Smart DM45

Multi-pass rotary and DTH drilling

Hole diameter: 5 7/8 to 10 5/8 inches (150 to 270 mm)

Epiroc



A legend, evolved for the future.

Like its Smart DML counterpart, Epiroc's Smart DM45 drilling rig is built for productivity, delivering unsurpassed availability and utilization for drilling industry applications.

The heavy-duty Smart DM45 from Epiroc expands on one of the world's most popular drills - for good reason. The DM45 has been proven in some of the toughest mining conditions, delivering productivity, reliability, and low operating costs year after year.

The DM series is so woven into the fabric of the industry that many operators learned to drill holes with a DM45. Today, you'll find these drills operating in over 50 different countries around the world.

Key benefits

Efficient drilling

The Smart DM45 is a crawler-mounted, hydraulic tophead-drive rig that is suitable for a variety of multi-pass rotary and DTH drilling applications. It features a 30 ft (9.1 m) drill pipe change and a standard 5-rod carousel. With one rod under the rotary head, these units have a total clean depth capacity of 175 ft (53.3 m).

Powerful performance

Feed pressure generates a pulldown of up to 45,000 lbf (200 kN) for the Smart DM45. The drill utilizes a diesel engine to drive the air compressor and hydraulic system. The powerful rotary tricone and DTH hammer drills deliver a hole diameter of 5 1/2 in - 8 7/8 in (140 mm - 225 mm) and can achieve a clean hole depth of 27.5 ft (8.4 m) in single-pass applications or depths of up to 175 ft (53.3 m) for multi-pass applications.

Options to fit your application

Choose from a variety of engines and compressors to create the right configuration for your drilling operation.



Discover more about the Smart DM45



Smart DM45 — Designed for maximum productivity and value

Enhanced safety

The Smart DM45 is equipped with a number of features designed to keep operators safe on the job. Features include a FOPS cab, safety interlocks through RCS, and safety shutdowns for temperature, low level, and pressure.

Operator comfort

The Smart DM45 features an insulated, pressurized cab with an air-ride operator seat, providing high suspension comfort with excellent visibility. The cab is equipped with our Rig Control System (RCS), providing onboard automation capabilities as part of the standard drill package for added safety and productivity.

Ease of maintenance

The deck layout on the Smart DM series offers easy access to all major service components. Hydraulic system filters are also mounted externally for accessibility. The integrated A/C system is mounted on the side, so no roof access is required, and the central lubrication manifold streamlines maintenance. To make service even easier, optional ground-level, quick-connect fittings are available for fast fill and evacuation of fuel, hydraulic oil, engine coolant, and other fluids.

Rig Control System

Flexibility for the future

Epiroc's Rig Control System (RCS) is based on proven CAN-bus technology, and comes standard on the Smart DM45. RCS provides a number of safety and interlock features, as well as a foundation to add new functionality/options later without a major rebuild of the machine. With RCS, you can run your Smart DM45 with an operator on board using options such as Autodrill and Autolevel - or you can run with the operator off the drill with the optional BenchREMOTE package, allowing one operator to run one or multiple units. You can even implement autonomous drilling with almost no human interaction with the drill.

Standard features:

AutoDrill 2
Executes fast, safe, and efficient drilling processes in a consistent way.

AutoLevel
Closes the gap between less experienced and expert operators.

Office pack
Includes:

- **Common Communications Interface (CCI)**
  Allows data transfer to and from RCS.
- **Rig Remote Access (RRA)**
  Wirelessly sends files to and from the drill rigs.
- **Desktop Viewer**
  Allows remote access to the drill's operational screens.

Add-on features:

Wireless remote tramming
Allows the operator to tram a Smart DML from the bench within a 32.8 - 65.6 ft (10-20 m) distance.

High-precision GPS hole navigation system
Imports drill plans to RCS and ensures that each blasthole is precisely positioned with accuracies of up to ±3.9 in (±10 cm), depending on installation and the number of satellites.

Embedded cameras
Optional enbedded 360° cameras that provide full situational awareness and safety.

Technical specifications

Substructure

Mainframe 162 lb/ft (241 kg/m)	
• Rectangular tubing construction • Designed by Epiroc, and weld fabricated by certified welders • Designed with the latest FEA technology and verified by dynamic strain gauging	
Leveling jack	
Type	Hydraulic cylinder
Quantity	Three (standard); Four (optional)
Calculated jack pad bearing pressure	Drill end: 68.9 psi (475 kPa) Non-drill end (4 jacks): 59.9 psi (413 kPa)
Position indication	"Jack up" indicator lights on console or RCS screen
Capacities	
Fuel tank	380 gal (1,438 L) standard 680 gal (2,574 L) optional
Water tank	300 gal (1,136 L), 400 gal (1,514 L), or 700 gal (2,650 L)
Hydraulic tank	150 gal (568 L)

Undercarriage and tramming system	
Make	Caterpillar 325L
Mounting	Oscillating walking beam: 5° each side, total 10°
Total length	Caterpillar: 184 in (4.67 m)
Ground contact	Caterpillar: 149 in (3.78 m)
Take-up adjustment	Grease slack adjustment; spring recoil
Rollers	Caterpillar 330S: 10 lower / 2 upper; Caterpillar 330L: 10 lower/ 2 upper
Location	Equally spaced between idler and sprocket
Roller bearings	Sealed for life
Track pads	Type: Triple bar grouser Width: 23.62 in (600 mm) Ground pressure: 13.5 psi (93 KPa)
Drive	Hydrostatic closed loop through planetary speed reducer
Propel motors	Two - Hydraulic, axial piston, fixed displacement rating (each): 111 HP (82.8 kW)
Propel speed range	Caterpillar: 0 - 1.3 mph (0 - 21 km/h)

Tower, carousel and drill rod handling

Tower		
Tower construction	Fully welded four main member with open front ASTM A500; rectangular steel tubing	
Tower raising	Two hydraulic cylinders; live tower (raise and lower with full carousel and rotary head at top of tower)	
Rod support	Hydraulic cylinder actuation to center drill rod	
Rated capacity		
Maximum hole depth	175 ft (53.3 m)	
Carousel (carousel internal to the tower with key-lock retention)		
Rod length	30 ft (9.1 m)	
Capacity	• Five pieces of 4-1/2 in, 5 in, or 5-1/2 in rods (113 mm, 127 mm, 140 mm) • Four pieces of 6-1/4 in or 7 in (159 mm, or 178 mm) • Three pieces of 7-5/8 in (194 mm)	
Actuation	Two hydraulic cylinders	
Safety	• Drill pipe is held securely in carousel by "key lock design" mechanism • No bump system to prevent damage if carousel not stowed	
Drill rods		
Drill pipe diameter	Thread	Suggested bit diameter
4-1/2 in (114 mm)	3-1/2 in API	5-7/8 in – 6-3/4 in (150 mm – 171 mm)
5 in (127 mm)	3-1/2 in API or BECO	6-3/4 in – 7-3/8 in (171 mm – 187 mm)
5-1/2 in (140 mm)	3-1/2 in BECO	6-3/4 in – 7-7/8 in (171 mm – 200 mm)
6-1/4 in (159 mm)	4 in BECO	7-7/8 in – 9 in (200 mm – 229 mm)
7 in (178 mm)	4-1/2 in BECO	9 in – 9-7/8 in (229 mm – 251 mm)
7-5/8 in (194 mm)	5-1/4 in BECO	9-7/8 in - 10-5/8 in (251 mm - 270 mm)
Rotary head		
Speed range	Variable: 0 – 161 RPM	
Torque	Variable: 0 – 7,200 lbf-ft (0 – 9,762 Nm)	
Number of motors	Two	
Type of motor	One variable displacement axial piston and one fixed	
Reduction	15:1	
Travel length	35 ft 7 in (10.9 m)	
Feed system		
Pulldown capacity	Up to 45,000 lbf (200 kN)	
Pullback capacity	0 – 22,000 lbf (0 – 98 kN)	
Weight on bit	Variable: 0 - 45,000 lb (0 - 20,412 kg)	
Mechanism type	Hydraulic cylinders with cable feed and chains	
Pulldown cable diameter	1 in (25.4 m)	
Pullback chain	160 H	
Feed speed	Standard 30 ft rod tower: 146 ft/min (44.5 m/min)	
Retract speed	Standard 30 ft rod tower: 205 ft/min (62.5 m/min)	

Power package

Airend	
Diesel only	1,070 cfm / 350 psi (30.3 m3/min/24 bar)
Diesel engine	
Diesel engine – non Tier 4	CAT C18 - 630 HP (470 kW)
Diesel engine – Tier 4 Final	CAT C18 - 755 HP (536 kW)

Optional equipment

Following are some examples of available options.
For a comprehensive list, please contact your local Epiroc Customer Center.

- Angle drill package - 0 - 30 degrees
- Cold-weather options for drill operation in extremely cold ambient conditions (-450 C)
- Tow hooks on non-drill end
- Epiroc dust collector
- Fast central service
- Hydraulic test st
- Water injection
- Automatic thread lube
- Bulk filtration
- Angle telescoping dust curtain
- Heavy duty rotary head
- Engine prelube
- Additional cab A/C kit

Cab and controls

Cab

- Quiet, single piece design with no seams or leaks (tested at less than 80 dBA)
- Insulated, pressurized with heater and under cab mounted air conditioning
- Falling object protective structure (FOPS) certified
- Ergonomically designed control system and excellent visibility (with unobstructed view to drill table)

Controls (Standard Rig Control System – RCS)

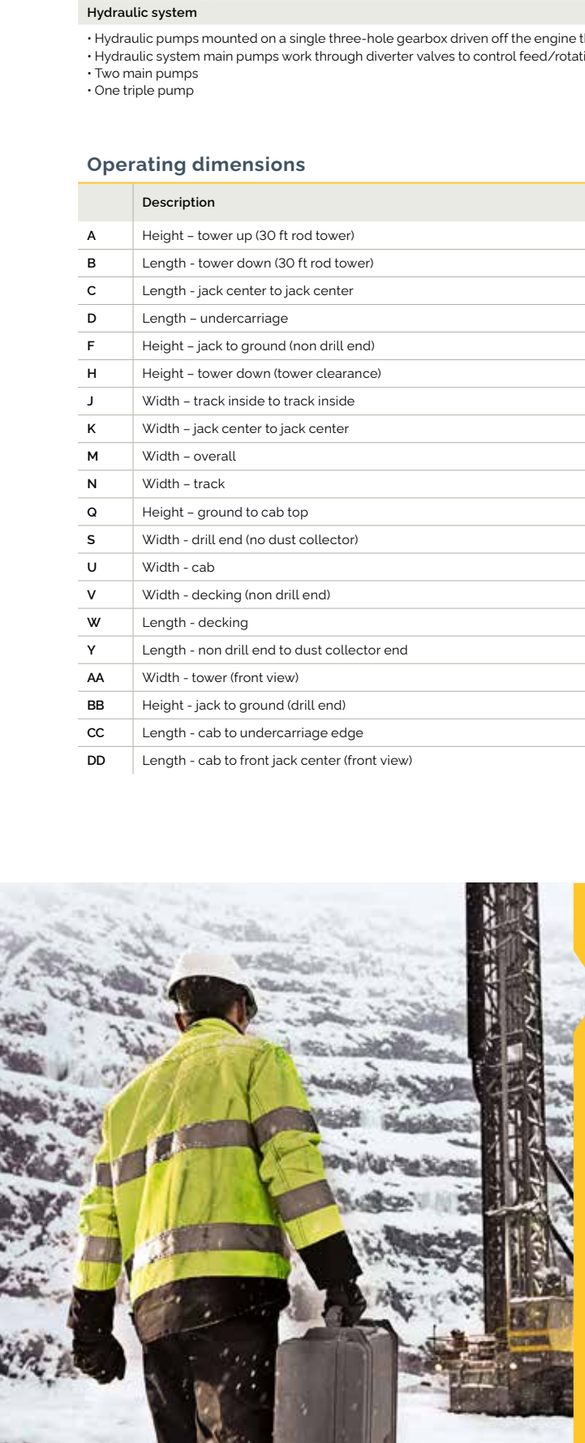
RCS	**Integrated control touchscreen** (penetration rate, rotation torque, rotation pressure, pulldown force, pulldown pressure, hole depth indicator, etc.) **Two joy sticks** (attached to the operator's seat) and push buttons on the operator panel controls (propel and leveling jack, pulldown feed control, holdback feed control) **Standard interlocks/features**

Hydraulic system

- Hydraulic pumps mounted on a single three-hole gearbox driven off the engine through a drive shaft
- Hydraulic system main pumps work through diverter valves to control feed/rotation and propel
- Two main pumps
- One triple pump

Operating dimensions

	Description	Dimensions ft (m)
A	Height – tower up (30 ft rod tower)	44' 8.6" (13.63)
B	Length - tower down (30 ft rod tower)	44' 4.6" (13.53)
C	Length - jack center to jack center	20' 3.8" (6.19)
D	Length – undercarriage	15' 2.5" (4.64)
F	Height – jack to ground (non drill end)	1' 5.5" (0.44)
H	Height – tower down (tower clearance)	15' 7.9" (4.77)
J	Width – track inside to track inside	7' 6.8" (2.31)
K	Width – jack center to jack center	9' 8.0" (6.19)
M	Width – overall	17' 7.7" (5.38)
N	Width – track	1' 11.6" (0.60)
Q	Height – ground to cab top	11' 9.8" (3.60)
S	Width - drill end (no dust collector)	16' 4.3" (4.98)
U	Width - cab	5' 4.3" (1.63)
V	Width - decking (non drill end)	12' 0.5" (3.67)
W	Length - decking	31' 4.7" (9.58)
Y	Length - non drill end to dust collector end	23' 9.3" (7.25)
AA	Width - tower (front view)	3' 1" (0.94)
BB	Height - jack to ground (drill end)	1' 5.7" (0.45)
CC	Length - cab to undercarriage edge	9' 0.2" (2.75)
DD	Length - cab to front jack center (front view)	8' 0.4" (2.45)



Service and support

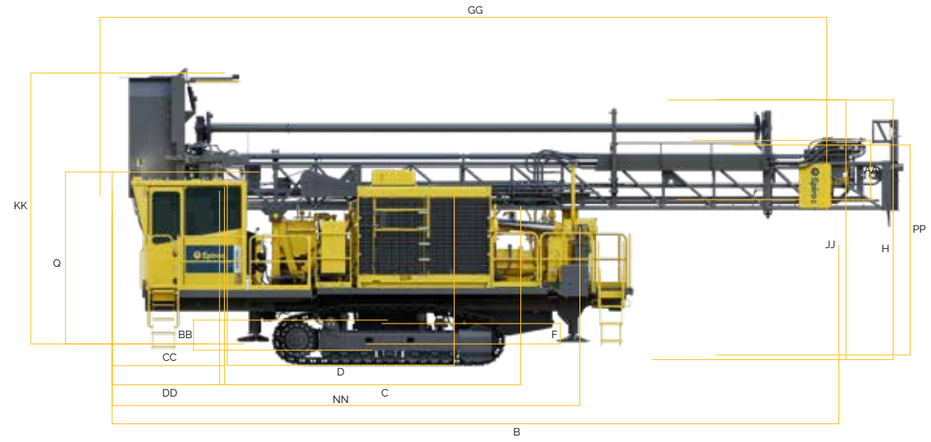
Epiroc offers several types of service agreements to meet your operational requirements and maximize your productivity:

Variable-price repairs
Service when you need it.

Fixed-price repairs
Service with controlled costs.

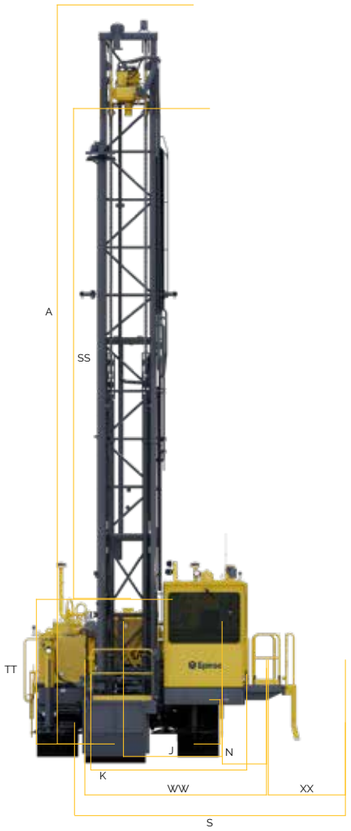
Equipment audit
Scheduled equipment quality control.

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



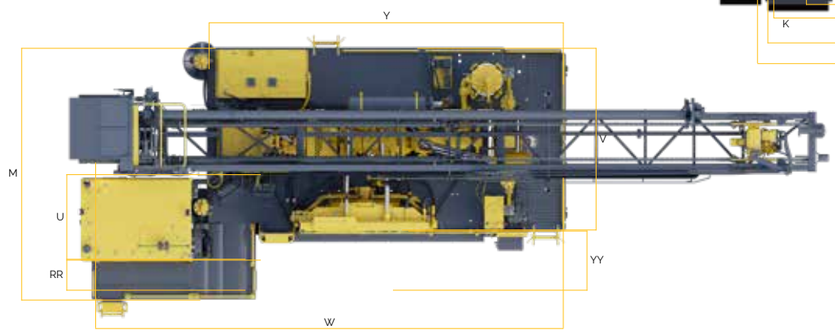
Operating dimensions (continued)

GG	Length - tower: front view (30 ft rod tower)	41' 11.2" (12.78)
KK	Length - ground to dust curtain platform	18' 4.2" (5.59)
NN	Length - non drill end to cab end	32' 2.4" (9.81)
QQ	Height - ground to oscillation yoke	1' 10.7" (0.58)
RR	Length - decking edge to cab edge	2' 6.8" (0.78)
SS	Rotary head travel	33' 1.2" (10.09)
TT	Height - ground to bottom stop	5' 9.1" (1.76)
WW	Width - undercarriage assembly	11' 6.1" (3.51)
XX	Width - decking (cab end to undercarriage edge)	4' 10.1" (1.48)



Shipping dimensions and weight (standard machine)

Operating weight	
Estimated weight	87,000 – 110,000 lb (39 – 50 tonnes)



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