

BE1600

HYDRAULIC EXCAVATOR



Salient Features :

- Efficient Hydraulic System
- Closed Loop Swing System
- Aesthetically Improved Cabin
- Optimized Service & Maintainability Index
- Powerful, Economical Engine
- Effort-Free operation
- Maximum Working Performance
- High Total Reliability and Durability
- Easy Maintenance
- Operator Comfort

BACKHOE

Flywheel Horsepower : 2 x 302 kW (2 x 404 HP) @ 1800 r/min

Operating mass : 160000 kg

Bucket capacity : 8.5m³ - 11.2 m³

LOADING SHOVEL

Flywheel Horsepower : 2 x 302 kw (2 x 404 HP) @ 1800 r/min

Operating mass : 162000 kg

Bucket capacity : 8.0 m³ - 13.0 m³



BE1600

HYDRAULIC EXCAVATOR

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 : Two BEML diesel engines deliver 2 x 302 kW (2 x 404 hp). 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 assure stable operation for maximum working performance.

Easy maintenance : Centralised monitoring systems 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.

Easy maintenance : Centralised monitoring systems within the operator's cab allows fast daily checks and also keeps the operator constantly informed of any abnormality during operation.

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.



ENGINE

BEML BSA6D140, 4 cycle, water cooled, overhead-valve, direct injection, turbocharged, diesel engine with water cooler. Six cylinders of 140 mm bore x 165 mm stroke and 15.24 l piston displacement. Mechanical all-speed control governor.

Flywheel horse power : 2 x 302 kW (2 x 404 hp) @ 1800 rpm
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. Positive control Load Sensing System 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 low fuel consumption. Oil-to-air hydraulic oil cooler maintains optimum heat balance of the hydraulic oil.

Hydraulic pumps

Four variable-capacity piston pumps power the boom, arm, bucket and travel circuits.

Capacity (discharge flow) at engine rated rpm - 4x410 l/min.

Two variable-capacity piston pump powers the swing circuit.

Capacity (discharge flow) at engine rated rpm - 2 x 358 l/min.

Tandem gear pump powers the pilot control circuit and PTO lubrication

Capacity at engine rated rpm : 2x(50+25) l/min

Hydraulic Motors :

Travel - Four, Variable displacement axial piston motors with brake external valve (two for each track).

Swing - Two fixed displacement piston motors with external swing holding brake.

Control Valves :

6/3 way eight spool type x 2

Relief Valve Settings

Implement circuits 31.4 MPa (320 kg/cm²)

Travel circuits 31.4 MPa (320 kg/cm²)

Swing circuits 30 MPa (300 kg/cm²)

Pilot circuits 3.43 MPa (35 kg/cm²)

Hydraulic cylinders : (Backhoe)

Cylinder	Numbers	Bore x stroke (in mm)
Boom	2	280 x 2660
Arm	2	250 x 2180
Bucket	2	200 x 2170

Hydraulic cylinders : (Loading shovel)

Cylinder	Numbers	Bore x stroke (in mm)
Boom	2	280 x 2110
Arm	2	225 x 1830
Bucket	2	225 x 1870
Bottom dump	2	180 x 460

STEERING

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

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, Fully hydrostatic drive, Track roller guards, Travel motor guards, Wet disc type parking brake, Swing holding brake, Hydraulic idler cushion (HIC), Vandalism cap, Segmented sprocket, Tool box, Electronic monitoring panel. All steel High mount cab includes tinted glass windows, reclining seat, magazine box, ash tray, rubber mat, rear view mirror, cabin fan, wind shield wiper, portable fire extinguisher and room lamp. Counter weight, Air horn, Automatic lubrication system, Air assisted greasing system.

OPTIONAL ACCESSORIES

Heater
Falling Object Protective Structure (FOPS)
Wind shield washer.

Air conditioner
Track shoe (1010 mm)
Front wind shield guard



DRIVES

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

Max. drawbar pull : 1030 kN (105000 kg)
Max. travel speed : 0.75 m/s (2.7 km/h)



BRAKES

Hydraulic lock type brakes. Each travel motor is equipped with a brake valve. When the travel / steering levers are positioned in neutral, the brake is automatically applied. When the brakes are applied, the brake valve 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 piston motors power the swing system through swing machineries with spur and planetary reduction gears. The wet disc type swing holding brake is automatically applied when the control lever is positioned in neutral. 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 : 5980 mm



UNDER CARRIAGE

Job-proven undercarriage with long track and wide track gauge. Center frame is mounted on the track frames and secured with bolts. Variable track gauge. Sealed tracks. Lubricated rollers and idlers. Hydraulic track tension adjusters with a cushion cylinder. Assembled track-type tractor shoes with double grousers.

Shoe width : 810 mm
Grouser height : 23 mm
No. of shoes (each side) : 49
No. of track rollers (each side) : 8
No. of carrier rollers (each side) : 3
Ground pressure (Backhoe) : 3
Ground pressure (Backhoe) : 152 kPa (1.55 kg/cm²)
Ground pressure (Loading shovel) : 154 kPa (1.57 kg/cm²)



OPERATING MASS (approx.)

Loading Shovel :

Operating mass including 5900 mm boom, 4400 mm arm, 9.5 m³ standard bucket, operator, lubricant, coolant, full fuel tank and the standard accessories..... 162,000 kg.

Backhoe :

Operating mass including 9100 mm boom, 4100 mm arm 10.5 m³ standard bucket, operator, lubricant, coolant, full fuel tank and the standard accessories..... 160,000 kg.



SERVICE REFILL CAPACITY

Fuel tank : 2050 ℓ
Coolant : 2 x 147 ℓ
Engine : 2 x 33.5 ℓ
Final Drive (each side) : 2 x 85.0 ℓ
Swing drive (each side) : 2 x 37.0 ℓ
Hydraulic Tank : 1500 ℓ
Pump Drive : 2 x 20.0 ℓ



BUCKET RANGE

EXCAVATOR Bucket Capacity m ³	LOADING SHOVEL					BACKHOE		
	13.0 10.3	11.0 8.7	9.5 7.5	9.5 7.5	8.0 6.39	8.5 6.7	10.1 7.7	11.2 8.7
Heaped								
Stuck								
Bucket width in mm								
Without side cutters	3,800	3,400	3,000	3,000	2,800	1,995	2,280	2,550
With side cutters						2,155	2,440	2,710
Bucket Mass (kg) with teeth								
Without side cutters	15,300	13,600	13,300	13,900	12,300	6,740	7,950	8,340
With side cutters						7,010	8,220	8,610
No. of bucket teeth	7	7	6	6	6	5	5	5
Bucket type	Light duty coal	Light duty Excavation	General purpose	Heavy duty Excavation	Rock	General purpose	General purpose	General purpose

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



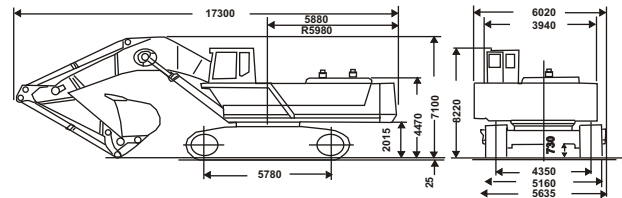
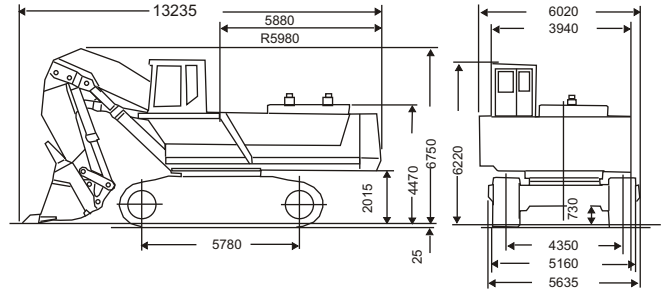
FILTER SYSTEMS

Engine : Two stage fuel filter with water separator.
Air intake : Dry type, two stage air cleaner with dust evacuator
Hydraulic : Two suction filter, 4 pr. line filters and 6 return line filters.



DIMENSIONS (in meters)

	Backhoe	Loading shovel
Overall length	17.300	13.235
Overall width	6.020	6.020
Overall height	7.100	6.750
Track length on ground	5.780	5.780
Track gauge	4.350	4.350
Min. ground clearance	0.730	0.730



WORKING RANGE

	SHOVEL	BACKHOE
EXCAVATOR BOOM	5900	9100
ARM	4400	4100
BUCKET	9.5	5000
A. Max. cutting digging width (m)	14110	13550
B. Max. dumping height (m)	10230	8730
C. Max. digging depth (m)	4050	10000
D. Level crowding distance (m) / Max. vertical digging depth	5220	5630
E. Max. digging reach at G.L. (m)	12500	16040
F. Max. digging reach (m)	13140	16450
G. Max. Bucket throat opening / Max. digging depth of cut at 2.44 m level	1890	9900
H. Reach at max. dumping height	7140	9900
Forces kN(kgf)		
Digging Force (Bucket)	716 (73,000)	571 (58,200)
Digging/Crowding Force (arm)	716 (73,000)	535 (54,500)

बी ई एम एल लिमिटेड BEML LIMITED

A Govt. of India Miniratna Company Under Ministry of Defence

Business Network

Corporate Office

BEML Soudha, 23/1, 4th Main,
S.R. Nagar, Bangalore-560 027

T + 91 80 22963240, 22963250

F + 91 80 22963278/516/280/164

E-mail: office@cpd.beml.co.in
office@pr.beml.co.in

International Business Division

BEML Soudha, 23/1, 4th Main,
S.R. Nagar, Bangalore-560 027

T + 91 80 22222730, 22233350
22963187, 22963215

F + 91 80 22224874

E-mail: office@export.beml.co.in

Marketing Division

5th Floor, Unity Building,
J.C. Road, Bangalore-560 002

T + 91 80 22963501/02/07/510/553

F + 91 80 22963541

E-mail: m@beml.co.in
bemldealer@dealer.beml.co.in

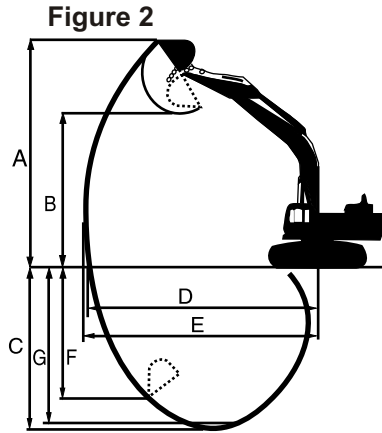
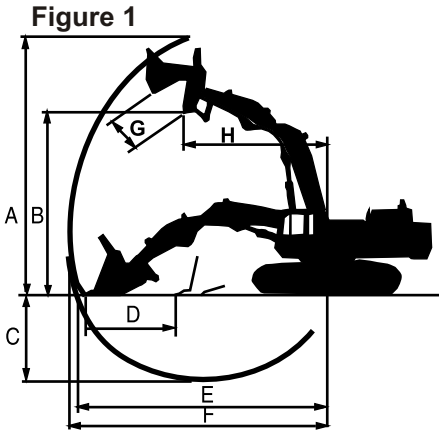
Global Service HQ

C-6, Central Hingna Road,
MIDC Industrial Area, Hingna,
Nagpur-440 028

T + 91 7104 287097/287098

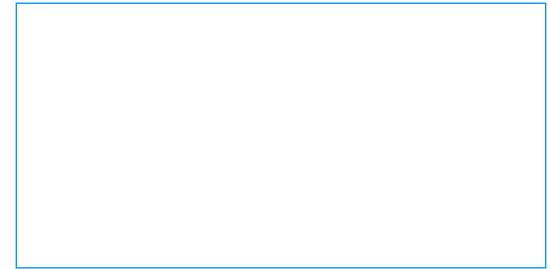
F + 91 7104 287099

E-mail: ss.servicehq@gmail.com
ss@servicehq.beml.co.in



www.bemlindia.com

Represented by :



REGIONAL OFFICES

Bilaspur : 1/A, Sector-C, Sirgitti Industrial Area, P.O: Tifra, Bilaspur - 495 223. Chattisgarh.	T + 91 7752 252745, 252598	F + 91 7752 252065	E-mail: bilaspur@rm.beml.co.in
Chennai : Flat No. 10 & 11, Supriya Estates, Sterling Road, Nungambakkam, Chennai - 600 034, Tamil Nadu	T + 91 44 28276576 / 28220844	F + 91 44 28257319	E-mail: chennai@rm.beml.co.in
Dhanbad : Kamal Kunj, Kola Kusuma, Saraidhela, Dhanbad - 828 127 Jharkhand	T + 91 326 2200180 / 2208982/5827	F + 91 326 2200182	E-mail: dhanbad@rm.beml.co.in
Hyderabad : 3-6-114, Himayat Nagar, Hyderabad - 500 029 Andhra Pradesh	T + 91 40 23225250 / 7032 / 2166	F + 91 40 23221794	E-mail: hyderabad@rm.beml.co.in
Kolkata : 35/1, Taratalla Road, Kolkatta - 700 088. West Bengal	P + 91 33 24015286 / 87 / 98 / 99	T + 91 33 24015288	E-mail: kolkatta@rm.beml.co.in
Mumbai : Rajmahal, 84 Veer Nariman Road, Church Gate, Mumbai - 400 020, Maharashtra	T + 91 22 22042533 / 22049490	F + 91 22 22852633	E-mail: mumbai@rm.beml.co.in
Nagpur : 33,Cement Road, Shivaji Nagar, Nagpur - 440 010, Maharashtra.	T + 91 0712 2248435 / 2248343	F + 91 0712 2249997	E-mail: nagpur@rm.beml.co.in
New Delhi : Flat EFGH, 'Vandana', 11th Floor, Tolstoy Marg, New Delhi - 110 001	T + 91 11 23310035 / 23316500	F + 91 23325085	E-mail: delhi@rm.beml.co.in
Ranchi : 206/D-1, Bhagirathi, (Behind NCC Campus), Rameshwaram Colony, Bariatu Road, Ranchi, Jharkhand - 834009	T + 91 651 2540710 / 2540791	F + 91 651 2540624	E-mail: ranchi@rm.beml.co.in
Sambalpur : BEML Complex,NH-6, Baraipalli, Sambalpur - 768 150 Orissa.	T + 91 663 2521604 / 2520393	F + 91 663 2521603	E-mail: sambalpur@rm.beml.co.in
Singrauli : PB No. 5, Jhingurdha Colliery, Sidhi, Singrauli - 486 889 Madhya Pradesh.	T + 91 7805 268260 / 266668	F + 91 7805 267282/318	E-mail: singrauli@rm.beml.co.in

DISTRICT OFFICES

Ahmedabad : 266-1, Dilbaug Villa, Darshan Society Road, Navrangpura, Ahmedabad - 380 009. Gujarat	T + 91 79 26445523	F + 91 79 26423950	E-mail: ahmedabad@rm.beml.co.in
Asansol : 3, Burnpur Road, Asansol - 713 304 West Bengal	T + 91 341 2252480	F + 91 341 2250601	E-mail: asansol@rm.beml.co.in
Bacheli : Behind Central Stores of NMDC Ltd., Depot 5, Bacheli - 494 553. Chhattisgarh	T + 91 7857 220518	F + 91 7857 230005	E-mail: bacheli@rm.beml.co.in
Bhilai : Room No. 22/C, BSP Building, Near Ispat Bhavan, Bhilai - 490 001 Chhattisgarh.	T + 91 788 2223882, 2894721	F + 91 788 2221652	E-mail: bhilai@rm.beml.co.in
Bhopal : Ground Floor, Hall No.1, Chittod Complex, Zone-1, MP Nagar,Bhopal - 462 023	T + 91 755 2550711		E-mail: bemlbhopal@gmail.com
Bhubaneswar : 252/A, LEWIS Road, Bhubaneswar - 751 014 Orissa	P + 91 674 2434427	T + 91 674 2434428	E-mail: bhuvaneshwar@rm.beml.co.in
Chandrapur : Mamidwar, Tiles Factory Compound, Ghugus Road, Padoli, Chandrapur - 442 406 Maharashtra	T + 91 7172 287230	F + 91 7172 287760	E-mail: chandrapur@rm.beml.co.in
Cochin : No. 55/845, Chittor Road, Ernakulam South, Cochin-682 016	T + 91 484 2375138		E-mail: bemlkochi@gmail.com
Guwahati : Hegrabari Road, House No. 11, Ganesh Puri, Dispur, Guwahati - 781 006 Assam	T + 91 361 2232966	F + 91 361 2232967	E-mail: guwahati@rm.beml.co.in
Hospet : L-8, KSSIDC Industrial Area, Dam Road, Hospet - 583 203 Karnataka	T + 91 8394 223173	F + 91 8394 230172	E-mail: hospet@rm.beml.co.in
Jammu : 62C, Block D/C, Gandhi Nagar, Jammu tawi - 180 004 Jammu and Kashmir	T + 91 191 2430447	F + 91 191 2477469	E-mail: jammu@rm.beml.co.in
Kothagudem : Old Project Planning Department, Near SCCL Corporate Office, Kothagudem - 507 101, Andhra Pradesh	T + 91 8744 245572	F + 91 8744 245530	E-mail: kothagudem@rm.beml.co.in
Madurai : 9-4/49, Kalai Nagar, 2nd Main Road, Madurai - 625 017, Tamil Nadu.	T + 91 452 2649458	F + 91 452 2649458	E-mail: madurai@rm.beml.co.in
Neyveli : F-4, Rajendraprasad Road, Block-27 Neyveli - 607 803. Tamil Nadu	T/F + 91 4142 268517	T/F + 91 4142 268517	E-mail: neyveli@rm.beml.co.in
Goa : 67-12, Dattaprasad Building, III Floor, MG Road, Timphoni School, Panjim - 403 001. Goa	T/F 91 832 2225135		E-mail: goa@rm.beml.co.in
Ramagundam : Opp. SCCL 11A Mines, Manthani, (PO) Jalaram, GK - 505 184 Karimnagar Dt. Andhra Pradesh	T + 91 8728 248299	F + 91 8728 244578	E-mail: ramagundam@rm.beml.co.in
Udaipur : 20-B,Uchhab Bhawan, Bedia Road, Fatehpura, Udaipur - 313 004. Rajasthan	T + 91 294 2452053, 2452055	F + 91 294 2452054	E-mail: udaipur@rm.beml.co.in
Visakhapatnam : No. 8-45-11, 4th lane, China Weltair Colony, Visakhapatnam - 530 003	T/F + 91 0891 2754608		E-mail: vizag@rm.beml.co.in

बी ई एम एल लिमिटेड BEML LIMITED

A Govt. of India Miniratna Company Under Ministry of Defence

Hydraulic Excavators
From BEML:

BE75 | BE200 | BE220 | BE240HD | BE300LC | BE450LC | BE700 | BE700E | BE1000-1 | BE1000E-1 | BE1250 | BE1600 | BE1800E