.3 mm) OD quantity x 20 ft (6.1 m) drill pipe With this configuration there is a 19 3/4 in (482 mm) clear space inside the derrick

Cooling package

Type	Modulating speed hydraulically drive cooling fan
Fan size	54 in (1,372 mm) diameter, suction type
Cooling capacity	Rated at 125˚ (51˚ C) ambient at sea level

Air piping selection

Standard air piping	3 in (76 mm) with piping on top head, 3 in (76 mm) handing and pivot hoses, 2 in (51 mm) stand pipe on deck (specify pressure rating)
High-pressure air piping (optional)	3 in (76 mm) with piping rated at 1500 psi (103 bar) This option includes a manifold for connection of auxiliary air compressors and/or pressure booster

Chassis

Gross vehicle weight rating (GVWR)	68,000 lb (30,833 kg)
Front Axle	22,000 lb (9,979 kg)
Rear Tandem	46,000 lb (20,865 kg) or optional 52,000 lb (23,586 kg)
Engine	Cummins X15, 600 hp (441 kW) @ 1,800 rpm
Transmission	Fuller RTLO-18918B, 18-speed
Wheelbase	20 ft 5 in (6.1 m)
Overall length	31 ft 2 in (9.5 m)
Cab to rear axle	14 ft 2 in (4.3 m)
Rear axle to end of frame	6 ft 8 in (7 m)
Transfer case	Namco split shaft PTO

Compressor

Make	Ingersoll Rand	Ingersoll Rand
Type	HR2.5 Over/under screw	HR2.5 Over/under screw
Flow rate	900 cfm (425 l/s) optional	1,070 cfm (505 cmm) optional
Pressure range	120-350 psi (8.3-24.1 bar) coupled to transfer case	120-350 psi (8.3-24.1 bar) coupled to transfer case

Service and support

Epiroc offers several types of service agreements to meet your operational requirements and maximize your productivity:

Variable-price repairs. Service when you need it.

Fixed-price repairs. Service with controlled costs.

Equipment audit. Scheduled equipment quality control.

Preventive maintenance programs. Peace of mind so you can focus on your core business.

United in performance. Inspired by innovation.

Performance unites us, innovation inspires us, and commitment drives us to keep moving forward. Count on Epiroc to deliver the solutions you need to succeed today and the technology to lead tomorrow.
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