



**ZOOMLION**

**LB2000**

## **Технические характеристики**

**По вопросам продаж и поддержки обращайтесь:**

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## LB2000 Container Type Asphalt Compound Mixing Equipment

LB2000 Container type asphalt compound mixing equipment (hereinafter referred to as asphalt plant) is Zoomlion LB mixing equipment serialization product. The forced batch-type mixing process and modularization design is adopted. Assembly and transportation are very convenient and efficient. The technology and performance had reached the global advanced level. It could product qualified asphalt compound under any circumstance. It is featured with precise metering, advanced control and environmental protection etc. It's widely used in construction area like high level road, airport, seaport and civil construction.

### I Main technical parameters

Performance parameter	Performance index
Rated mixing capacity (Kg/batch)	2000
Production (t/h)	120~160
Rated mixing period (s)	45
Temperature of the finished source(°C)	130~200
Temperature accuracy(°C)	≤5
Fuel consumption (kg/t source)	≤6.2
Metering accuracy (%) Solid (Static/Dynamic) Power (Static/Dynamic) Asphalt (Static/Dynamic)	≤0.50%/2.0% ≤0.30%/2.0% ≤0.10%/1.0%
Emission thickness(mg/Nm <sup>3</sup> )	≤20
Gas Black (Ringelman Black)	≤ I 级
Operation position noise (dB(A))	≤70
Environmental noise (dB(A))	≤85
Power (kw)	430
Control mode	Manual, half-auto, auto

**Note: mixing capacity, production capacity, mixing period and fuel consumption are all under standard working condition. That is:**

Ambient temperature 20℃, standard atmosphere, average moisture content of 5% among cold solid, diesel, medium-aggregate type common asphalt compound with the hot solid temperature of 160℃.

## **II. Performance features**

Zoomlion Heavy Industry Science & Technology Development Co., Ltd. , formerly known as Ministry of Construction of Changsha Construction Machinery Research Institute, is the drafting unit of national standard such as GB/T17808 Asphalt Compound Mixing Equipment. Our company has profound technical background in the field of mixing equipment, putting the construction demands and customer usage as the first during designing and producing asphalt mixing equipment. The main performance features are as follows:

1. Modularization design ; It could be flexibly formed into several equipments according to the requirements of construction, with logical layout to minimize the floor area..Assembly and transportation are very convenient and efficient.
2. Adopting model analysis and finite element simulation design, using world famous spare parts. The product quality is stable and reliable.
3. Drying roller is equipped with four independent attrition driving wheels; therefore the power train is steady. The roller size is the best matched with burning mechanism, with efficient for heat shifting. Under the same working condition, comparing to the same class product, it could save fuel 0.3~0.5kg/t source.
4. With patented design of burning mechanism, fuel atomization and fuel adaptability are very good. With variable frequency control of air and fuel ratio, adjusting range is broadened and the accuracy is high. High-efficient clean-fuel are of environmental protection and energy-saving.
5. The heat source griddle vibrates at the straight line, with high efficiency and long service life. The vibrator adopts patented oil bath technology, and is free of maintenance and safe and reliable.

6. Metering system adopts some technologies such as variable frequency, flow rate monitoring, fall auto compensation and memory loop of waiting source. Source distribution is classified into two stages of coarse and fine. High-accuracy sensor and weighing module is also mounted to increase efficiency and accuracy.

7. Source temperature control adopts two-stage three-point monitoring and PID fuzzy control for heat source and finished source. The temperature is steady and accuracy.

8. Double horizontal axle mixers are driven by dual-motor, with low filling rate and good mixing. The powder and asphalt forcefully flow into all process along axial direction. The mixing and distribution process is more effective and even. Mixer blade and scale board material are efficient and durable, over 100,000 times usage life.

9. The filtration for the powder has two process way, viz inertia settlement and bag dust clean. Low filtration wind and air pulse reflow design could keep the dust emission thickness less than  $20\text{mg}/\text{Nm}^3$ , reaching Euro emission standard.

10. Site bus control technology; humanized design; dual-machine dual control; each operation completed only by clicking mouse; it has functions like process monitoring, data manage and fault self-diagnosis etc.

### III. Components and Technical parameters

#### 3.1 Cold solid supply system

The five hoppers are basic equipment and each hopper is equipped with feeder conveyor and feeding flow testing equipment. The conveyor adjusts the feeding speed via variable frequency and conveys the matched and different sizes of solid into the drying roller to be heated through aggregate conveyor, cold source sieving machine and inclined conveyor.

✧ Cold solid hopper, 5 sets

Capacity, each hopper:	$12\text{ m}^3$
Width, loading:	3500 mm
Height, loading:	3200 mm

✧ Feeder conveyor, 5 sets

Width, conveyor:	650 mm
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Max. feeding amount, each hopper: 80 t/h

Power, motor: 1.5 kW

✧ Sand silo vibrator, 1 set

Power : 300 W

✧ Aggregate conveyor, 1 set

Width, conveyor: 650 mm

Conveying capacity: 200 t/h

Power, motor: 5.5 kW

✧ Inclined conveyor, 1 set

Width, conveyor: 650 mm

Conveying capacity: 200 t/h

Power, motor: 5.5 kW

✧ Primary cold-source sieving machine, 1 set

Sieving capacity: 220 t/h

Power, vibrator motor: 0.75 kW

### 3.2 Solid drying system

✧ Drying roller, 1set

The drying roller is driven by 4-set independent attrition driving wheel made of special steel plate. The blades of variable shapes at different working zones are suitable for heat exchanger of different solid, saving energy also with high efficiency. The thermal insulation and stainless steel plate are set outside of roller to minimize the heat emission.

Drying capacity: 160t/h

Roller appearance:  $\Phi 2200 \times 8400$  mm

Power, motor: 4 x 11 kW

✧ Burner, 1set

The fuel burner is of patented product, with the amount of wind and fuel controlled via variable frequency. The burner is layout at the axial direction, with compact structure. The air used for burning is absorbed into the burning chamber via rear part, pressurized at middle part. Turbulence formed in the chamber is mixed with atomized fuel, reaching to

optimal mixing ratio. It is of energy-saving and efficiency.

Max. fuel amount, burner:	1200 kg/h
Heating power, burner:	14 MW (calorific value 42000KJ/kg)
Fuel type:	Diesel, heavy oil, residual oil
Adjusting ratio:	1 : 10
Ignition mode:	Electronic ignition, acetylene combustion
Power, blower motor:	15kW
Power, fuel supply pump motor:	2.2 kW
Atomized air consumption:	3000 l/min

✧ Temperature sensor, 1set

It's used for testing hot source temperature, positioned at the outlet of drying roller. Accordingly the burner will automatically adjust ratio of air and fuel.

### 3.3 Sieving mixing system

Modularization design is adopted and bolt connecting type could speed up the installation. The connectors are reserved for SMA additive and equipments for reclaiming used casting sand etc.

✧ Hot aggregate lifter, 1 set

With box structure, the inlet and outlet are equipped with wear-resistance lining plate and inspection access. A lift hopper is made of special wear-resistance steel plate and driven by imported reducer with non-return equipment. It is of dual-chain structure.

Lifting capacity:	180 t/h
Lifting height:	17650 mm
Power, motor:	15 kW

✧ Hot aggregate sieving machine, 1 set

Bias inertia straight-line vibrating sieve is of all closed-box structure, sieving 5 kinds of solid.

Screen layer:	5 layers
Sieving area:	24m <sup>2</sup>
Sieving capacity:	180 t/h
Power, motor:	2 x 11 kW

✧ Hot aggregate silo, 1set

There are 5 pieces of hot aggregate silos. The silo is insulated by rock wool and upholstered with ripper color-steel plate. Each silo is equipped with a continuous level meter, an overflow protection, pipes and Pt100 type temperature probe.

Capacity, silo :40t (solid density  $1.7\text{t/m}^3$ ), including:

Sand silo:	18 t
No.1 silo:	8 t
No.2 silo:	8t
No.3 silo:	8 t
No.4 silo:	8 t

✧ Metering system, 1set

There are 3-set independent weighing system with weighing sensor and hopper. The asphalt weighing hopper is of heating function. After weighing, the solid, powder and asphalt are conveyed to mixer correspondingly through cylinder unloading valve, spiral conveyor and asphalt pump.

Weighing capacity:

Solid:	2000 kg
Powder:	300 kg
Asphalt:	240 kg
Power, spiral conveyor:	7.5 kW
Power, asphalt pump:	15 kW

✧ Mixer, 1set:

Double horizontal axle mixer are driven by imported 2-set reduction gear, with strong power. The mixer is equipped with leakage-prevent unloading door.

Mixing capacity:	2,000 kg
Mixing period:	45 s
Power, motor:	2 x 22 kW

✧ Infrared temperature tester, 1set

Positioned at the mixer unloading port, it is of non-contact type and used for finished source temperature.

- ✧ Compressed air supply system, 1 set

Imported screw type air compressor is used for supplying compressed air to the whole equipment.

Exhaust amount:	7m <sup>3</sup> /min (0.8MPa)
Power :	45 kW
Air reservoir:	2X1000 L

### 3.4 Finished source lifting and storing system

There are 2-set pass-by type finished source liso, paralleled with main mixing plant. This system consists of trolley, track, waster storage, finished source silo, support and hoist etc. The finished source silo is insulated and covered by ripper color-steel plate. The unloading door is thermostatically controlled by electrical heating oil. The top is equipped with high level meter. Hoist is of variable frequency governor. Wire rope is of anti-lax protection.

- ✧ Finished source silo, 1set

Number of finished source silo	2 pieces
Capacity, in total:	100 t (finished source density 1.8t/m <sup>3</sup> )
Height, unloading:	3,600 mm

- ✧ Waster bin, 1set

Capacity:	7 t
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- ✧ Trolley and track, 1set

Trolley efficiency	180 t/h
Trolley capacity	2000 kg
Hoist power	37 kW

### 3.5 Powder supply system

This system consists of recover powder and new mineral powder, respectively equipped with a silo. There are respectively paddle switch level indicator and pneumatic arch-breaking device etc. The dust filtered by bag dust filter is conveyed to the transferring recovery-powder bin of the main mixing plant through powder lifter.

- ✧ Powder lifter, 1 set



Lifting height: 14450 mm

Lifting capacity: 30 t/h

Power, motor: 4 kW

✧ Recovery powder bin, 1 set

Surplus powder drainage is reserved at the bottom of bin. If the recovery powder is too much, it will be drained out of bin through butterfly valve. The customer should take necessary measures to avoid the second pollution.

Capacity: 40t (Powder density 1.2t/m<sup>3</sup>)

✧ New mineral powder silo, 1 set

The powder is added using tanker. There is a cleaner and relief valve on the bin top. If you need to add the bagged mineral powder, the powder lifter is recommended. Its performance parameters are same as the lifter of recovery powder system.

Capacity: 40t (Powder density 1.2t/m<sup>3</sup>)

✧ Spiral conveyor, new powder, 2 sets

The new powder will conveyed from the silo to the weighing hopper.

Power, motor: 2×7.5 kW

### 3.6 Asphalt supply system

The conduction oil, as heat carrier, will thermally insulate and heat the asphalt and its pipes. This system consists of asphalt tank, asphalt tank, valve, thermal controlling unit and pipes etc.

✧ Asphalt tank, 2 pieces

There are two asphalt tanks. The user could increase or decrease the number of tanks to store and heat asphalt. The heating coiler is set inside the tank. The tank is thermally insulated by rock wool and covered by aluminum plate.

Capacity, asphalt tank: 2X50 m<sup>3</sup>

Thermal insulation performance, asphalt tank: Temperature lowering: < 1°C/h  
(asphalt 160°C, ambient temperature ≥20°C)

✧ Asphalt supply pump, 1set

Power, motor: 7.5 kW

- ✧ Asphalt and conduction oil pipe, 1set
- ✧ Conduction oil furnace, 1set

The conduction oil furnace is of fuel type, has independent operating system with internal coil pipe. The conduction oil, as heat exchanger medium, consists of burner, oil pump and expansion box etc. The oil furnace is of full-automatical control.

Rated heating power: 600,000 kcal/h ( 700 kW)

Fuel type: Diesel

Max. fuel consumption, burner: 75 kg/h

Max. working temperature, conduction oil: C280 ° C

Power, conduction oil cycling pump motor: 15 kW

- ✧ Asphalt transfer heating system, 1 set

It is commonly known as oil unloading pool, facilitating to convey the external asphalt into the asphalt tank. That is: the asphalt transport vehicle will be unloaded into this system, and then conveyed into the asphalt tank after heating.

Capacity, asphalt transfer tank: 3000 L

Power, asphalt pump: 7.5 kW

### 3.7 Exhaust and dust filter system

This system is used to dry the roller and filter the whole mixing plant, consisting of initial separator, bag filter, aggregate bin, spiral conveyor, ash valve, chimney, damper and cold air exit etc. The bag filter is functioned with automatical cleaning and smoke over temperature protection. The collected coarse powder will be conveyed to hot aggregate lifter and the fine powder to recovery powder lifter.

- ✧ Combination filter, 1set (including initial separator and bag filter)

Disposing function: 62000 Nm<sup>3</sup>/h

Filtering area: 650 m<sup>2</sup>

Bag usage temperature: ≤200℃

Dust density at the entrance: ≤ 150 g/Nm<sup>3</sup>

Dust draining density: ≤ 20 mg/Nm<sup>3</sup>

- ✧ Induced draft fan, 1set

Power, motor: 90 kW

- ✧ Spiral conveyor, coarse powder, 1sets

The powder collected by the initial separator will be conveyed to hot source lifter.

- ✧ Spiral conveyor, fine powder, 1set

The powder collected by the bag filter will be conveyed to powder lifter of recovery bin.

- ✧ Pipeline and chimney, 1set

Chimney height: 15 m

### 3.8 Powder supply system

This system consists of diesel and heavy oil, used for supply fuel to the main burner, burner of hot oil furnace and auxiliary facilities. Please refer to the contract.

- ✧ Diesel supply system (prepared by customer)

Capacity, diesel tank: 30 m<sup>3</sup>

- ✧ Heavy oil heating system

This system should contain heavy oil tank, oil pump, pipeline etc to burn the heavy oil or residual oil.

Capacity, heavy oil tank: 50 m<sup>3</sup>

### 3.9 Electrical control system

- ✧ A control room

The control room is featured with sound insulation, heat preservation, wide view, internal and external decoration, air conditioning, comfortable.

- ✧ Control system, 1set

- This system adopts latest technology achievement like industry Ethernet, on site bus.

The data is transmitted to PLC and two PCs through Ethernet. It is reliable and stable.

- Dual-machine dual-control: Two Industrial Personal Computers (IPC) are communicated with PLC. User could shift to control them at will to share and synchronize the information. If one IPC failure occurs, the other will activate to ensure the continuous producing and increasing the system safety.

- Each part, producing process, parameter set and actual data are all dynamically displayed on the color screen. The mixing procedure could be set as you want. Viz: the weighing order of hot solid and the conveying order of solid, powder, asphalt could be adjusted at will. This system is functioned with automatically fault diagnosis and warning etc.
- Recording data management during producing is functioned with query, storage and print.
- Applied IP address and network could realize the remote monitoring and maintenance.

The logo for ZOOMLION, featuring the word "ZOOMLION" in a bold, dark blue, sans-serif font. The text is centered within a light green rectangular background that has a diagonal cut on its right side.

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