DM45/50

Multi-pass rotary and DTH drilling

Epiroc

Legendary productivity

Like their larger DML series counterparts, Epiroc's DM45/50 drilling rigs are built for productivity, delivering unsurpassed availability and utilization for drilling industry applications.

Epiroc's heavy-duty DML and DM45/50 are some of the world's most popular drills for good reason. All three models have 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 DML or DM45/50. Today you'll find these drills operating in more than 50 different countries around the world.

For details on how the DM45/50 can enhance your profitability, contact your Epiroc representative or visit epiroc.com.

Efficient drilling

The DM45/50 is a crawler-mounted, hydraulic tophead-drive rig that is suitable for a variety of multi-pass rotary and DTH drilling applications. They feature 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 DM45 and up to 50,000 lbf (222 kN) for the DM50. Both units utilize 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.

Added flexibility

When more air and pulldown are required, the DM45 evolves into a DM50 for an enhanced capability to drill larger hole sizes.

Options to fit your application

Choose from a variety of high- and low-pressure compressors to create the right configuration for your drilling operation. You can also add on-board automation capabilities with the optional Rig Control System Lite (RCS Lite) for added safety and productivity.

Designed for maximum productivity and value

+ Operator comfort

The DM45/DM50 features an insulated, air-conditioned, pressurized cab with an adjustable swivel seat and excellent visibility. All operational functions are controlled from the driller's console, and the ergonomic layout allows operators to instantly switch from drilling to tramming for increased productivity. In addition, the electric-over-hydraulic controls are common across the DM series, making operation easy for drillers with DM series experience. Plus, with a rating of 80 dBA, the noise inside the cab is kept to a minimum for greater operator comfort.

+ Ease of maintenance

The deck layout on the 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.

+ Enhanced safety

The DM45/50 is equipped with a number of features to help keep operators safe on the job. Features include a FOPS cab with safety glass, remote hydraulic tower pinning and a pulldown over-center valve — as well as leveling jacks and load-holding valves. These rigs also have guards on rotating parts and safety shutdowns for temperature, low level, and pressure. Other features include spring-applied, hydraulic-released brakes on the tramming system, and automation options can be added to further increase safety.

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.

Robust, double-cut structural tower lacing offers strength without the added weight of less efficient designs and is designed for long life in the toughest mining conditions.

Electronic Air Regulation System (EARS) allows you to easily adjust your compressor to save horsepower and fuel consumption for a lower total cost of ownership (TCO).

Spacious one-piece FOPS (Falling Object Protective Structure)-rated cab is designed for visibility and operator comfort.

"Walking beam" oscillation yoke allows the rig to travel over uneven ground while reducing torsional stresses on the main frame.

Main frame features welded rectangular tubing, reinforced by dynamic strain gauging.

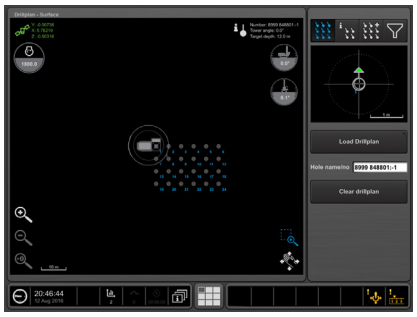
Flexibility for the future

Add flexibility to your DM Series drill rig with Epiroc's Rig Control System (RCS) Lite. Built on the RCS 5 platform that comes standard on the Pit Viper series, RCS Lite offers a number of safety and interlock features. It also provides a convenient foundation to add more functionality and technology options in the future without a major rebuild of the machine. In addition, RCS Lite allows all Epiroc rotary drills to have the same onboard display and system for consistent operator training and service. It's a modular solution that delivers efficiency now, along with the opportunity to enhance your equipment down the road as your mining requirements grow.

Home screen: all selections are done from the main menu.

Drilling: shows information about pressures and flows for various systems during drilling.

Setup and Propel: shows machine conditions during setup and while propelling.



Drill Plan: shows the interactive drill plan.

User: sets the control system language. Logs in users to the control system and shows user information.

Performance: shows statistics about the machine and drilling consumables.

Choose from three packages

RCS Lite | Basic

- RSC 5 touchscreen display and GUI with:
  - Real-time depth and pen rate. feedback with histogram.
  - Rotation RPM and pressure (torque).
  - Pulldown/holdback.
  - Air pressure, water tank level.
  - On-screen machine inclinometers.
- Autolevel
- Safety features
  - Pipe-in-hole interlocks.
  - Stability interlock.
- One I/O module common with RCS 4/5 Pit Viper

RCS Lite | Connected

Includes all features of RCS Lite | Basic, plus:

- CCI module for data storage and transmission to wireless network
  - Rig events, drilling quality, drill status, etc.
- Surface Manager
- Remote desktop viewer
- Measure while drilling
- Onboard storage
- Operator ID and management
- Delay code management and reporting
- Optional user-level logins for RCS Lite drills

RCS Lite | NAV

Includes all features of RCS Lite | Connected, plus:

- GPS-ready with brackets (Option A) OR high-precision GPS installed (Option B)
- Moving map display software
- Geofence capability

Technical specifications

Sub structure

Mainframe	
• 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
Calculated jack pad bearing pressure	Drill end: 68.9 psi (475 kPa) Non drill end: 66.7 psi (460 kPa)
Position indication	"Jack up" indicator lights on console
Capacities	
Fuel tank	380 gal (1,438 L) standard 680 gal (2,574 L) optional
Water tank	300 gal (1,136 L) or 500 gal (1,893 L)
Hydraulic tank	150 gal (568 L)
Undercarriage and propel system	
Make	Epiroc 2500 or Caterpillar 325L
Mounting	Oscillating walking beam: 5° each side, total 10°
Total length	Epiroc: 183 in (4.65 m); Caterpillar: 184 in (4.67 m)
Ground contact	Epiroc: 146 in (3.71 m); Caterpillar: 149 in (3.78 m)
Take-up adjustment	Grease slack adjustment; spring recoil
Rollers	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	Epiroc: 0 – 1..0 mph (0 - 1.6 km/h), Caterpillar: 0 – 1.3 mph (0 - 2.1 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		
Single pass depth	27.5 ft (8.4 m)	
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 (114 mm, 127 mm or 140 mm) • Four pieces of 6-1/4 in or 7 in (159 mm or 178 mm)	
Acuation	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 x 30 ft (9.1 m)	**Thread**	**Suggested bit diameter**
4-1/2 in (114 mm)	3-1/2 in API	5-1/2 in – 6-3/4 in (140 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 – 8-7/8 in (200 mm – 225 mm)
7 in (178 mm)	4-1/2 in BECO	8-7/8 in (225 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	DM45: up to 45,000 lbf (0 – 200 kN) DM50: up to 50,000 lbf (0 – 222 kN)	
Pullback capacity	0 – 22,000 lbf (0 – 98 kN)	
Weight on bit	DM45: variable, 0 – 45,000 lb (0 – 20,412 kg) DM50: variable, 0 – 50,000 lb (0 – 22,680 kg)	
Mechanism type	Hydraulic cylinders with cable feed and chains	
Pulldown cable diameter	1 in (25.4 mm)	
Pullback chain	160 H	
Feed speed	146 ft/min (44.5 m/min)	
Retract speed	205 ft/min (62.5 m/min)	

Technical specifications

Cab and controls

Cab	
• Thermally insulated and pressurized • Adjustable suspension swivel seat with seat belt • Two hinged and lockable doors • Quiet (tested at 80 dBA) • Falling Object Protective Structure (FOPS) certified • Side-mounted air conditioning (easier to service as no roof access required) • Ergonomically designed wrap-around console • Windshield wiper on drilling and rear tramming window	
Controls (electric over hydraulic)	
Panels	• Tramming and jack controls • Ignition console and gauges • Engine diagnostic • Air regulation controls • Drill controls and gauges
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	

Power package

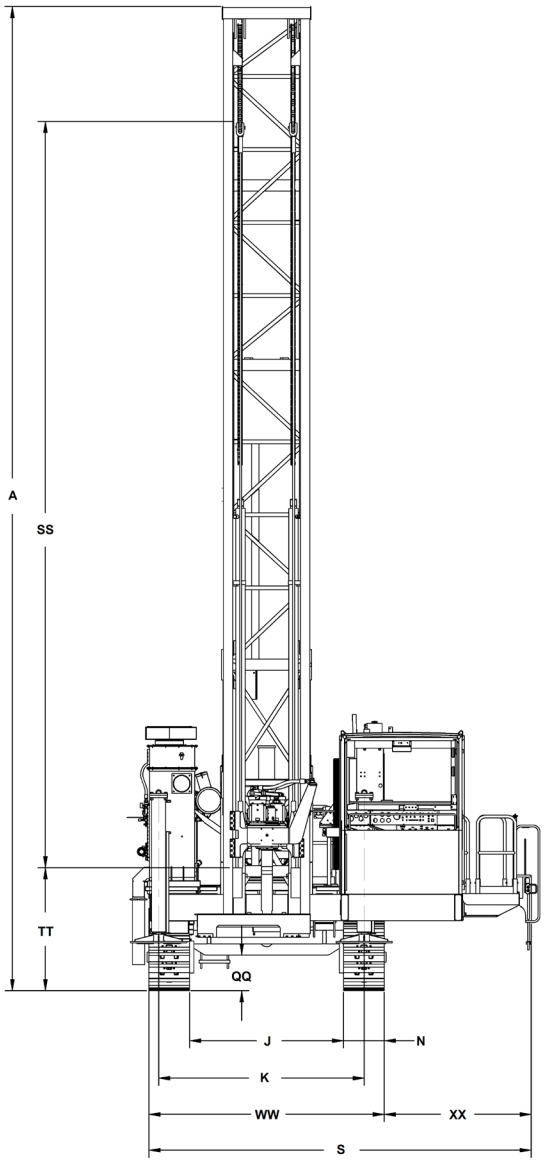
Airend	
	900 cfm @ 110 psi (25.5 m^3/min @ 7.6 bar) 1,050 cfm @ 110 psi (29.7 m^3/min @ 7.6 bar) 1,200 cfm @ 110 psi (34 m^3/min @ 7.6 bar) 900 cfm @ 350 psi (25.5 m^3/min @ 24 bar) 1,070 cfm @ 350 psi (30.3 m^3/min @ 24 bar)
Diesel engine (1,800 rpm)	
Diesel engine – non Tier 4	CAT C15 – 440 HP (328 kW) CAT C15 – 475 HP (354 kW) CAT C15 – 540 HP (403 kW) CAT C18 – 630 HP (470 kW) Cummins QSX15 – 425 HP (317 kW) Cummins QSX15 – 475 HP (354 kW) Cummins QSX15 – 530 HP (395 kW) Cummins QSX15 – 600 HP (447 kW)
Diesel engine – Tier 4 Final	CAT C15 – 475 HP (354 kW) CAT C15 – 540 HP (403 kW) CAT C18 – 755 HP (563 kW) Cummins QSX15 – 500 HP (373 kW) Cummins QSX15 – 550 HP (410 kW) Cummins QSX15 – 600 HP (447 kW)

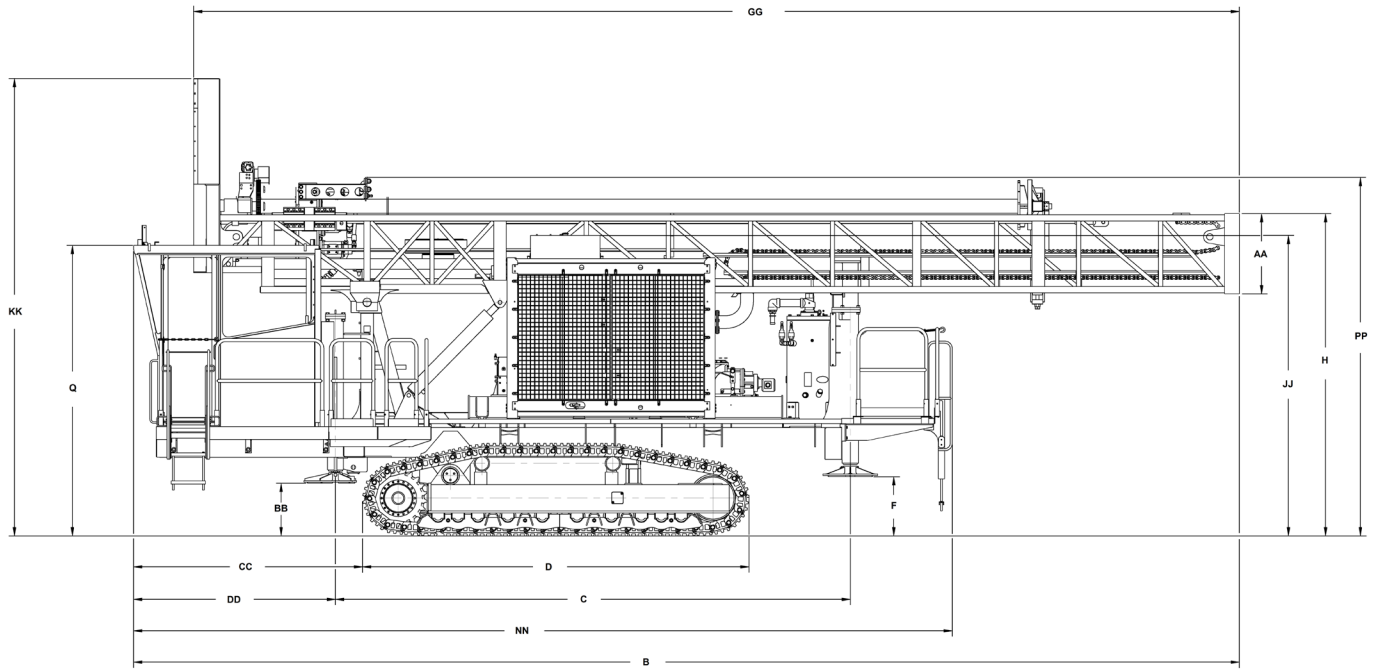
Dimensions and weight

Operating weight	
Estimated weight	77,000 – 95,000 lb (35 – 43 tonnes)

Operating dimensions
(Dimensions for DM45 HP)

	Description	Dimensions in (m)
A	Height – tower up	43' 7" (13.3)
B	Length – tower down	43' 7" (13.3)
C	Length – jack center to jack center	20' 3" (6.2)
D	Length – undercarriage	15' 3" (4.65)
F	Height – jack to ground (non drill end)	2' 4" (0.71)
H	Height – tower down (tower clearance)	12' 7" (3.88)
J	Width – track inside to track inside	6' 9" (2.09)
K	Width – jack center to jack center	9' 1.25" (2.78)
M	Width – overall	17' 2" (5.23)
N	Width – track	1' 8" (0.55)
Q	Height – ground to cab top	11' 6" (3.49)
S	Width – drill end (no dust collector)	16' 9" (5.16)
U	Width – cab	6' 4" (1.64)
V	Width – decking (non drill end)	10' 7" (3.27)
W	Length – decking	30' 7" (9.37)
Y	Length – non drill end to dust collector end	23' 6" (7.18)
AA	Width – tower (front view)	3' 2" (0.97)
BB	Height – jack to ground (drill end)	2' 1" (0.63)
CC	Length – cab to undercarriage edge	9' (2.76)
DD	Length – cab to front jack center (front view)	7' 11" (2.43)
GG	Length – tower; front view	41' 3" (12.6)
JJ	Height – ground to cooler	11' 8" (3.56)
KK	Length – ground to dust curtain platform	18' (5.5)
NN	Length – non drill end to cab end	32' 3" (9.86)
PP	Height – tower down (rod changer clearance)	14' 1" (4.31)
QQ	Height – ground to oscillation yoke	1' 7" (0.48)
RR	Length – decking edge to cab edge	2' 6" (0.78)
SS	Rotary head travel	33' 1.2" (10.09)
TT	Height – ground to bottom stop	5' 4.4" (1.64)
WW	Width – undercarriage assembly	10' 6" (3.19)
XX	Width – decking (cab end to undercarriage edge)	6' 11" (1.99)
YY	Width – decking (cab end to non drill end)	5' 11" (1.79)

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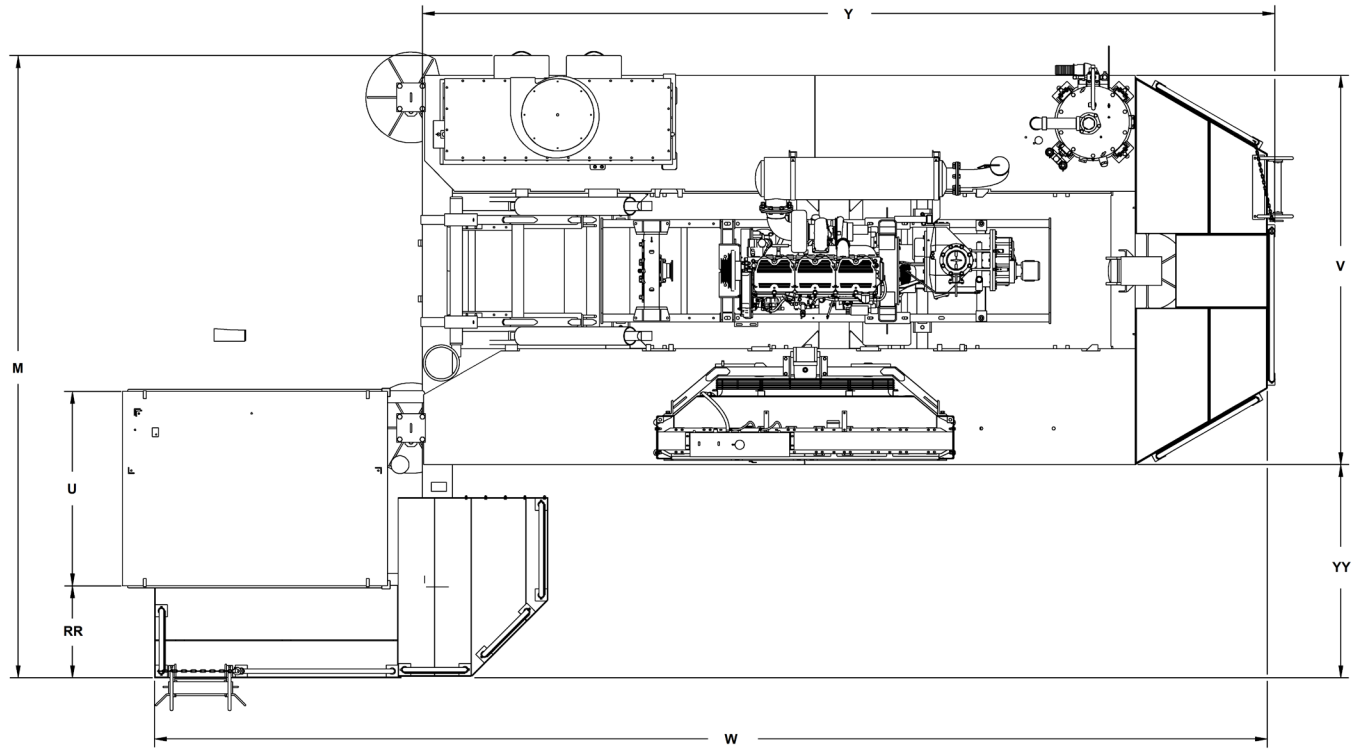
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Optional equipment

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

- Angle drill package – 0-30 degrees
- Video camera system with three cameras and LCD screen
- Cold-weather options for drill operation in extremely cold ambient conditions (-45˚ C)
- Ground-level emergency shutdown
- Hands-free auxiliary wrench
- Tow hooks on non-drill end
- Epiroc dust collector
- Cab and tower strobe lights
- Automatic lube system
- Rotational tachometer
- Wiggins central service
- Hydraulic test station
- Water injection

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