

HYDRAULIC EXCAVATOR

BE220G



CUMMINS-6BTAA5.9 Engine

Direct-Injection system for high fuel efficiency and clear exhaust with minimum specific fuel consumption.



Power Shift Drive:

For smooth power shifting and make instant speed and directions changes by a single lever.



Effort free operation

Work equipment controls are simple and light touch due to the hydraulically assisted control system.



Gross power : 148 hp @2000rpm

Bucket Capacity : 0.44 - 1.26 m³

Operating Mass : 22,800 Kg

1 Salient Features

EFFICIENT HYDRAULIC SYSTEM:

- Positive Control main pump hydraulic system with advanced optimum hydraulic control system assures easy & smooth independent and simultaneous compound functions.
- The horse power summation feature makes full use of engine output power for maximum productivity with faster cycle time.
- The positive control pump, tandem parallel circuit featuring boom and arm regeneration functions and advanced control valve with load sensing feature reduces the hydraulic loss during idling and increases oil flow in direct proportion to joystick movement for precise control.
- Optimized and bigger spool gallery achieves higher productivity and reduced fuel consumption.
- Intelligent flow distribution, full priority functions with lesser pressure drops due to optimized spool design.
- State of the Art electronic system enables
 - Hydraulic system more flexible in parameterization
 - Full priority to individual function
 - Faster response
 - Better controllability and increased comfort
- HMI provides increased comfort with soft and gentle touch

POWERFUL ECONOMIC ENGINE:

- CUMMINS diesel engine 6BTAA5.9 delivers Gross Power 110 kW (148hp) @ 2000 RPM.
- A direct injection system ensures reduced fuel consumption and assures high operational economy.
- The turbo charger allows engine to attain high performance even on high altitude job sites.

EFFORT FREE OPERATION:

- Work equipment controls are simple and light touch due to the hydraulically assisted control system.

MAXIMUM WORKING PERFORMANCE:

- Reinforced & Robust design of work attachment with casting design.
- 2 mode selection switch provided in the operator cabin can be used for high excavation efficiency.
- "S" Mode for standard working condition & better fuel efficiency and
- "H" Mode for heavy duty application.

EASY MAINTENANCE:

- Centralized monitoring system within the operator's cab allows fast daily checks and also keeps the operator constantly informed of any abnormality during operation.

OPERATOR COMFORT:

- Specially designed cab provides plenty of work space and excellent visibility.

2 Power Line

ENGINE

Make/Model	: CUMMINS-6BTAA5.9
Type	: 6 Cylinder, 5.9L, Liquid Cooled Diesel Engine with Turbocharged & CAC.
Bore X Stroke	: \varnothing 102 x 120 mm
Total Displacement	: 5.88 litre
Gross Horse Power	: 148 HP @ 2000 RPM
Torque	: 626 N-m @ 1300 RPM

Electrical

Alternator	: 24 V, 100 Amps
Starting motor	: 24 V, 4.5 kW
Battery	: 2 x 12 V, 150 Ah

FINAL DRIVE

Drive Type	: Hydrostatic drive with planetary reduction with inbuilt counter balance valve & relief valve for smooth operation
Max. Drawbar pull	: 158kN (16,145 kg).
Travel speed	: 5.7 / 3.3 (High / Low) (Km/Hr)
Parking Brake	: Multi wet disc.
Gradeability	: 35°

3 Hydraulic System

HYDRAULICS

Positive control hydraulic system with closed center featuring boom & arm regeneration with summation and two mode selection for optimum utilisation of hydraulic power.

Hydraulic Pump

- Variable axial piston double pump with positive displacement and power summation controls.
- One common suction port
- Compact design for limited installation space
- High efficiency
- High power density due to increased pressure level
- Low noise level

Main Pump	: Variable displacement axial piston pump
Maximum flow	: 480 ℓ /min @ 2200 rpm
Pilot pump	: 1 No. Auxiliary pump

Hydraulic Motors

Travel	: 2 No.s Axial piston motor
Swing	: 1 No. Axial piston motor

Relief valve settings

Implement circuits	: 31.4 MPa (320 kg/cm ²)	(Boom, arm & bucket)
Swing circuits	: 29.13 MPa (297 kg/cm ²)	
Travel circuits	: 31.4 MPa (320 kg/cm ²)	
Pilot circuits	: 2.94 - 3.53 MPa (30 - 36 kg/cm ²)	

Control valves

- Electronically controlled Smart mode operation to prioritise digging operations.
- Closed centre design for elimination of hydraulic bleed off losses
- High flexibility due to sandwich design
- Intelligent flow distribution (e-Valve) for individualization of MCV functions
- Full priority for auxiliaries possible
- Optimized & bigger spool gallery with lowest pressure drops.

Hydraulic Cylinders

Type	: Double acting piston type	
Cylinders	No.	Bore x Stroke
Boom	2	\varnothing 130 x 1234 mm
Arm	1	\varnothing 140 x 1628 mm
Bucket	1	\varnothing 130 x 989 mm

COOLANT AND LUBRICANT CAPACITY (REFILL)

Systems (Refilling)	Capacity (Liters)
Fuel tank	400.0
Radiator	25.0
Engine Oil	22.0
Final drive each side	5.0
Swing drive	6.0
Hydraulic tank	160.0

FILTRATION

Engine	: Two stage fuel filter with water separator
Air-intake	: Dry type, two stage air cleaner with dust evacuator
Hydraulic	: One suction strainer, one return line filter and one pilot filter.

4 Drive

STEERING

Steering Control	: Either hand levers or foot pedals
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GAUGES & INDICATORS

LCD Gauge / Sight Gauge	: Fuel gauge, water temperature gauge, engine oil pressure gauge, engine rpm, Hour meter, Hydraulic oil level and temperature gauge.
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Indicators & alarms	: Hydraulic Oil Level, Engine Oil Level, Battery Charge (indicator), Radiator, Water Level, Engine Oil Pressure, Water Temperature
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■ ELECTRONIC SYSTEM (ECU)

- High performance ECU with 32-bit Tri Core processor with 80 MHz frequency
- Robust and compact design
- High Electromagnetic Compatibility (EMC)
- Inputs and outputs with fault detection
- Pulse-Width-Modulated (PWM) solenoid currents for minimum hysteresis
- Closed-loop control of solenoid currents
- Shock resistance 30g & protection class IP65, IP66

5 Excavator Attachment

■ WORKING RANGE (FIG A)

Arm Length	3.0m	2.0m	2.2m	2.5m	3.5m
A max. digging height (m)	9.18	8.90	8.93	8.97	9.44
B max. dumping height (m)	6.36	6.10	6.13	6.20	6.61
C max. digging depth (m)	6.70	5.67	5.88	6.17	7.16
D max. vertical wall depth (m)	5.76	4.61	5.74	4.97	6.20
E max. Digging depth of cut for 2440 mm level bottom (m)	6.57	5.43	5.67	5.96	7.01
F max. digging reach at ground level (m)	10.00	9.09	9.27	9.51	10.46
G max. digging reach (m)	10.18	9.29	9.45	9.70	10.63
Bucket Digging force kN (kg)	125 (12700)	125 (12700)	126 (12820)	125 (12700)	125 (12700)
Arm crowd force kN (kg)	100 (10200)	147 (14990)	136 (13905)	120 (12270)	91 (9280)

■ SWING SYSTEM

- Swing lock : Hydraulic disc brake type
- Swing reduction : Spur & Planetary reduction
- Swing speed : 13 rpm
- Tail swing radius : 2845 mm

6 Features

■ STANDARD EQUIPMENT

Dry type air cleaner, 600/610 mm track shoe, Fully hydrostatic drive, Radiator & oil cooler, Rear view mirror, All weather steel cab, (with safety glass windows, lockable door, window wiper, room lamp & adjustable seat), Suction fan, Front light, PPC hydraulic control, Hydraulic track adjuster, Tool kit, Counter weight, Portable fire extinguisher, Electronic monitoring system, Electric horn

7 Dimensions (mm)

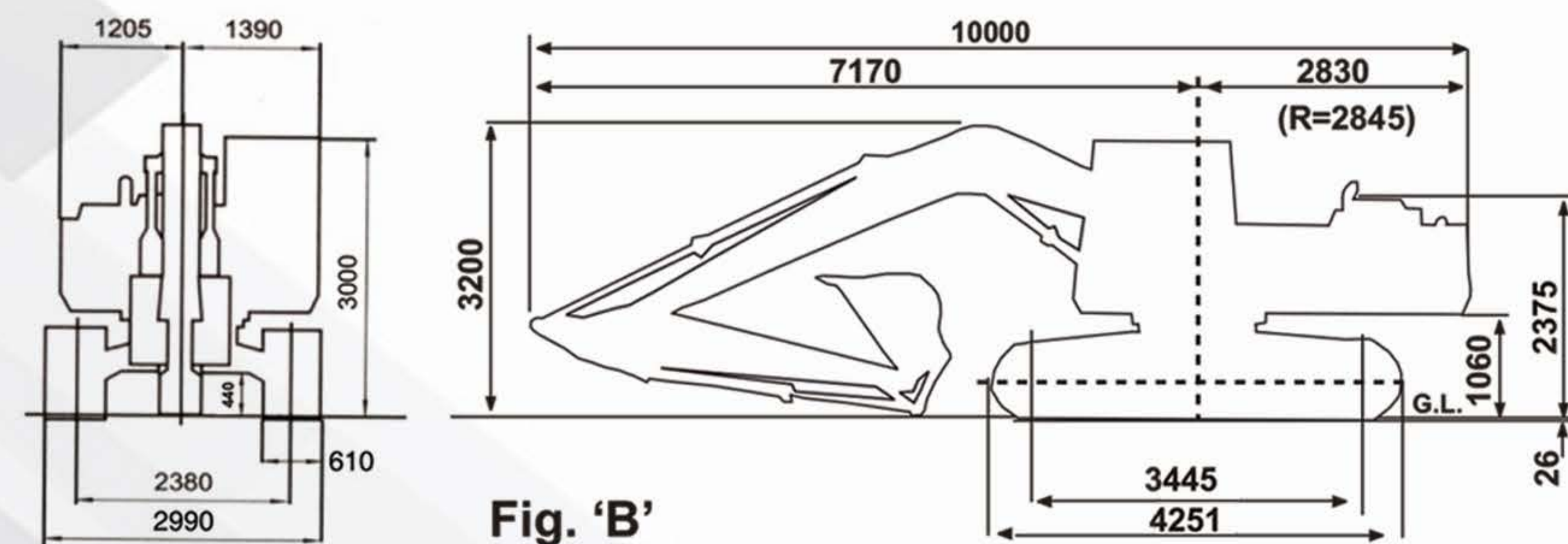


Fig. 'B'

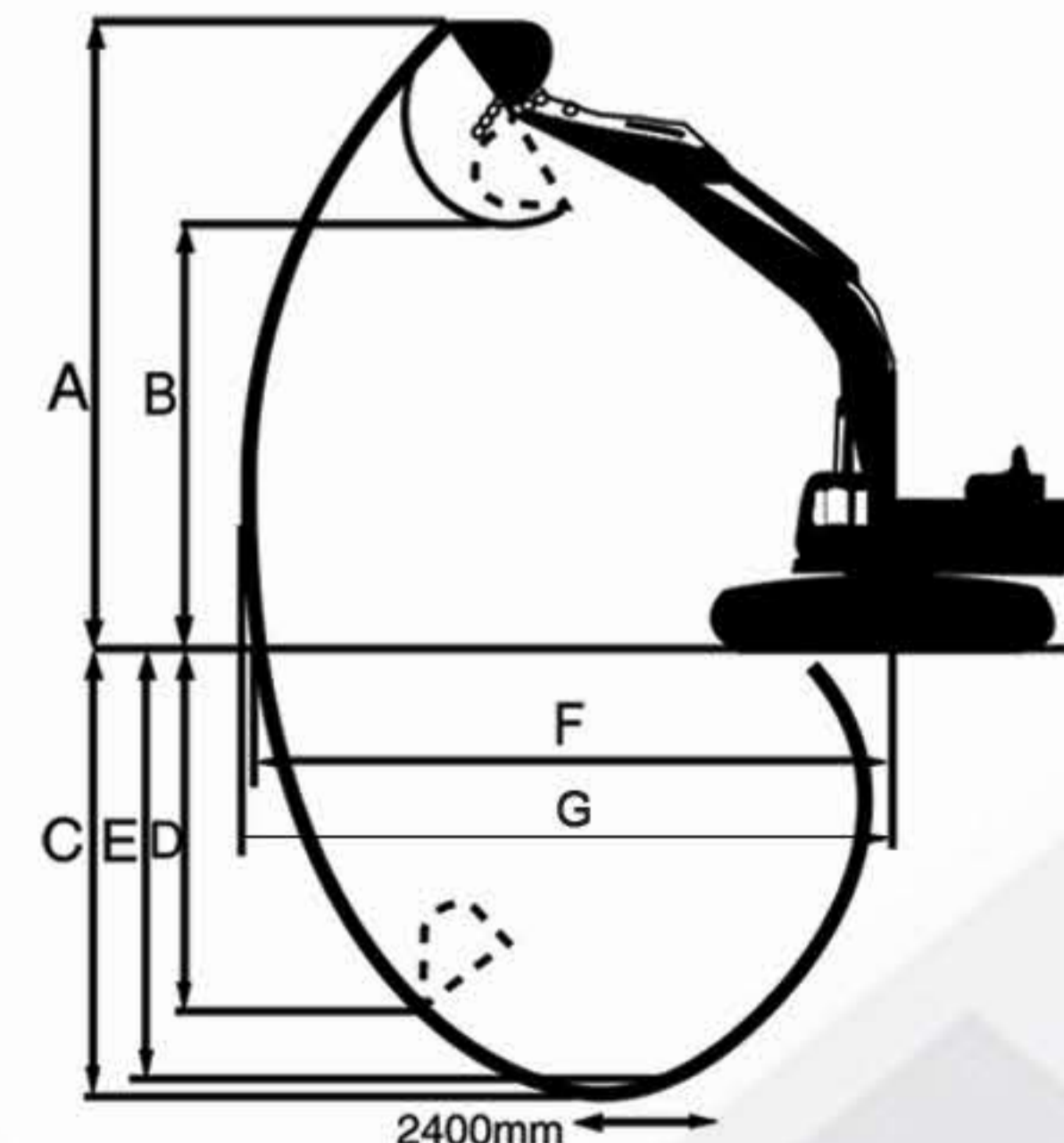


Fig. 'A'

8 Hydraulic Excavator Range

BE75

BE220G

BE300LC

BE700

BE1000-1

BE1000E-1

BE1800D

BE1800E



■ OPERATING MASS

Operating Mass : 22,800 kg
(including 5.85 m boom, 2.5 m arm, 1.0 m³ SAE heaped backhoe bucket, coolant, full fuel tank, Hydraulic tank & operator)

■ BRAKES

Brake : Spring applied and hydraulically released oil disc brakes. Travel motors are equipped with counter balance valve which regulates speed when making descents.

■ BACKHOE BUCKETS

BACKHOE BUCKETS	Narrow bucket	Standard bucket	Light duty bucket
Bucket Capacity m³			
SAE heaped	0.44	0.72	1.00
Struck	0.36	0.55	0.75
Bucket width mm			
Without side cutters	600	900	1085
With side cutters	705	1005	1190
Bucket Mass Kg (with teeth)			
Without side cutters	609	810	776
With side cutters	643	844	810
No. of bucket teeth	3	3	4

■ UNDER CARRIAGE

- Track frame : H bar type centre frame is integrally welded with reinforced box-section track frame
- Shoe width : 610 mm
- No. of shoes : 47 each side
- No. of carrier rollers : 2 each Side
- No. of track rollers : 8 each side
- Ground Pressure : 48 kPa (0.49 kg/cm²)

■ OPTIONAL ATTACHMENTS/ACCESSORIES/BUCKET

- Windshield washer - Front windshield protective guard - FOPS - Cabin heater - Air conditioner - High rise cabin - Single shank ripper - Three shank ripper - Hydraulic rock breaker
- Track shoes (500 mm, 710 mm & 810 mm)
- Long arm (3.045 m) - Extra long arm (3.5 m)
- Short arm (2.0 m & 2.2 m)
- Super long front (for 12.2 m & 18.3 m reach)
- Trapezoidal bucket (0.5 m³) - Slope finishing bucket (0.35 m³)
- Ripper bucket (0.56 m³) - Clamshell bucket (0.6 m³ & 1.2 m³)
- Super long front bucket (0.64 m³ & 0.44 m³)
- Light duty bucket (1.14 m³ & 1.26 m³)

बी ई एम एल लिमिटेड BEML LIMITED

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