

BE1000-1

HYDRAULIC EXCAVATOR



- Efficient Hydraulic System
- Closed loop swing system
- Aesthetically improved cabin
- Optimized service & Maintainability index
- Powerful, Economical Engine (Electronically Governed)
- Effort-free operation
- Maximum Working Performance
- High Total Reliability and Durability
- Easy Maintenance
- Operator Comfort

BACKHOE

Flywheel Horsepower : 404 kW (542 hp) @ 1700 rpm

Operating mass : 95000 kg

Bucket capacity : 3.1 m³ - 5.55 m³

LOADING SHOVEL

Flywheel Horsepower : 404 kW (542 hp) @ 1700 rpm

Operating mass : 98000 kg

Bucket capacity : 4.5 m³ - 7.0 m³



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HYDRAULIC EXCAVATOR



ENGINE

BEML BSA6D170EG, 4 cycle, water cooled, overhead valve, direct injection, turbocharged, diesel engine with after cooler. Six cylinders of 170 mm bore x 170 mm stroke and 23.15 l piston displacement.

Flywheel horse power : 404 kW (542 hp) @ 1700 rpm. All speed electronically governed/controlled. Gear pump driven forced lubrication with full flow filter. Dry type air cleaner with an automatic dust evacuator for longer element service intervals and a dust indicator for simplified maintenance. 24 Volt electrical starting system.



HYDRAULIC SYSTEM

Unique three-pump system and independent closed loop swing function assure smooth compound movements of the work equipment. The hydraulic system is proportional positive flow control system for implement circuit and closed loop swing system for swing circuit with electronic load limiting control for all three pumps for efficient use of engine power. This system also reduces hydraulic loss during operation, resulting in lower fuel consumption. Oil to air hydraulic oil cooler maintains optimum heat balance of hydraulic oil.

Hydraulic pumps

- Two variable-capacity tandem pumps power the boom, arm, bucket and travel circuits.
Capacity (discharge flow) at rated r/min - 2x628 l/min
- One variable-capacity piston pump powers the swing closed loop circuit.
Capacity (discharge flow) at rated r/min - 1 x 405 l/min
- Tandem gear pump powers the pilot + PTO lub circuit.
Capacity (discharge flow) at rated rpm - 1 x (49+24.5) l/min

Hydraulic Motors :

Travel : Four variable displacement axial piston motors with built-in counter balance valve for overrun protection and an externally fitted mechanical parking brake of spring applied and hydraulically released wet multiple disc type for braking. (Two for each track)

Swing : Two fixed displacement axial piston motors with flushing valves for closed loop swing system and an externally fitted swing holding brake of spring applied and hydraulically released wet multiple disc type.

Control Valves : High flow capacity eight spool type two numbers for minimum pressure drop for rated flow.

Relief valve settings

Implement circuits	: 31.39 MPa (320 kg/cm ²)
Travel circuits	: 31.39 MPa (320 kg/cm ²)
Swing circuits	: 29.43 MPa (300 kg/cm ²)
Pilot circuits	: 3.43 MPa (35 kg/cm ²)

Hydraulic cylinders : (backhoe)

Cylinder	Numbers	Bore x Stroke (in mm)
Boom	2	225 x 2200
Arm	1	250 x 2015
Bucket	1	225 x 1630

Hydraulic cylinders : (Loading shovel)

Cylinder	Numbers	Bore x stroke (in mm)
Boom	2	225 x 1805
Arm	2	180 x 1765
Bucket	2	200 x 1530
Bottom dump	2	140 x 435

Salient Features :

Efficient Hydraulic System for increased Productivity :

Three pump hydraulic system with independent closed loop swing function not only assures smooth compound work equipment movements and travel but also shortens the cycle time.

Powerful economical engine :

BEML diesel engine delivers 404 kW (542 fhp). A direct injection system for 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 :

Wide working range and large undercarriage assures stable operation for maximum working performance.

Easy maintenance :

Centralised 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.

Minimum downtime :

Automatic lubrication system supplies optimum amount of grease to vital hinge pins and swing circle bearings reducing failures and downtime.

Safety :

Automatic fire detection and suppression system prevents fire accidents and hence minimizes loss of valuable resources.



STANDARD EQUIPMENT

- 2 x 24 V/7.5 kW starting motor
- 24 V/100 A alternator
- 2 x 12 V / 200 Ah batteries
- Air cleaner
- Dust indicator
- Two modes selection with electronic load limiting control
- Track roller guards
- Wet disc parking brake
- Vandalism Protection
- Reclining seat
- Magazine box
- Ash tray
- Rubber mat
- Rear view mirror
- Cabin fan
- wind shield wiper
- Portable fire extinguisher and Cabin lamp
- Counter weight
- Centrallised lubrication system
- Swing holding brake
- Tool box

OPTIONAL ACCESSORIES

- Low mount steel cab
- Heater
- Air conditioner
- Seat belt
- Falling object protective
- Track shoe - 810 mm and 1010 mm
- Front Wind shield guard
- Automatic lubrication system
- Automatic fire supression system
- Wind shield washer

STEERING

Type: Steering / travel controls are actuated with either hand levers or foot pedals. Pushing both levers (or pedals) makes the machine to move forward. Pulling them back makes the machine to move backward. Steering one lever (or pedal) in neutral and the other in forward enables the machine to make a pivot turn. Pushing one lever forward while pulling the other backward makes the machine counter-rotate on the spot.

DRIVES

Type Fully hydrostatic drive system is with two speeds. Each track is driven by two hydraulic motors. Power is transmitted through spur gears and planetary reduction gears to the track.

Max. Drawbar pull	: 608 kN (62,000 kgf)
Max. travel speeds	
High	: 0.94 m/sec (3.4 km/h)
Low	: 0.67 m/sec (2.4 km/h)

BRAKES

Hydraulic lock type brakes. Each travel motor is equipped with an externally fitted brake of spring applied and hydraulically released wet disc type. When the travel/steering levers are positioned in neutral, the brake is automatically applied. When the brake are applied, the hydrostatic braking softens shocks and also serves to regulate speeds when making descent. Wet, multiple disc type parking brakes which are hydraulically interconnected with travel/steering lever are also automatically actuated on the final-drive shaft.

SWING SYSTEM

Two fixed displacement piston motors power the closed loop swing system through two swing machineries with spur and planetary reduction gears. An externally fitted wet multiple disc type swing holding brake in the swing motor is automatically applied after 3.5-4.0 sec. when the control lever is positioned in neutral, with swing in Auto mode and always release in release mode and applied always when parking brake switch is in ON position. Single-row shear type ball bearings with induction hardened internal gears are built-in in the swing circle.

Swing speed	4.5 r/min
Tail Swing radius	4650 mm

UNDER CARRIAGE

Job proven undercarriage with long track and wide track gauge. Centre frame is mounted on the track frames and secured with bolts. Sealed and lubricated rollers and idlers. Hydraulic track tension adjusters with cushion cylinders, assembled track-type shoes with double grousers

Shoe width	: 710 mm
Grouser height	: 20 mm
No. of shoes (each side)	: 51
No. of track rollers (each side)	: 8
No. of carrier rollers (each side)	: 3
Ground pressure (Backhoe)	: 120.00 kPa (1.22 kg/cm ²)
Ground pressure (Loading shovel)	: 123/56 kPa (1.26 kg/cm ²)

OPERATING MASS (approx.)

Loading Shovel : 98,000 kg.
Operating mass including 5100 mm boom, 3800 mm arm, 6.1 m³ standard bucket, operator, lubricant, coolant, full fuel tank and the standard accessories.

Backhoe : 95,000 kg.
Operating mass including 7900 mm boom, 3415 mm Arm, 5.0m³ standard bucket operator, operator, lubricant, coolant, full fuel tank and the standard accessories

WORKING RANGE

EXCAVATOR	Loading Shovel (Figure 1)		Backhoe (Figure 2)			
	Boom	5.1m	7.9m Short	9.25m Std.		
	Arm	3.8m	3.4m Std.	3.4m Std.	4.6m	5.7m Long
	Bucket	6.1m ³	5.0 m ³			
A. Max. cutting / digging height (m)	12.170	12.7	13.4	13.1	13.80	
B. Max. dumping height (m)	8.780	8.4	9.1	9.0	9.5	
C. Max. digging depth (m)	3.910	7.9	9.3	10.4	11.5	
D. Level crowding distance (m) / Max. vertical digging depth	4.720	6.2	7.4	7.6	9.2	
E. Max. digging reach at G.L. (m)	10.950	13.5	15.0	15.9	17.00	
F. Max. digging depth reach (m)	11.380	13.9	15.3	16.2	17.30	
G. Min. reach on ground cut at 2.4(m) /Max. digging depth of cut at 2.44 m level	6.125	7.8	9.16	10.3	11.40	
H. Reach at max. dumping height / I.Max. bucket throat opening	6.350 / 1.815					
Bucket digging force (kg)	58,500	37,000	37,000	37000	30500	
Arm crowding force (kg)	56,000	34,000	34,000	29000	24500	

Material and specifications are subject to change without notice, Illustrations may include optional equipment & accessories

SERVICE REFILL CAPACITY

Fuel tank	:1140 ℓ	Swing drive (each side)	:13 ℓ
Coolant	:158 ℓ	Hydraulic Tank	:650 ℓ
Engine	:51 ℓ	Pump Drive (P.T.O.)	:15 ℓ
Final Drive (each side)	:55 ℓ	Total Hydraulic System	:1200 ℓ

INDICATORS / ALARMS

Radiator coolant level	Engine oil level
Hydraulic oil level	Engine cooling water temperature
Engine pre-heating	Hydraulic oil Filter clogging

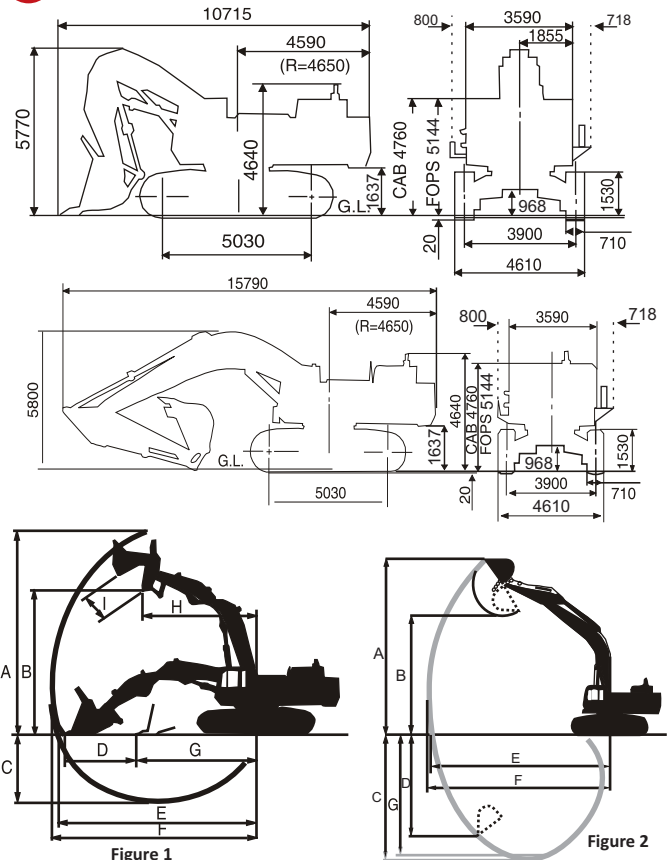
GAUGES & METERS

Fuel level gauge	Engine oil pressure gauge
Engine cooling water temperature	
Hydraulic oil level & temperature gauge, Service Meter	

FILTER SYSTEMS

Engine : Two stage fuel filter with water separator.
Air intake : Dry type, two stage air cleaner with dust evacuator.
Hydraulic : One suction filter, four pressure line filters, four main, return line filters, one for motors drain filter, one filter for pilot system, one for closed loop swing and one for PTO lubrication system.

DIMENSIONS



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