

Atlas Copco Blasthole Drills

DML series



Rotary and DTH drilling – Multi-pass

Hole diameter 5 7/8 -10 5/8 in (149 - 270 mm)
Maximum hole depth 205 ft (62.5 m)

Sustainable Productivity

Atlas Copco

Heavy duty concept with high drilling capacity

The Atlas Copco DML is a crawler mounted, hydraulic tophead drive, multi-pass rotary drilling rig specifically designed for production blasthole drilling to depths of 175 ft (53.3 m) with a 30 ft pipe change and 205 ft (62.5 m) with the optional 35 ft (10.7 m) pipe change. Various carousel capacities are available for both the standard 30 ft (9.15 m) and the optional 35 ft (10.7 m) tower. Feed pressure generates a weight on bit force of up to 60,000 lbf (267 kN).

Since the launch of the DML in the early 1980's this robust drilling rig has operated in many demanding coal and metal mining operations around the globe. The rugged DML provides efficient operation in all environmental conditions, from extreme arctic conditions to tropical heat.

Tower and pipe handling

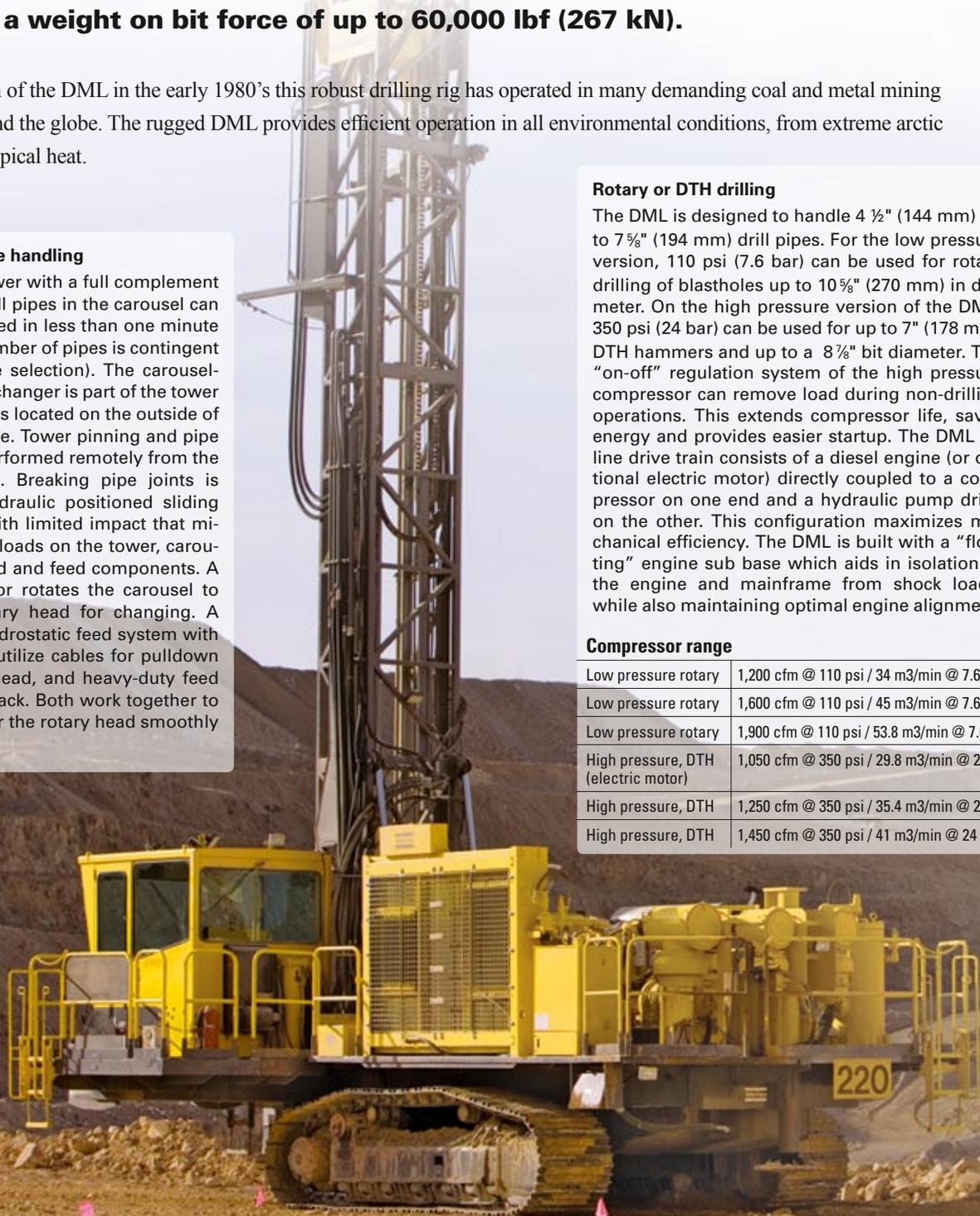
Raising the tower with a full complement of up to six drill pipes in the carousel can be accomplished in less than one minute (maximum number of pipes is contingent upon pipe size selection). The carousel-type drill pipe changer is part of the tower assembly and is located on the outside of the tower frame. Tower pinning and pipe changing is performed remotely from the operator's cab. Breaking pipe joints is done by a hydraulic positioned sliding fork wrench with limited impact that minimizes shock loads on the tower, carousel, rotary head and feed components. A hydraulic motor rotates the carousel to index the rotary head for changing. A closed loop hydrostatic feed system with two cylinders utilize cables for pull-down of the rotary head, and heavy-duty feed chain for pullback. Both work together to raise and lower the rotary head smoothly and positively.

Rotary or DTH drilling

The DML is designed to handle 4 1/2" (144 mm) up to 7 5/8" (194 mm) drill pipes. For the low pressure version, 110 psi (7.6 bar) can be used for rotary drilling of blastholes up to 10 5/8" (270 mm) in diameter. On the high pressure version of the DML, 350 psi (24 bar) can be used for up to 7" (178 mm) DTH hammers and up to a 8 7/8" bit diameter. The "on-off" regulation system of the high pressure compressor can remove load during non-drilling operations. This extends compressor life, saves energy and provides easier startup. The DML in-line drive train consists of a diesel engine (or optional electric motor) directly coupled to a compressor on one end and a hydraulic pump drive on the other. This configuration maximizes mechanical efficiency. The DML is built with a "floating" engine sub base which aids in isolation of the engine and mainframe from shock loads, while also maintaining optimal engine alignment.

Compressor range

Low pressure rotary	1,200 cfm @ 110 psi / 34 m ³ /min @ 7.6 bar
Low pressure rotary	1,600 cfm @ 110 psi / 45 m ³ /min @ 7.6 bar
Low pressure rotary	1,900 cfm @ 110 psi / 53.8 m ³ /min @ 7.6 bar
High pressure, DTH (electric motor)	1,050 cfm @ 350 psi / 29.8 m ³ /min @ 24 bar
High pressure, DTH	1,250 cfm @ 350 psi / 35.4 m ³ /min @ 24 bar
High pressure, DTH	1,450 cfm @ 350 psi / 41 m ³ /min @ 24 bar



Operator comfort

All operational functions can be controlled from the drillers console in the cab. The operator has excellent visibility with an unobstructed view of the drill table. The wrap-around drilling console places the heavy-duty electric over hydraulic controllers within easy reach. The cab is thermally insulated, pressurized, equipped with tinted safety glass, and has an ergonomic seat with seat belt. The FOPS certified cab has an integrated air conditioning system with a sound abatement tested at 80 dBA, which can be entered through two hinged and lockable doors.



Efficient drill pipe handling

An exclusive “key lock” securely locks in the drill pipes at the bottom and the top of the carousel, and a no-bump drill pipe change limits the feed force of the rotary head while the carousel is moved into the complete out position which prevents carousel operations unless the rotary head is at the top of the tower. Drill pipes can be handled by a 4,000 pound (1 814 kg) auxiliary hoist/winch that comes standard on the rig, and is located at the top of the tower.



A mobile and stable platform

The DML utilizes an excavator-type undercarriage, built to Atlas Copco specifications. Tracks are driven by a planetary gear system and two hydraulic motors rated at 175 hp (130 kW) each. Both tracks are individually controlled and act as an independent unit. The tracks are hydraulically adjustable with a spring recoil system and equipped with replaceable triple bar grouser pads. The Atlas Copco designed DML main frame is a weld fabrication of rectangular tubing, verified by dynamic strain gauging. A “walking beam” oscillation yoke allows the rig to propel over uneven ground, while reducing torsional stresses on the main frame.



Standard Equipment

- Insulated cab with FOPS
- Cab pressurizer / ventilator / heater
- Nine quartz halogen night lighting package
- Dust hood with curtains and hydraulically raising dust flap
- Auxiliary hoist for drill pipe and accessory handling
- Heavy-duty engine silencer/muffler
- Separate air intake filters with quick release dust drop covers for engine and air compressor
- Gear indexing carousel
- Sliding hydraulic fork wrench for drill pipe breakout
- Hydraulically powered auxiliary chain wrench
- 350-gallon (1,324 L) fuel tank
- 4SV-2-10 two motor high speed rotary head with spline lubrication, 0 to 160 RPM, and a maximum torque of 7,200 lbf•ft
- 30 foot drill pipe change
- No-bump rod changer
- Ether injection
- Jack-up indicator lights
- Three 48 in. (1,219 mm) stroke leveling jacks
- 33.5 in. (850 mm) wide triple bar grousers
- Reinforced rectangular steel track frame with oscillation yoke
- Walkways and railings
- Remote tower pinning
- Back-up alarm

A selection of options on the DML Series

For a more comprehensive options list, please contact your local Atlas Copco Customer Center.



Angle drilling package

Two optional angle drilling packages are available (20° angle and 30°) for positioning the tower from vertical in 5° increments. Both include a drill rod support and an angle drill tie bar. The controls are located inside the cab.

Dust control

There are three optional sizes of dry dust collectors available for the DML. The dust collector includes dust hood curtains that are rectangular split and a hydraulically retractable front curtain. Another alternative for dust control is the optional Water Injection System.

Fast service system

Fast Service system with ground level, quick connect fittings for fill and evacuation of fuel, hydraulic oil, engine coolant, receiver tank oil, and crankcase oil is an available option for the DML. Another option for fuel only quick fill is also available.

EARS

The optional Electronic Air Regulation System (EARS) is designed to deliver variable air volume control, while still maintaining constant air pressure. This allows for savings in power and fuel consumption.

Technical data DML

Technical data

Drilling Method	Rotary and DTH - Multi pass	
Hole Diameter	5 7/8 in - 10 5/8 in	149 mm - 270 mm
Hydraulic Pulldown	60,000 lbf	267 kN
Weight on bit	60,000 lb	27,200 kg
Hydraulic Pullback	22,000 lbf	98 kN
Single pass depth	27 ft 5 in or 32 ft 5 in	8.5 m or 10 m
Maximum hole depth	175 ft or 205 ft	53.3 m or 62.5 m
Feed speed	146 ft/min	0.7 m/s
Rotary head, torque	7,200 lbf-ft	9.76 kNm
Estimated weight	87,000 lb - 110,000 lb	39.5 tonnes - 50 tonnes

Dimensions tower up (30 ft tower)

Length	31 ft 10 in	9.7 m
Height	43 ft 8 in	13.3 m
Width	16 ft 6 in	5 m

Dimensions tower down (30 ft tower)

Length	43 ft 7 in	13.3 m
Height	17 ft 8 in	5.7 m

* Maximum hole dept only achieved with certain pipe sizes and wall thicknesses

Engine (2Tier II, 3Tier III)

Caterpillar	C15 ³	540HP@1800RPM (LP 1200)
Cummins	QSX15 ³	530HP@1800RPM (LP 1200)
Caterpillar	C18 ³	630HP@1800RPM (LP 1600)
Cummins	QSX15 ³	600HP@1800RPM (LP 1600)
Caterpillar	C27 ²	800HP@1800RPM (LP 1900)
Cummins	QSK19 ²	755HP@1800RPM (LP 1900)
Caterpillar	C27 ²	800HP@1800RPM (HP 1250)
Cummins	QSK19C ²	755HP@1800RPM (HP 1250)
Caterpillar	C27 ²	800HP@2100RPM (HP 1450)
Cummins	QSK19C ²	760HP@2100RPM (HP 1450)
Weg motor	6808	700HP@50-60Hz (LP 1200 or HP 1050)

Drill pipe specification

Drill pipe diameter	Suggested bit diameters	Thread
4 1/2" (114 mm)	5 7/8" - 6 3/4"	3 1/2" API
5" (127 mm)	6 3/4" - 7 3/8"	3 1/2" API or BECO
5 1/2" (140 mm)	6 3/4" - 7 7/8"	3 1/2"
6 1/4" (159 mm)	7 7/8" - 9"	4" BECO
7" (178 mm)	9" - 9 7/8"	4 1/2" BECO
7 5/8" (194 mm)	9 7/8" - 10 5/8"	5 1/4" BECO

High pressure DTH drilling

Up to 7" DTH hammer and max. 8 7/8" bit diameter