EL2000

Longwall Shearer

SPECIFICATIONS

	Machine @ 50 Hz	Machine @ 60 Hz
Seam Range	1.8-4.5 m	71-177 in
Typical Machine Length (drum centers)	14 065 mm	46.15 ft
Installed Power	Up to 1780 kW	Up to 2,797 hp
Available Cutting Power	2 × 500 kW	2 × 805 hp
	2 × 620 kW	2 × 998 hp
	2 × 750 kW	2 × 1,207 hp
Cutting Drum Diameter	1600-2500 mm	63-98.5 in
Cutting Drum Speed		
RA560	33.5, 38.8, and 43.8 rpm	40.2, 46.6, and 52.6 rpm
RA750	32.8, 37.4 and 45.2 rpm	39.4, 44.9, and 54.2 rpm
Haulage System	AC inverter drive	AC inverter drive
Haulage Power	2 × 125 kW	2 × 168 hp
Haulage Speed (maximum)		
Low Downdrives	31.36 m/min	102.9 ft/min
High Downdrives	30.11 m/min	98.8 ft/min
Haulage Pull (maximum)		
Low Downdrives	861 kN	96.8 tons
High Downdrives	897 kN	100.8 tons
Pump Motor	30 kW	48 hp
Body Thickness	610 mm	24 in
Machine Weight (approximate)	70 tonnes	77 tons
Operating Voltage	3,300V	4,160V
Minimum Pan Width	1032 mm	40.6 in

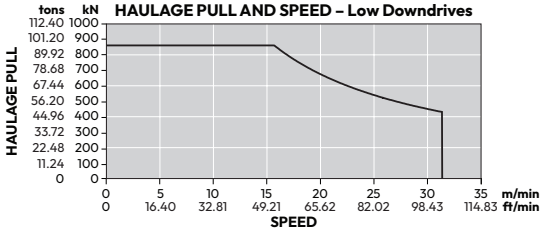
Ranging Arm – RA560

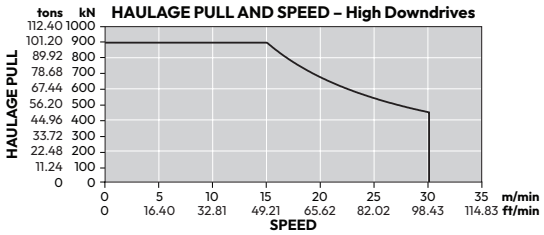
- Reconfigurable gear cassettes for adaptation of drum speeds
- Integral monitoring transducers
- Quillshaft transmission protection
- High-speed gears and idlers rated for 560 kW at 50 Hz (900 hp at 60 Hz), hub rated for 750 kW at 50 Hz (1,200 hp at 60 Hz).
- Separate oil compartments for high speed and planetary section (optimal cooling and lubrication)
- Maximum drum diameter of 2000 mm (79 in)
- Available cutter motor – 500 kW at 50 Hz (805 hp at 60 Hz)
- Robust cowl drive mechanism (optional)
- Vibration monitoring (optional)

Ranging Arm – RA750

- Reconfigurable gear cassettes for adaptation of drum speeds
- Integral monitoring transducers
- Quillshaft transmission protection
- Transmission rating of 750 kW at 50 Hz (1,207 hp at 60 Hz)
- Separate oil compartments for high speed and planetary section (optimal cooling and lubrication)
- Maximum drum diameter of 2500 mm (98 in)
- Available cutter motors – 620 kW and 750 kW at 50 Hz (998 hp and 1,207 hp at 60 Hz)
- Robust cowl drive mechanism (optional)
- Vibration monitoring (optional)

Haulage Unit – HU150





- Haulage motor limited to 125 kW (168 hp)
- Transmission rating of 150 kW (200 hp) providing designed redundancy
- Transmission reduction of 137:1
- Absolute encoder for accurate machine position detection (no reset devices at gate ends needed)
- Closed loop control for accurate load-sharing and increased service life of rackbar and sprocket
- Haulage unit accepts hydraulic motor for installation and face recovery
- Oil temperature monitoring
- Quillshaft transmission protection
- Machine parking brake (optional)
- Vibration monitoring (optional)

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Downdrive

> Configurable for direct and indirect drives
> Fully removable, modular gearbox
> Designed for superior serviceability with quick and easy access for maintenance (Higher variants use cartridge design for top drive wheel assembly/lower versions provide access via top cover)
> Transmission rating of 125 kW (168 hp) for low downdrives/ 150 kW (200 hp) for high downdrives
> Trapping shoe with replaceable wear inserts (for indirect drives), safe and easy to replace
> Suitable for all rack type systems
> Reconfigurable downdrive and shoe posts for different pan widths and seam heights

Powerpack – PP2

> Single powerpack with less parts to fail and less tasks for quick and easy maintenance
> Fixed displacement pump with two options:

	Capacity at 50 Hz	Capacity at 60 Hz	Operating Pressure
Standard	49 L/min (10.8 gal/min)	59 L/min (13 gal/min)	280 bar (4,060 psi)
Option	62 L/min (13.6 gal/min)	74 L/min (16.3 gal/min)	225 bar (3,260 psi)

> Robust hydraulic reservoir of 140 L (37 gal) capacity
> Integral monitoring transducers (oil level and temperature)
> For use with ISO 68 hydraulic oils
> Available with 6 section valve bank
> Reliable low-voltage pump motor rating of 30 kW @ 50 Hz (48 hp @ 60 Hz)
> Optional boost valve for accelerated gate end operations (recommended for cowls)

Mainframe – MF2

> High structural integrity and absorption of all cutting and haulage forces, providing maximum protection for all major units
> Maximum protection of electrical boxes, providing the highest level of flameproof integrity, protects gearboxes against torsion
> Split mainframe is available in case of transportation limitations
> Modular design enabling for selective overhauls
> Spray boom retrofittable
> Mainframe add additional weight to cope with the most challenging cutting conditions

Electrical Control Box – ECB2

> This flameproof module contains most of the shearer electrical control and power distribution components.
> High current carrying capacity of 400 amps; accommodation of trailing cables up to 120 mm² (4/0 AWG)
> Internal chassis can be 'bench built,' tested and stored
> LV circuit breakers resettable through FLP cover (reduced downtime) Powerful PMC Evo-S control system with state-of-the-art Ethernet communication
> Containing cutter motor contactors, circuit breakers, control transformer, current monitoring, HV fuses, earth leakage and visible disconnect

Haulage Transformer Box – HTB2

> Flameproof module containing the main 253 kVA haulage transformer, power supplies, auxiliary transformer, drive system circuit breaker, hydraulic pump motor, and a 250 kW (335 hp) 600V AC inverter drive with integrated regenerative breaking.

Electrical Material

> This model of shearer is available with headlights, cameras, methane monitoring, end displays and audible alarms.
> All electrical material is designed and certified to IEC standards and also complies with other regional and national standards, such as MSHA, GOST, MA, ATEX and DGMS, as well as Australia's New South Wales and Queensland regulations.

Hydraulic Material

> All hose assemblies are to ISO 6805 and proof tested according to EN ISO 1402.
> The hoses are assembled to Hose Assembly Standard DIN 20066.
> Hose selection and routing per industry standard best practices (including MDG41, ISO TS 17165N2 and SAE J1273)
> HBT hoses are aligned with the standards of MSHA, DGMS and MA

Water Material

> All HBT hose assemblies are designed according to ISO 6805 and proof tested according to EN ISO 1402.
> The hoses are assembled to Hose Assembly Standard DIN 20066.
> Hose selection and routing per industry standard best practices (including MDG41, ISO TS 17165N2 and SAE J1273).
> HBT hoses are aligned with the standards of MSHA, DGMS and MA. MDG 41 compliant hoses are available for Australia.
> Stainless steel fittings (optional)
> Onboard water filtration (optional)

Dust Suppression

> Wide range of dust suppression solutions available:
  > Body sprays
  > Spray booms
  > Sloughing plate sprays
  > Spray rings (in place of cowls)
  > Shearer clearers

Health Monitoring

> A comprehensive health monitoring system is available, including oil levels and temperatures, flows, pressures and vibration analysis.

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Machine Automation and Communication

- Distributed, high-performance PMC-S control system for machine control, health monitoring, system protection and predictive maintenance
- Modular design allows individual configuration (from basic monitoring and protection to advanced automation) to meet customer requirements
- Fast Ethernet Broadband communication allows enhanced diagnostics and analysis
- Control system architecture with backup functionality
- Widespread use of intrinsically safe components for improved serviceability and maintenance
- Machine performance algorithm “advanced motor and speed control” for increased machine uptime, coal production and longer service life
- Shearer automation levels available:
  - Standard Machine Control
  - Basic Automation
- Advanced Automation (including face alignment horizon control)
- Pan Angle Measurement System (PAMS) enabling fully automated gate end cutting sequences without machine operator interactions (optional)
- Horizon Control from PMC-R Controls to allow corrections to Floor and Roof drum cutting heights (optional)
- Shearer Remote Operation to allow machine control from a safe remote location outside the face (optional)

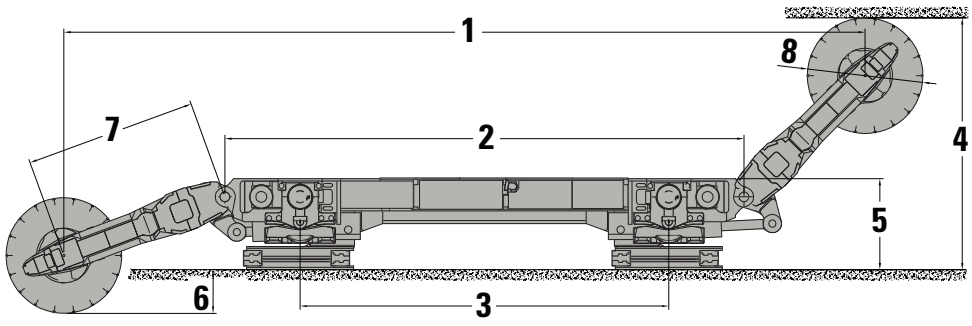
Remote Control

- Lightweight handheld device
- Color graphic display
- Tilt, drop and impact detection

TYPICAL MACHINE CONFIGURATIONS

Dimensions

All dimensions are approximate.



		Low		Mid-Low		Mid-High		High	
1 Distance between Drums with Arms Horizontal		14 065 mm	554 in	14 065 mm	554 in	14 065 mm	554 in	14 065 mm	554 in
2 Distance between Ranging Arm Hinge Points		8435 mm	332 in	8435 mm	332 in	8435 mm	332 in	8435 mm	332 in
3 Distance between Trapping Shoe Centers		6398 mm	252 in	5985 mm	236 in	6541 mm	258 in	5985 mm	236 in
4 Cutting Height	Maximum	3930 mm	155 in	4130 mm	163 in	4330 mm	170 in	4560 mm	180 in
	Minimum	1800 mm	71 in	1900 mm	75 in	2200 mm	87 in	2500 mm	98 in
5 Top of Mainframe		1467 mm	58 in	1518 mm	60 in	1567 mm	62 in	1647 mm	65 in
6 Shearer Drum Undercut of Floor		400 mm	16 in	500 mm	20 in	600 mm	24 in	670 mm	26 in
7 Ranging Arm Length (Hinge to Drum)		2815 mm	111 in	2815 mm	111 in	2815 mm	111 in	2815 mm	111 in
8 Drum Diameter		1600 mm	63 in	1900 mm	75 in	2200 mm	87 in	2500 mm	98 in

Please note!!!
All dimensions are approximate.
All values based on Pitch 147, T11.
Low based on DD360.
Mid-Low based on DD410.
Mid-High based on DD460.
High based on DD540.
Inch values rounded.

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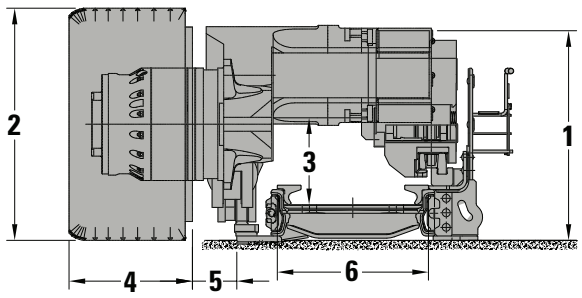
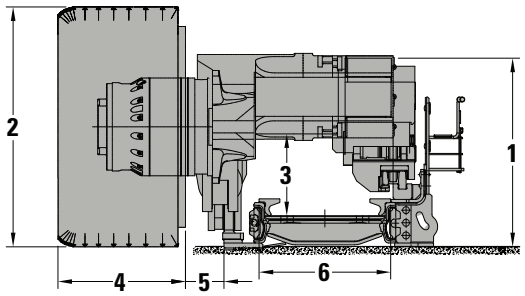
Dimensions

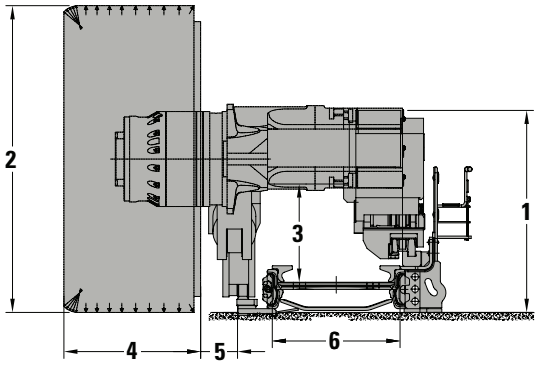
All dimensions are approximate.



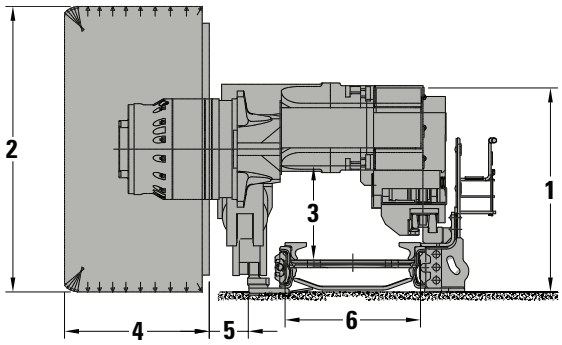
Low



Mid-Low



High



Mid-High

		Low		Mid-Low		Mid-High		High	
1 Machine Height over Main Body		1467 mm	58 in	1518 mm	60 in	1567 mm	62 in	1647 mm	65 in
2 Ranging Arm Cutting Drum Diameter		1600 mm	63 in	1900 mm	75 in	2200 mm	87 in	2500 mm	98 in
3 Vertical Tunnel Clearance		600 mm	24 in	651 mm	26 in	700 mm	28 in	780 mm	31 in
4 Maximum Cutting Drum Overall Width		1150 mm	45 in	1150 mm	45 in	1150 mm	45 in	1150 mm	45 in
5 Clearance from Drum to AFC Toeplate		300 mm	12 in	300 mm	12 in	300 mm	12 in	300 mm	12 in
6 AFC Pan Width	Maximum	1342 mm	53 in	1342 mm	53 in	1342 mm	53 in	1342 mm	53 in
	Minimum	1032 mm	41 in	1032 mm	41 in	1032 mm	41 in	1032 mm	41 in