



# Cat<sup>®</sup> EL4000

## LONGWALL SHEARER

### Specifications

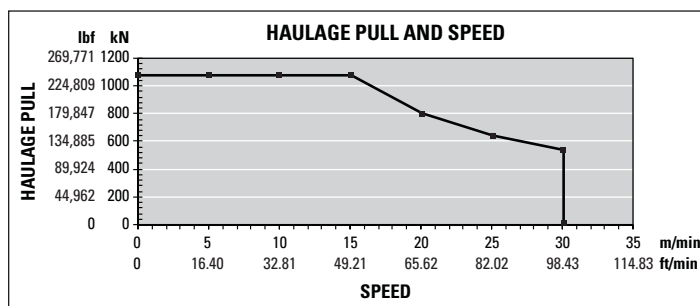
	Machine @ 50 Hz	Machine @ 60 Hz
Seam Range	4.0-7.0 m	158-276 in
Typical Machine Length (drum centers)	17 008 mm	55.8 ft
Installed Power	Up to 2295 kW	Up to 3,680 hp
Available Cutting Power	2 × 860 kW 2 × 750 kW	2 × 1,380 hp 2 × 1,200 hp
Cutting Drum Diameter	Up to 3500 mm	Up to 138 in
Cutting Drum Speed	30.8, 35 and 43 rpm	37, 42 and 51.6 rpm
Haulage System	AC inverter drive	AC inverter drive
Haulage Motor	2 × 150 kW	2 × 240 hp
Haulage Speed	Up to 31.1 m/min	98.7 ft/min
Haulage Pull	Up to 1075 kN	120 tons
Coal Sizer	200 kW	320 hp
Pump Motor	75 kW	120 hp
Body Height	1070 mm	42 in
Machine Weight (approximate)	130 tonnes	143 tons
Operating Voltage	3,300V	4,160V
Minimum Pan Width	1342 mm	52.8 in

### Ranging Arms – RA860

- Transmission rating of 860 kW @ 30.8 rpm and above
- Maximum drum diameter of 3500 mm (138 in)
- Choice of drum speeds
- Complete with 32 mm (1.3 in) bore, through shaft PFF/PBF wet cutting
- Square drum hub (630 mm [24.8 in] across flats)
- Maximum oil capacity of 45 L (11.88 gal) in high speed compartment and 60 L (15.85 gal) in the epicyclic
- Integral monitoring transducers
- Quillshaft transmission protection
- Available cutter motors – 750 kW and 860 kW @ 50 Hz (1,200 hp and 1,380 hp @ 60 Hz)

### Haulage Units – HU150

Total Machine Pull	1075.94 kN	241,881 lbf
	110.15 tonnes	121.42 tons
Speed at Maximum Pull	15.06 m/min	49.39 ft/min
Maximum Machine Speed	30.11 m/min	98.77 ft/min
Pull at Maximum Speed	537.97 kN	120,940 lbf
	55.07 tonnes	60.70 tons



- Maximum power rating 150 kW (201 hp)
- Integral water cooling @ 9 L/min (2 gal/min)
- Transmission reduction of 137:1
- Available with Machine Position Encoder
- Available with Machine Parking Brake
- Maximum oil capacity of 25 L (7 gal)
- Integral monitoring transducers
- Quillshaft transmission protection
- This unit has a haulage motor rating of 150 kW (201 hp)

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## Downdrive – DD150

- Innovative and unique downdrive design
- Transmission rating of 150 kW (201 hp)
- Maximum haulage pull 1075 kN (123 tons)
- Fully removable, rehandable, modular gearbox
- Removable modular top drive wheel assembly (cartridge)
- Downdrive ratio 22T – 27T – 31T – 11T (three wheel configuration)
- Trapping shoe with replaceable wear inserts, safe and easy to replace (unique to Caterpillar)
- Suitable for all current rack type systems

## Powerpack – PP3

- Fixed displacement pump, with a capacity of 200 L/min (53 gal/min)
- Operating system pressure of 210 bar (3,046 psi)
- Robust hydraulic reservoir of 300 L (79 gal) capacity
- Integral monitoring transducers
- For use with ISO 68 or ISO 100 hydraulic oils
- Available with 6 or 8 section valve bank (dependent on function requirement)
- Available with two speed ranging arm facility
- This unit has a pump motor rating of 75 kW @ 50 Hz (120 hp @ 60 Hz)

## Mainframe – MF4

- 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
- Improved access for maintenance and ease of overhaul and repair
- Versatility of application due to fully modular construction
- Split mainframe, in case of transportation limitations

## Hydraulically Activated Top Guards

- This shearer can be equipped with hydraulically activated top guards

## Electrical Control Box – ECB3

- This flameproof module contains the majority of the shearer electrical control and power distribution components.
- High current carrying capacity of 500 amps and can accommodate trailing cables up to 240 mm<sup>2</sup> (9.45 in<sup>2</sup>).
- All internal chassis can be 'bench built,' tested and stored.
- Box contains various LV circuit breakers which can be reset through the FLP cover, reducing downtime.
- An extremely powerful PMC Evo-S control system with state-of-the-art Ethernet communication and backup functionality, this allows the shearer to be operated even if the overall control system is not functioning.
- This unit also contains cutter motor contactors, circuit breakers, control transformer, current monitoring, HV fuses, earth leakage and both visible disconnects.

## Haulage Transformer Box – HTB3

- This flameproof module contains the main 350 kVA haulage transformer, power supplies, auxiliary transformer, drive system circuit breaker and two 200 kW (268 hp), 600V AC inverter drives, with regenerative braking module.

## 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 to EN ISO 1402.
- The hoses are assembled to Hose Assembly Standard DIN20066:201-10.
- All hose and hosing is in compliance with guideline MDG 41 and MSHA regulations.

## Water Material

- All hose assemblies are to ISO 6805 and proof tested to EN ISO 1402.
- The hoses are assembled to Hose Assembly Standard DIN20066:201-10.
- All hose and hosing is in compliance with guideline MDG 41 and MSHA regulations.
- This model of shearer is available with onboard filtration, dust suppression spray bars, shearer clearers and ranging arm spray rings.

## Health Monitoring

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

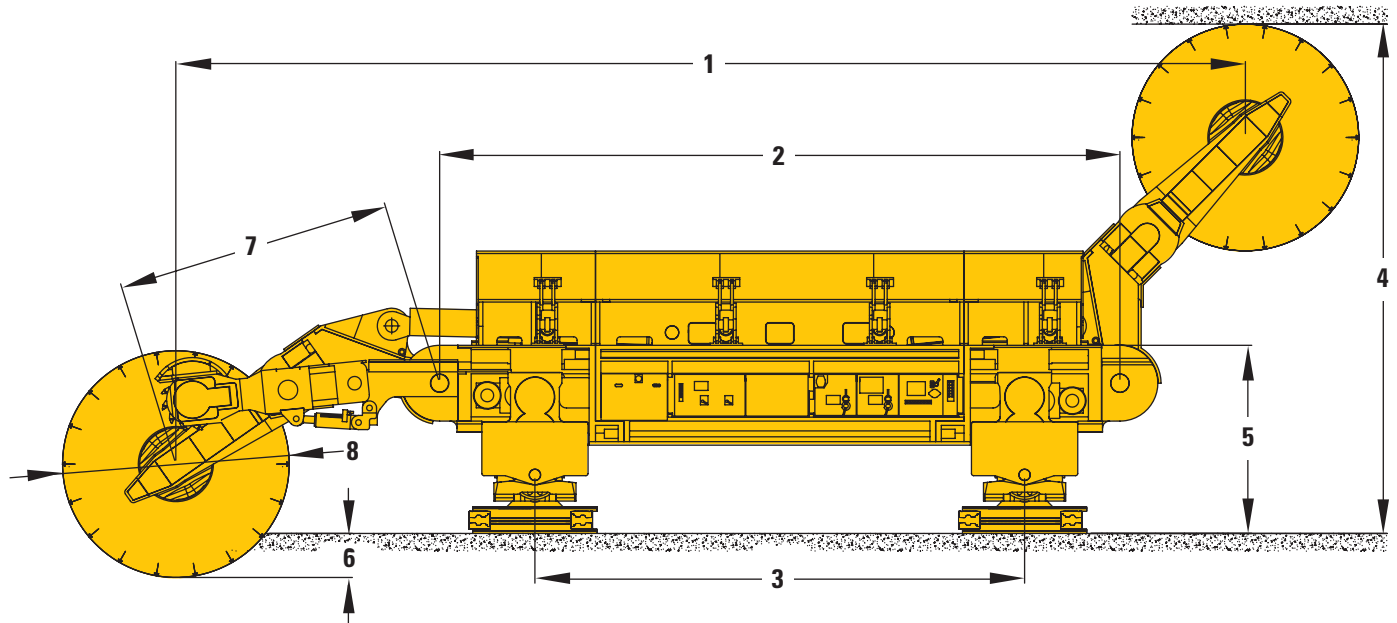
## Machine Automation and Communication

Industry-leading Automation from the Pioneer of State-based Automation.

- This shearer has a state-of-the-art distributed automation system for the control, monitoring and protection of the shearer. Its modular design allows it to be configured to meet individual control needs, from basic monitoring and protection to advanced automation and data transmission.
- The PMC Evo-S control system with state-of-the-art Ethernet communication and backup functionality allows the shearer to be operated even if the overall control system is not functioning.
- The shearer is equipped with a state-of-the-art industry PC in a flame-proof housing with plenty of computing power, allowing flexibility to upgrade to future features such as condition monitoring.
- A Programmable Logic Controller (PLC) takes care of basic machine control tasks, ensuring that coal is produced.
- Unlike competitor systems, the modularity of the longwall system and control allow the longwall to operate in "fault-tolerant" mode, even when there is a problem with the overall automation system.
- In other words, integrated automation does not prevent control via individual PLC's in order to keep production up and running.
- Levels of automation:
  - Zone-based automation "Navigator 1"
  - State-based shearer automation "Navigator 2"
  - Integrated longwall automation with "Navigator 2 + 3"
  - "Longwall Navigator" for improved face alignment and horizon control

## Optional Machine Mounted Coalsizer – CS200

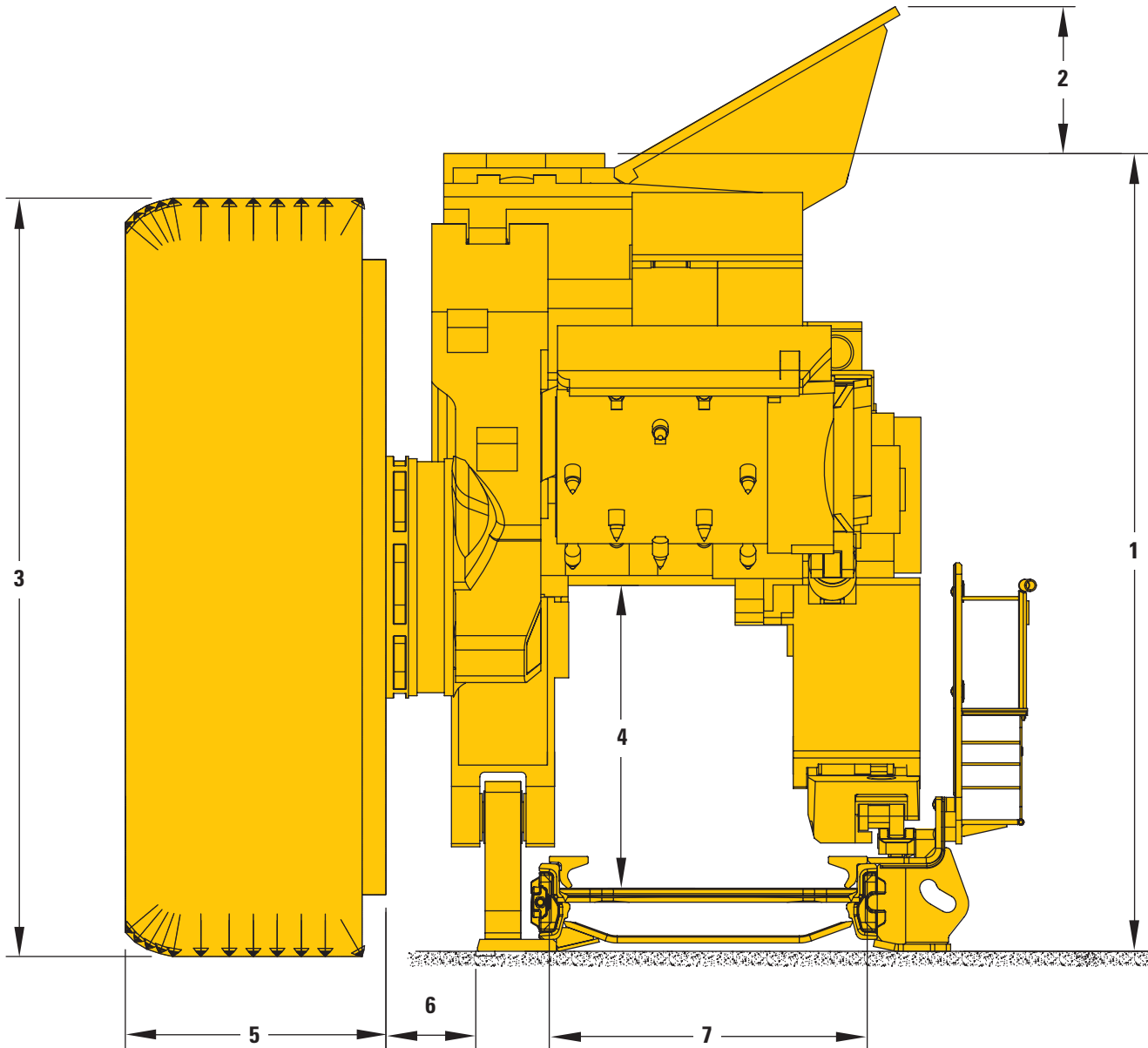
- Transmission rating of 200 kW @ 50 Hz (320 hp @ 60 Hz)
- Quillshaft transmission protection
- Drum speed of 200 rpm (240 @ 60 Hz)
- Drum diameter 900 mm (35.5 in) over picks
- Integral water cooling for transmission and motor
- Square drum hub drive for drum
- Complete with anti-shock lift mechanism (unique to Caterpillar)
- Available motor rating 200 kW @ 50 Hz (320 hp @ 60 Hz)



### Dimensions (All dimensions are approximate.)

<b>1</b> Distance between Drums with Arms Horizontal	17 008 mm	670 in
<b>2</b> Distance between Ranging Arm Hinge Points	9600 mm	378 in
<b>3</b> Distance between Trapping Shoe Centers	6910 mm	272 in
<b>4</b> Maximum Cutting Height for Seam	7188 mm	283 in
<b>5</b> Height to Top of Machine Main Body	2656 mm	105 in
<b>6</b> Shearer Drum Undercut of Floor	621 mm	24 in
<b>7</b> Ranging Arm Length (hinge to drum)	3893 mm	153 in
<b>8</b> Diameter of Shearer Cutting Drum	3200 mm	126 in

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## Dimensions (All dimensions are approximate.)

1 Machine Height over Main Body	3366 mm	133 in
2 Top Guard Height over Main Body	620 mm	24 in
3 Ranging Arm Cutting Drum Diameter	3200 mm	126 in
4 Vertical Tunnel Clearance	1277 mm	50 in
5 Cutting Drum Overall Width	1100 mm	43 in
6 Clearance from Drum to AFC Toeplate	380 mm	15 in
7 AFC Pan Width	1342 mm	53 in

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