Quality Changes the World

# SAC5000S

**SANY All Terrain Crane**
**500 Tons Lifting Capacity**

**Max. Lifting Capacity: 500 t**
**Max. Boom Length: 84 m**
**Max. Lifting Height: 126 m**

## Excellent performance

- The fully extended boom is 84 m long and the longest jib is 42 m long, which is in the leading position in the industry.
- Fully optimized lifting boom of structural steel with U-shape section and high strength is used as the seven-section boom, so that the lifting boom has a more uniform force and a lighter weight. The 4-section assembled boom head is designed to achieve the construction of works with only 4-section boom, thus reducing the weight of the complete vehicle and expanding the scope of application.
- The working condition of special fan covers the overhaul of 1.5 MW wind power.
- Special subway conditions and fan conditions in India are designed to meet the needs of the Indian market.





## High reliability

- The upper/lower structure engines are imported 480 KW Mercedes-Benz electric-controlled diesel engines. It is equipped with ZF automatic transmission gearbox and hydraulic torque converter imported from Germany. The kessle axle imported from Germany is used for axle and transfer case;
- All controllers, monitors and sensors are equipped with top-of-the-line configurations, which fully meet European and American industry safety standards and ensure safe, stable and efficient operation.
- Stable and high-quality main oil pumps, main valves, winch motors, swing motors, balance valves and other key hydraulic elements are used, and the system has high reliability;
- Cables are used for wiring, with exquisite appearance and high reliability.

## Energy conservation and environment protection

- Adopt the electric proportional pump, of which displacement and speed can be controlled by different gears, thus achieving high efficiency and energy conservation.
- Adopt the first double pump confluence/shunt intelligent speed regulation technology in China to meet the needs of various action combinations and save energy with high efficiency.

## High safety

- Complete safety logic and interlock control to avoid the danger caused by human misoperation.
- Comprehensive hazard warning to remind operators of possible hazard trends in time;
- Multiple safety protection and different restriction levels for different hazards, to maximize hoisting performance while ensuring safety;
- It is equipped with rich sensor pieces to timely feedback the data information to realize real-time monitoring.

# Overall Dimensions



# Technical Parameters

Technical Parameter (Note: Since the crane has not completed the test, this table is for reference only.)

| Type | Item | | Parameter |
|---|---|---|---|
| Capacity/rated lifting capacity | Max. lifting capacity | | 500t |
| Dimensions | Overall length | | 19165mm |
| | Overall width | | 3000mm |
| | Overall height | | 4000mm |
| | Axle distance | Axle-1, 2/axle base 1/axle base 2 | 1650mm |
| | | Axle-2, 3/axle base 2/axle base 3 | 3170mm |
| | | Axle-3, 4/axle base 3/axle base 4 | 1650mm |
| | | Axle-4, 5/axle base 4/axle base 5 | 2440mm |
| | | Axle-5, 6/axle base 5/axle base 6 | 1650mm |
| Weight | Overall weight | Note: Remove the 3-7 section booms while driving | 73000 kg |
| Power | Rated power | | 480 kW/1800rpm |
| | Rated torque | | 2900 N.m/ 1300 rpm |
| | Rated power | | 205 kW/2200rpm |
| | Rated torque | | 1100 N.m/ 1400 rpm |
| Traveling | Max.traveling speed | | 75 km/h |
| | Turning radius | | 12.5m |
| | Wheel formula | | 12 × 8 |
| | Min.ground clearance | | 310 mm |
| | approach angle | | 16° |
| | Departure angle | | 11° |
| | Max.gradeability | | 45.0% |
| Main Performance Data | Temperature range | | – 20 ° ~ + 50 ° |
| | Full counterweight | | 140t |
| | Boom section | | 7 |
| | boom shape | | U-shape boom |
| | Max.lifting moment | Base boom | 14570kN·m |
| | Boom length | Base boom/ | 16.1 m |
| | | Full-extend boom | 84 m |
| | | Longest boom+longest fixed jib | 125m |
| | Outrigger span (Longitudinal×Transversal) | | 9.4 × 9.6 m |
| | Jib offset | | 0 °,20°,40° |
| Working speed | Maximum lifting speed of single rope of main winch (no load) | | 130 m/min |
| | Slewing speed | | 1.2 r/min |
| Aircondition | Aircondition in up cab | | Heating and cooling |
| | Aircondition in low cab | | Heating and cooling |

# Technical Parameters

## Hook

| Hook specification | Number of pulleys | Number of stringing | Lift hook weight (kg) |
|---|---|---|---|
| 200t lifting hook | 9 | 18 | 3243 |
| 80t lifting hook | 3 | 7 | 1979 |
| 12.5t ball hook | - | 1 | 676 |

| Special working condition | | | |
|---|---|---|---|
| Working condition | The length of boom(m) | Working radius(m) | Lifting capacity(t) |
| Subway working condition | 26.5m | 12m | 115t |
| | | 18m | 75t |
| | 36.9m | 12m | 110t |
| | | 18m | 75t |
| Work shop condition of Wind power machine | 96.6m | 16m | 21t |
| | 126 m | / | 11t |





# Technical Parameters

# Crane Introduction

## Cab

- It is made of corrosion resistant steel plate and equipped with fully covered softened interior, panoramic skylight, adjustable seat and other humanized design, which makes operation more comfortable and relaxing. Moment limiter display screen is equipped, which realizes organic combination between console and operation and display system and provides open-and-shut data of all conditions during hoisting.

## Engine

- Type: straight-six cylinders, water cooling, supercharging and inter-cooling and diesel engine;
- Rated power: 205 kw/2,200 r/min;
- Environmental protection: The emission conforms to European III standard.

## Hydraulic system

- All hydraulic elements are of high quality, with high reliability and long service life. Moreover, they have excellent operation and control performance based on accurate parameter matching.
- The electric proportional variable displacement piston pump is used, and the displacement of oil pump can be adjusted in real time through the change of opening of the electric control handle, thus realizing high-precision flow control and no energy loss during operation.
- The self-developed double-pump confluent main valve has multi-stage pressure selection function, which can meet the pressure requirements under different working conditions, make the complete vehicle move more stably, make the energy utilization more reasonable, and reduce the energy loss.
- The main winch is equipped with a closed winch system, which has high efficiency, low energy loss and good micro-mobility and stability of winch. A four-level protection system is provided to ensure that the winch system is safer and more reliable.
- Adopt the dead-weight luffing compensating hydraulic system to ensure no energy loss and make micro-mobility and stability of luffing more excellent.
- With the unique single-cylinder pin-type telescopic boom technology adopted, the cylinder boom pin is interlocked and protected mechanically, electrically and hydraulically, with higher reliability.
- Closed swing system is designed to help avoid the throttling loss of the open system and improve the efficiency of the system. The system is characterized by load sensitivity, heavy load at low speed, light load at high speed and high action efficiency. At the same time, emergency braking and slow braking modes are realized through an electric proportional pressure reducing valve, so that the movement is more stable and effective;

## Control system

- PLC integrated programmable controller and CAN-BUS control network are used in combination with conventional electricity to realize the logic control and electric proportional control of the system;
- In addition to the conventional control, it also supports real-time system monitoring and automatic fault diagnosis;
- Lifting, swing, luffing and extending and retracting are controlled proportionally by the electric proportional handle. The lifting of counterweight, the dislocation of control cabin and the locking of rotary table are all controlled by keys on the control panel;
- The display is connected with the controller by CAN bus. Its main functions are: digital adjustment and display of electric proportional control parameters; fault code display of electric proportional system; display of real-time detection data of hydraulic system.

## Luffing system

- The top single-cylinder luffing is applied with luffing angle ranging from -0.4° to 82°. Hydraulic system adopts the dual-pump converging open hydraulic circuit to achieve large-angle fast lowering and small-angle stable and slow lowering operations combining with electro proportional control, power lowering and self-weight luffing.

## Telescopic system

- The boom structure is designed to resist to twisting, and is made of fine-grained high-strength steel. The 7-section elliptical boom has extremely high stability. Single cylinder automatic pin-type system is used for extension and retraction. A double-acting oil cylinder can control the extension and retraction of all booms to achieve various boom length combinations.
- Boom length: 84 m.

## Lattice jibs

- The fixed jib can realize the boom length combination of 12 m - 42 m, and the angle can be changed according to the actual needs of working conditions.
- It is equipped with a special jib for wind power, which adapts to the working conditions of the fan and has strong lifting capacity.

## Luffing system

- For double-cylinder front-top luffing, the hydraulic system uses double-pump confluence open hydraulic circuit, and combines electric proportional control, power luffing down and dead-weight luffing down to realize large-angle fast luffing down and small-angle stable and slow luffing down.





## Superlift device

- The superlift device greatly improves the stress state of boom, avoids sidewise bending, reduces the down deflection of boom, and remarkably improves the lifting performance.

## Slewing system

- It is composed of a constant displacement motor and a swing reducer, which are mature in technology and widely used in truck cranes. At the same time, the superlift device is externally meshed with a swing bearing to realize full swing by 360°, and the swing speed can be continuously adjusted from 0 to 1.3 rpm. A closed swing hydraulic system is used to avoid throttling loss of open system and improve the efficiency of the system. Electric proportional brake pedal is used to realize emergency braking.

## Counterweight

- 140t combined variable counterweight. Various combination modes are provided to meet the requirements of different working conditions and maximize the performance of structural parts. The counterweight displacement technology is adopted to greatly improve the stability of the complete vehicle.

## Safety system

- A moment limiter calculation system based on gravity model is established with the method of analysis mechanics, and the loading accuracy reaches ±3% through online no-load calibration.
- Hydraulic balance valve, overflow valve, two-way hydraulic lock and other components are provided for hydraulic system to realize stable and reliable hydraulic system;
- Three-circle protector is equipped for main winch to avoid overfall of wire rope;
- Height limiters are equipped for boom and jib ends to avoid overwind of wire rope.
- Boom end is equipped with anemometer to detect whether high-altitude wind speed exceeds the allowable range for operation.

## Hoisting system

- Main lifting mechanism:
- hydraulic motor-driven planetary gear reducer, special rope groove winding drum and built-in brake.
- Wire rope lock: High quality wire rope lock is applied. The wire rope end is casted and directly installed in the lock sleeve, which improves the lifting rate of the replacement speed and is convenient and efficient.
- Wire rope specification: φ24, non-rotating wire rope;
- Maximum single rope speed (outer layer): about 130 m/min.

# Crane Introduction

## Cab

- With new steel structure researched and developed independently by SANY, excellent shock absorption property and sealing performance, outward opening type doors at two sides, driver's seat and assistant driver's seat of pneumatic suspension, adjustable steering wheel, rear-view mirror with wide view, comfortable driving chair with headrest, fog-resistance fan, air conditioner, stereo radio and other devices, and complete control equipment and instrument, the cab is more comfortable, safe and humanized.

## Carrier frame

- It is designed and manufactured by SANY, and the anti-torsion box structure which is welded by the high strength steel plate formed by fine grain and has strong load carrying capacity.

## Outriggers

- The movable outrigger adopts H-shaped telescopic outrigger, which is supported at 4 points, with longitudinal and transversal span of 9.4 m × 9.6 m. The outrigger telescopic hydraulic system adopts electric proportion control technology, the outrigger control panel can display the load, and has the functions such as automatic leveling with high control precision and convenient operation.

## Engine

- Type: electronic control, V-shaped eight-cylinder, water cooling, supercharging and inter-cooling, electric injection and diesel engine;
- Output power: 480 kw/1,800 rpm;
- Maximum torque: 3,000 Nm/1,300 rpm;
- Environmental protection: Emissions meet Euro IV standards;
- Fuel tank capacity: about 550 L.

## Transmission system

- Transmission: Manual/automatic transmission has 12 gears with a wide speed ratio range, which can meet the requirements of climbing at low speed and driving at high speed on the site.
- Transfer case: with large input torque and the rated torque up to 30,000 N. m. Differential lock air cylinder.
- Drive shaft: With optimized layout of drive shaft, the drive of drive shaft is steady and reliable. Drive of the optimized force: The drive shaft linked with end face gear coupling is adopted, and the transmitted torque is large with a maximum torque of 30,000 Nm.

## Drive/Steer

- 12 × 8 × 12. A steering pump with a hydraulic power-assisted system is applied, which ensures that the steering is light and flexible. Full-axle steering.

## Axles

- Six-axle chassis design, full-axle steering and No. 1, 3, 5 and 6 axles drive. The last four axles are subject to electro-hydraulic auxiliary steering, which can assist in speed control and special steering mode is available, with easy steering and flexible control.

## Suspension system

- All axle suspension devices are hydro-pneumatic suspension technology devices with adjustable height and hydraulic locking. The suspension cylinder travel is +160/-130 mm and can achieve five modes: suspension, rigid locking, automatic leveling, complete vehicle lifting and single-point lifting. Driving condition: each root bridge load is equal, not higher than 12 t. The trafficability is good, which can be applied to various bad working conditions and road surfaces, ensuring the smoothness and rollover stability of cranes and comfortable driving.

## Tyres

- 12-16.00R25

## Steering system

- It is equipped with servo power steering gear, dual-circuit system hydraulic steering device and emergency steering pump.
- It can be divided into six steering modes, including: 1) driving on road; 2) full-wheel steering; 3) crab running; 4) non-deflection steering; 5) independent rear axle steering and 6) rear axle locking steering.

## Brakes system

- To ensure the reliability and safety of the brakes system, 4 independent brakes systems are included:
- Service brake: dual-circuit air brake which applies to all the wheels;
- Parking brake: air-break brake with spring energy storage;
- Emergency brake: air-break brake with spring energy storage can also be used as emergency brake;
- Slow-release brake: engine with double brakes and transmission with hydraulic retarder brake;

## Electrical system

- The applied 24 V DC power supply can be used to cut off the power supply of the substructure; the system is equipped with the automotive lighting system; vehicle movement, such as throttle and outrigger control, are all electrically controlled; electrical systems have capabilities such as strong detection, logic and computing with the functions of self-diagnosis, centralized display and self-protection;
- The chassis is subject to CAN bus system and multi-function centralized display system, with small power consumption, and the maximum power consumption is only 5 w. Four function keys are provided on the user interface; the display is subject to LCD liquid crystal, with adjustable contrast.

# Load Chart - Telescopic Boom

Unit: t


15.65-73m | Outriggers fully extended | 500t

| SAC5000S Main boom ( without super lifting device ) +140t counterweight | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radius (m) | 16.1m* | 21.3 m | 26.5 m | 31.7 m | 36.9 m | 42.1 m | 47.3 m | 52.5 m | 57.7 m | 62.9 m | 68.1 m | 73.4 m | 78.6 m | 84m | Radius (m) |
| 2.5 | 500 | | | | | | | | | | | | | | 2.5 |
| 3 | 450 | 193.3 | | | | | | | | | | | | | 3 |
| 3.5 | 239.3 | 194.1 | 188.3 | | | | | | | | | | | | 3.5 |
| 4 | 239.3 | 195 | 189.1 | | | | | | | | | | | | 4 |
| 4.5 | 239.3 | 196.2 | 189.8 | 183.9 | | | | | | | | | | | 4.5 |
| 5 | 239.3 | 197.5 | 190.5 | 180.9 | | | | | | | | | | | 5 |
| 6 | 238.8 | 200.2 | 191.1 | 174,6 | 162.7 | | | | | | | | | | 6 |
| 7 | 212.4 | 186.4 | 182.3 | 166,2 | 155 | 123 | | | | | | | | | 7 |
| 8 | 185.3 | 167.6 | 166.4 | 161 | 147.4 | 116.3 | 103.3 | | | | | | | | 8 |
| 9 | 164.1 | 152.1 | 150.9 | 145.9 | 139.4 | 109.6 | 98.1 | 68.5 | | | | | | | 9 |
| 10 | 146.8 | 137.8 | 137.4 | 133.1 | 129.5 | 104.2 | 93 | 64.9 | 57 | | | | | | 10 |
| 12 | 120.5 | 115.6 | 115.6 | 112.7 | 110 | 94.3 | 83.6 | 59.2 | 52.4 | 45 | 38.6 | | | | 12 |
| 14 | 101.4 | 98.6 | 98.5 | 97.9 | 94.6 | 85.7 | 74.7 | 55.1 | 48.6 | 41.5 | 36.2 | 31.2 | | | 14 |
| 16 | | 84.6 | 84.6 | 85 | 82.4 | 78.8 | 67.2 | 47.8 | 45.3 | 38.4 | 33.7 | 29.6 | 25.2 | 20 | 16 |
| 18 | | 73.2 | 73.2 | 73.8 | 75 | 71.8 | 61.2 | 44.9 | 42 | 36 | 31.4 | 28 | 24.2 | 19.2 | 18 |
| 20 | | 49.3 | 64.8 | 64.7 | 63.8 | 64.1 | 55.3 | 42.1 | 39.2 | 33.6 | 29.4 | 26.4 | 23.2 | 18.4 | 20 |
| 22 | | | 57.6 | 57.3 | 56.5 | 57.5 | 50.7 | 39.7 | 36.8 | 31.5 | 27.8 | 24.8 | 22.1 | 17.5 | 22 |
| 24 | | | 51.6 | 51.2 | 52.4 | 51.8 | 46.8 | 37.7 | 34.4 | 29.8 | 26.2 | 23.3 | 20.9 | 16.7 | 24 |
| 26 | | | | 46.1 | 47.5 | 46.7 | 42.9 | 35.7 | 32.1 | 28 | 24.9 | 21.8 | 19.7 | 15.9 | 26 |
| 28 | | | 41.9 | 43.1 | 42.3 | 39.1 | 33.7 | 30.4 | 26.2 | 23.6 | 20.6 | 18.6 | 15.1 | 28 | |
| 30 | | | 37.5 | 39.4 | 38.5 | 36.4 | 31.8 | 28.8 | 24.8 | 22.3 | 19.6 | 17.5 | 14.3 | 30 | |
| 32 | | | | 36.1 | 35.2 | 33.8 | 30.1 | 27.1 | 23.6 | 21.1 | 18.6 | 16.5 | 13.5 | 32 | |
| 34 | | | | 33.3 | 32.3 | 31.1 | 28.4 | 25.5 | 22.4 | 20.1 | 17.6 | 15.5 | 12.8 | 34 | |
| 36 | | | | | 29.7 | 28.6 | 26.7 | 24 | 21.1 | 19.1 | 16.8 | 14.6 | 12.1 | 36 | |
| 38 | | | | | 27.5 | 26.2 | 25.1 | 22.8 | 19.9 | 18.2 | 16.1 | 13.6 | 11.5 | 38 | |
| 40 | | | | | 25.5 | 24.8 | 23.4 | 21.6 | 18.8 | 17.3 | 15.3 | 12.9 | 10.8 | 40 | |
| 42 | | | | | | 23.8 | 21.6 | 20.4 | 17.3 | 16.3 | 14.6 | 12.1 | 10.2 | 42 | |
| 44 | | | | | | 22.8 | 20 | 19.2 | 15.7 | 15.5 | 13.9 | 11.4 | 9.6 | 44 | |
| 46 | | | | | | 17.9 | 18.6 | 18.2 | 14.3 | 14.8 | 13.2 | 10.6 | 9.1 | 46 | |
| 48 | | | | | | | 17.3 | 17.2 | 13 | 14 | 12.5 | 9.9 | 8.6 | 48 | |
| 50 | | | | | | | | 16.2 | 12.2 | 13.3 | 11.9 | 9.2 | 8 | 50 | |
| 52 | | | | | | | | 15.4 | 11.5 | 12.6 | 11.4 | 8.6 | 7.5 | 52 | |
| 54 | | | | | | | | 14.4 | 10.9 | 12 | 10.8 | 8 | 7 | 54 | |
| 56 | | | | | | | | 12.3 | 10.2 | 11.5 | 10.2 | 7.4 | 6.6 | 56 | |
| 58 | | | | | | | | | 9..5 | 10.9 | 9.7 | 6.9 | 6.1 | 58 | |
| 60 | | | | | | | | | 9.1 | 10.4 | 9.2 | 6.3 | 5.7 | 60 | |
| 62 | | | | | | | | | 8.5 | 9.9 | 8.8 | 5.8 | 5.3 | 62 | |
| 64 | | | | | | | | | | 9.5 | 8.4 | 5.4 | 4.9 | 64 | |
| 66 | | | | | | | | | | 9.1 | 8 | 5 | 4.5 | 66 | |
| 68 | | | | | | | | | | | 7.7 | 4.6 | 4.2 | 68 | |
| 70 | | | | | | | | | | | 7.4 | 4.2 | 3.9 | 70 | |
| 72 | | | | | | | | | | | 5.8 | 3.9 | 3.6 | 72 | |
| 74 | | | | | | | | | | | | 3.6 | 3.3 | 74 | |
| 76 | | | | | | | | | | | | 3.3 | 3 | 76 | |
| 78 | | | | | | | | | | | | | 2.7 | 78 | |
| 80 | | | | | | | | | | | | | 2.4 | 80 | |
| 82 | | | | | | | | | | | | | 2.1 | 82 | |

- 1,It need to add additional device, working behind the machine;The lifting capacity in the list apply to working in the flat ground or adjust the crane into flat;The lifting capacity in the list include the capacity of main hook and lifting device.
- 2, Because the test of crane have not finished .The lifting load chart list above is only for reference.

Notes

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Reminder:
For safe and reliable operation of the diesel engines, please fill Grade IV machines with Grade IV diesel and urea solution conforming to related national standards. Please refer to the operating instructions and related standards for details.

Any change in the technical parameters and configuration due to advancement in technology may occur without prior notice. The machine in the figures may include auxiliary equipment. This brochure is for reference only, and goods in kind shall prevail.


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