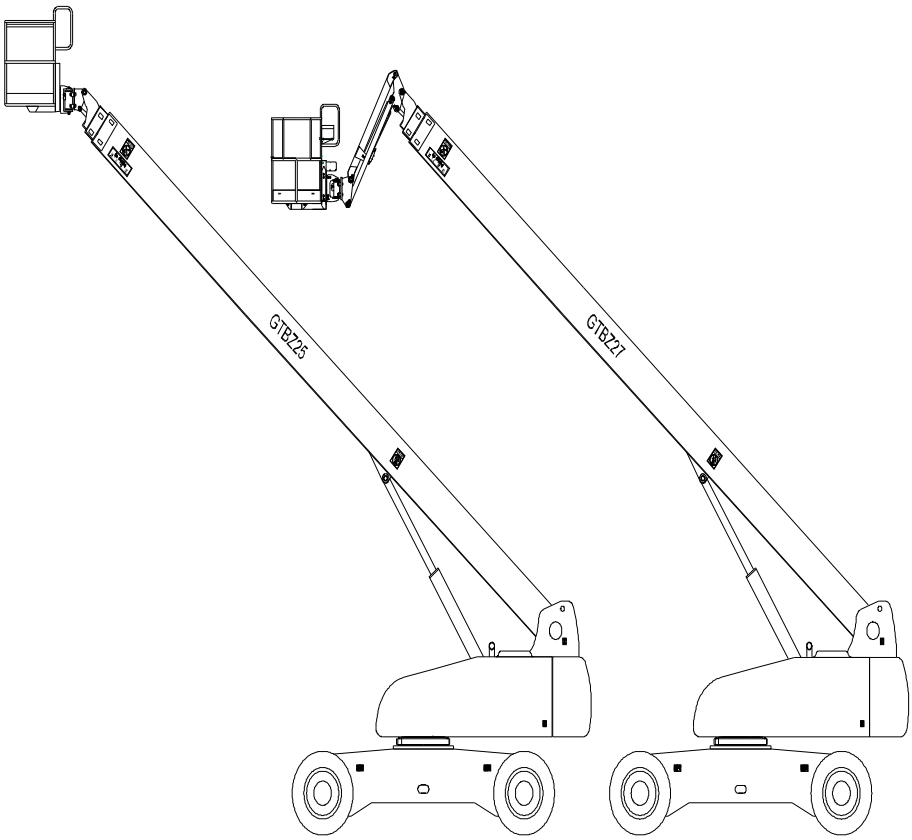
SINOBOOM
星邦重工

Hunan Sinoboom Heavy Industry Co., Ltd.

Technical Offer

GTBZ25/27



SINOBOOM Self-propelled Telescopic Boom Lift

(GTBZ25/27)

Detailed Technical Offer

Content

I. Company Profile

Hunan Sinoboom Heavy Industry Co.,Ltd is Chinese technical leading player in Chinese MEWP field, located in Changsha, Hunan, P.R.China, the Chinese engineering machinery manufacturing base. Sinoboom is specialized in engineering machinery R&D, production, sales and after sales services, with aerial work platform as the main product.

SINOBOOM R&D team consists of senior experts with more than 18 years of experiences based in hydraulic, mechanical, electrical separate fields and in Chinese engineering machinery field. Sinoboom self-patented self-propelled aerial work platform can provide access solution from 8m-43m working height. With focus on market demands and technical innovation, the company is developing, guided by the globalization strategy, as the one who enjoys the growth most rapidly and steadily.

There are 3 series of Self-Propelled aerial work platform covering working height from 8M to 43M, which are telescopic boom, articulating boom and scissors. Now Sinoboom machines are widely being used in ship building/repairing, construction sites, power, telecom, gardening, advertisement, airport and terminals, big objects manufacturers and even college campus in Chinese mainland, Hongkong area, Australia, Singapore, Malaysia, Middle East, and South America. Since 2010 Sinoboom is looking for its Europe partners for joint market development, as all series machines are successfully CE certificated via the world famous SGS.

SINOBOOM well established manufacturing and quality control procedures is based on the ISO9001, and machines strictly following JG/T5101-3 and EN280 standard for an ensured high quality feature. Excellent hydraulic components from U.S.A and Europe, the broad application of the latest technology and new materials, CAD/CAE/CAM system, and comprehensive inspection methods are working together to secure quality, performance and competitiveness of SINOBOOM.

Keeping to our vision of honesty and technical development, we are continuing to contribute for customer demands of working safely and efficiently.

II. Technical Specifications

GTBZ25 parameters

Item	Measurement	Item	Measurement
Dimensions		**Productivity**	
Overall length(stowed)	11.35M (37ft)	Platform height max.	25.2M (83ft)
Overall width(stowed)	2.49M (8ft)	Working height max.	27.2M (89ft)
Overall height(stowed)	2.8M (9ft)	Horizontal reach max.	21.9M (72ft)
Ground clearance	0.33M (1.1ft)	Turntable rotation	360°continuous
Wheelbase	3.0M (10ft)	Platform rotation	160°
Overall weight	16000kg (2WD)	Platform Load capacity	250kg (non-restricted)
	16070kg (4WD)		480kg (restricted）
Platform Size (L*W*H)	2.44*0.91*1.1M (8ft*3ft*3.6ft)	Grade ability	30% (2wd)
			45% (4wd)
Platform levelling	Automatic	Turning radius(outside)	5.84M (19ft)
Tire specification	12.00-20	Turning radius(inside)	2.44M (8ft)
Tire type	Solid	Turntable tailswing	1.32M (4.3ft)
Power		Max. Driving Speed	5.2KM/H
Hydraulic tank vol.	170L	Driving Speed (stowed)	0~5.2km/h
Hydraulic system vol. (inc. the tank)	270L	Driving Speed (extended)	0~1.1km/h
Fuel tank vol.	125L	Max allowable wind force	12.5m/s
Control voltage	24V	Max allowable slope	3°
Engine	Original Cummins B3.3 80hp	Max noise on normal use	82dB(A)
Drive & steer model	2WD*2WS	Max allowable side force	400N

Optional: (All “option” configure will be charged per quotation)

Description	Specification
Platform Size (L*W*H)	1.83*0.76*1.1M (6ft *2.5ft *3.6ft)
Drive & steering model	4WD*2WS
Engine	Perkins 1104D
Tire	Foam
Rough terrain	oscillating axle
Operator protection	Anti-crash device

GTBZ27 parameters

Item	Measurement	Item	Measurement
Dimensions		**Productivity**	
Overall length(stowed)	12.37M (40ft)	Platform height max.	26.7M (88ft)
Overall width(stowed)	2.49M (8ft)	Working height max.	28.7M (94ft)
Overall height(stowed)	2.8M (9ft)	Horizontal reach max.	23.4M (77ft)
Ground clearance	0.33M (1.1ft)	Turntable rotation	360°continuous
Wheelbase	3.0M (10ft)	Platform rotation	160°
Overall weight	16200kg (2WD)	Platform Load capacity	250kg (non-restricted)
	16270kg (4WD)		
Platform Size (L*W*H)	1.83*0.76*1.1M (6ft *2.5ft *3.6ft)	Grade ability	30% (2wd)
			45% (4wd)
Platform levelling	Automatic	Turning radius(outside)	5.84M (19ft)
Tire specification	12.00-20	Turning radius(inside)	2.44M (8ft)
Tire type	Solid	Turntable tailswing	1.32M (4.3ft)
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Description	Specification
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Tire	Foam
Rough terrain	oscillating axle
Operator protection	Anti-crash device

III. Technical Features

Description of the major parts

Chassis

Closed hydraulic loop provides good power and great performance. Load-sensing system automatically adjusts pump's output to maintain optimal performance. Closed loop system applies the axial variable piston driving motor. With the joystick and reliable control module, SINOBOOM closed hydraulic circulatory system operates as an automatic hydraulic gearbox.

Two-wheel drive traction system carries strong traction. SINOBOOM drive traction system provides full-time positive traction in all speed ranges. The traction system maintains the same driving force for all the driving wheels; if the wheels on one side lose traction (due to mud, snow, or sand), the wheels of the other side will not lose the driving force.

SINOBOOM driving braking systems provide smooth and controllable brakes for 2 wheels while closed cycle driven system provides hydraulic brakes even on slopes. This kind of joystick controlling brake system bring a smooth and controllable stop for the machine and control the driving speed, to prevent sliding form slope and ensure the operators the controllable declivity.

The Parking brake ensures that the machine can stop at any speed it can climb, and the machine equipped with a spring to impose a hydraulic releasing double wheel parking brake which is located between driving motor and wheel reducer (i.e., torque motor). When the joystick is in the median place or when the operator's feet left the foot pedal, the brake works automatically. If it cannot release because of brake failure, the demolition of two small round caps of wheel reducers and install them reversely, you can release the brake.

Steering system (includes steering connecting bar and degree transducer) meets the outdoor requirements of uneven ground-base and extends the tires' life. SINOBOOM applies two fuel tanks to ensure the two tires work with the same speed and force while steering. Traction connecting rod is used to adjust the wheel toe-in; traction rod and steering tank are located behind the axle for the purpose of protection.

Maintainability - all components are easy to access and maintain. The durable and movable steel plate protects all the components under the chassis and makes the inspection, maintenance and reparation of components very easy. There's no electric line on the drive chassis which reduce the complexity and provides easy troubleshooting.

Tether points allow safe transportation and lifting. They are locate at the front part, the back part and the central of the machine, and can also be used as lifting eyes.

Solid tires provide the maximum throughput capacity, traction and safety durability.

Turntable

The 360°continuous rotation provides mobility for the boom operation and platform positioning, which is adapted the hydraulic drive pinion gear and meshing with the gear rim on the turntable, accompanied by a set of spring imposes hydraulic force to release the brake.

The turntable rotation is installed on the turntable whirl lock pins ensure the boon safety and protect against damage. One mechanic pin lock is to lock the turntable on a set position,

The minimum limited tailswing allows much mobility even on the narrow space. SINOBOOM telescopic boom lift is designed the minimum tailswing in the aerial lift industry.

Anti-restart control module protects the engine start motor and flywheel rim. Such design can prevent operators from re-meshing the start motor when the engine works.

The standard instruments facilitate to monitor and error inspection, allows the operators to monitor the engine and machine capacities and makes it easy to diagnosis and error repair. The instruments conclude engine fuel pressure gauge, engine temperature gauge, fuel level indicator, hydraulic oil level indicator and hydraulic fuel filter bypassing indictor.

The stalling of engine protects against engine damage. The engine-protecting stalling system will automatically switch off the motor when the engine temperature reaches too high or the engine fuel pressure falls too low.

Roll-out type engine bracket is designed to the easiest accessible engine in the aerial lift industry, reduces the maintenance and repair time. Engine rack can remove 50°and be locked via disassembling one bolts, allowing closer approach to the engine sides and associated assembly. None of the competitors can produce such high priority and maintainability.

The hydraulic system module can provide reliability when improving the maintainability and error inspection. SINOBOOM incorporates the hydraulic hoses to two hydraulic modules: one is used for boom function, the other for driving function, which enhances the reliability while reducing the hoses, connections and any possible leakage. The diagnosis devices, error repair and maintainability help to modify the hydraulic and conventional hose systems with the features of quick pressure inspection connections and applicable exchange of valves element.

The underground control panel is operated easily with the user friendly interface design. It concludes emergency stop switch, platform/underground select switch, auxiliary power control, boom power control, boom function control, indicator light, and engine monitoring instrument and 15A circuit breaker which can be reset.

It provides the 125L fuel tank as standard configuration, with the fuel level indictor.

The 170L hydraulic oil tank provides a coolant hydraulic system to extend the assembly life and concludes the oil level indicator, temperature gauge, oil-absorbed filter nets, oil-return filter, air filter and filter bypassing gauge. Such device can extend the assembly life by providing the coolant filter and observing function, enhance anti-corrosion and increase the capacity of monitoring system.

The lockable turntable cover plates protect the assembly against damage or unauthorized operation. The side covers of the monolithic hinge with pneumatic supporting rod protect the turntable assembly. The key lock can prevent from unauthorized access on the worksite. It is provided the steel turntable cover plates on the machine.

Boom

Installing the cable guiderails on sides will reduce the repair cost and make repair much easier. The cable is protected by the durable steel cable guiderail assembly.

The rectangular boom structure improves the rigidity, only acquiring the minimum maintenance limitation. The design of three pairs of rectangular booms gain excellent rigidity, self-lubrication pad can be replaced and easy to adjust without filing butter.

The boom extended/stowed system improves the maintainability and reduces the maintaining time and cost. While SINOBOOM uses dual-action cylinder extended/stowed system, greatly improving the maintainability and reducing the maintaining time and cost. The dual-action cylinder supports the central boom, extends the booms in order with the balance valves installed for protection. The cylinder can extract from the back of the boom without decomposing them.

The pins and bushes are easy to maintain and can serve for a long time. All the moving pins are made by the possessed steel plungers and self-lubrication synthesis of copper bearings without filing butter. And they have passed the periodical test, proves to be normally used for 20 years.

The limit switch for driving speed guarantees the operators' security. It works when the boom is raised over 5°and extended over 0.6m, with a automatically lowing speed of

1.1km/h.

The derricking cylinder with buffer increases the operators' security and confidence. The derricking cylinder of the boom includes a buffer device, which will automatically slow down actions and stop smoothly when the boom is fully extended.

Platform

Installing the platform at the end can gain the maximum extension, reduce the collapse risk and modify the mobility ability. This kind of structure eliminates the visual obstacles beneath the operators' feet and provides the clear vision for the operators.

The hydraulic platform rotator provides better access on the compact work site. The hydraulic helical gear power rotator is 160° rotation around the platform.

The hydraulic platform leveling system is a mandatory control system with dual hydraulic cylinders, providing continue leveling. The hydraulic platform leveling system allows operators to ignore the system but provides continue auto-leveling.

Control

The electric-hydraulic full scale gradual change control system provides the very sleek control, accurate positioning and mobility. SINOBOOM provides such a system for the proportion of driving and servo control, for instance, includes all kinds of boom rod functions, enable the operators to gain the positioning ability and be confident to operate the boom rod. Such a system adjusts the proportional control valve through the electric signal created by traveling angel and speed of the platform joystick.

The driving direction confirming system enhances the operators' alertness and security. This system is the unique safety operation features of SINOBOOM machines. When the boom rotated over the non-steering axle, the driving action can not be operated the indicator light to flight on the platform simultaneously, the direction of the driving movement may be opposite to that of the movement. At this time, the driving confirmation switch shall use the driving restoration function, to guarantee the operators to know the boom position and correct joystick driving direction.

It is easily accessible to the platform control operation. The design of the platform control meets the ergonomic and simplicity requirement and east to positioning; and easy to operate even wearing extra large gloves.

The ground control box provides accessible quick-diagnosis and fault diagnosis and with easily replaceable poke-insert type relays, modular diode blocks, quick wire separation connected column and anti-restart modules in the box. The wire system keeps the same color and line numbers. Such a feature is fitted with all SINOBOOM machines, which makes easier to find and disposal faults. The control box can be rotated outward; the vacancy space will be easily accessed the function modules.

Other configuration

The advanced anti-adverse environment assembly (the standard configuration) provides protection for the machines in dust, flying sparks and corruption working condition. It concludes the cylinder bellow sheath, boom rod sand-scraping device, control box cover, central turret cover, engine air intake pre-filter device, steel cable guiderail, naked cable fire-prove protection devices, to provide protection for the machines ready to welding, sand-washing and spraying work.

The pictographic symbols attached on the ground and work platform control box are to illustrate the switching function.

The safety instructions for the machine operation are easy to understand and safely operated.

Battery configuration----the battery is used for engine starting, auxiliary power and control system.

Horizontal setting the platform---- (1.83M×0.76M×1.1M or 2.44M×0.91M×1.1M)

Machine lifting----the machines can lift when the boom rod and chassis are in the relatively vertical or horizontal position.

Safety measures

- ü Alert on the slope of 3°
- ü Start to warning when the rotation turret is over the slope of 3°
- ü The 24V DC auxiliary pump will use the battery power when engine fails, to guarantee operators safely reach the ground

Security protection to the extended axle

If the front and back axles are not extended in place, the telescopic boom will not be extended and raised above the place of 5°, to ensure the security of working at height and prevent form faulty operation.

Foot switch

The foot switch is installed on the work platform, to control the confirmation of all functions of the work platform. It can control and operate the machine on the platform only by stepping down the switch.

Emergency stop

There is a red button on the platform and ground control respectively. Pressing down any of the button on emergency, all functions of the machine will be cut off.

Standard Compliance

- ü Chinese national standard JG/T5101-3.
- ü European Standard under the CE Machinery Directive EN280-2001 +A2:2009
- ü Australia standard AS 1418. Which is supporting the sales in Australia.

Some illustrations of SINOBOOM machines

Engine

SINOBOOM provides multiple choices on the host engine: Cummins/Perkins/Yuchai. Engine can be rotated out, easily for maintenance and repair.

Pumps

All the pumps are world famous brands imported from EU/USA, which ensure the performance of SINOBOOM machine.

Cooling device

To ensure a continuous work and the temperature of the hydraulic oil not sharply increased, SINOBOOM machines equiped with cooling device

Protections

Durable flexible rubber is installed to protect all the cylinders; it's easy to be replaced with a zipper; Dust guard fixed in four sides of each joint of the booms;

Valve blocks

The major valve blocks are totally concentrated in the integrated block in the cabin, easy for maintenance, service and repair

Axle pin

Slide bearing to prevent bearing crack resulting from dust and other debris in the void between the axles. All axle pins are processed with the wear-resistance and electroplating.

CAN-Control

Easy for adjustment, read, maintenance

Hydraulic and electric originals

EU/US hydraulic and electric originals possess higher reliability

The Safety Guaranty

The design and producing standards

We are designing and producing in accordance with Chinese national standard and CE standard. We have got the CE certificate, JG/T5001 (Chinese national certificate), ISO9000 certificate and test approval Certificates by China National Construction Machinery Quality Supervising Test Center and MMI Proving Ground for Construction Machinery and Refit Military Vehicles.

The key parts and configuration

The SINOBOOM aerial lifts are equipped with the world famous key parts from EU&USA to ensure the quality and reliability.

Anti-crash device on the platform

When the machine accidentally crashes on something, it will immediately stop all the dangerous operations. And the movement to stow down the boom and persons in the platform will still work, so that it can ensure the person to step down on the ground from the height.

The range limit in the whole system

It is fixed by SINOBOOM the different vary range on different parts and different movements. Those are programs set by SINOBOOM which can not be easily changed by anyone unless he got the authorization from SINOBOOM. To set down the programs is to maximize ensure every movement is under control in the safety range. If accidently the movement is out the the range, the program will automatically stop the dangerous operation which may cause unexpected dangers. That is to say, all the movements or the operations are required to do in the set safety range, which is our responsibility to guarantee the customers' safety as the manufacturer.

The tilt alarm on the turntable

Once the machine is not even, the tile alarm will sound to warn the workers and it will simultaneously cut off the dangerous operations, but the slow-down operation can still work to let people down to the ground.

Auto-leveling device on the platform

It is equipped the auto-leveling device on the platform. Every time when the boom extended or elevated, it will adjust the platform to make sure it is level. Once the platform is not level, it will sound to warn the workers, so that the workers can modify or stop the operation, and stow down the boom.

The emergency pump in the turntable

It is equipped the emergency pump on the turntable to prevent the machine shut down from the engine faulty. The pump will provide power to the machine to let the workers in the sky to stow down the boom and go back to the ground when the engine is accidentally stopped.

The pins made by high pressure steel connect to the boom and the platform

The pins are made by high pressure steel and they are firm and stable enough to make sure the platform will never fall down from the sky.

Key Components and Origin

NO.	Name	Origin
1	Engine	CUMMINS
2	Variable Pump	SAUER-DANFOSS (U.S.A) / REXROTH / EATON
3	Gear Pump	CASSAPA (Italy)
4	Drive Motor	SAUER (U.S.A.) / REXROTH
5	Drive Hub	FAIRFIELD(U.S.A) / REXROTH / REGGIANA (Italy)
6	Balance Valve	OIL CONTROL (Italy)
7	Hydraulic Valve Unit	OIL CONTROL (Italy) / HYDRAUFORCE (U.S.A.)
8	Oscillatory Motor	HELCA (U.S.A.)
9	Rotary Motor	WHITE(U.S.A) / DANFOSS(U.S.A)
10	Limit Switch	KACON (Korea)
11	Power Unit	WINNER (Taiwan) / HALTER(U.S.A)
12	Coupling Shaft	KTR (Germany) / CENTA(Germany)
13	Proportional joy stick	SAUER-DANFOSS (U.S.A)
14	PLC	EPEC (Finland)
15	Leveling Sensor	GEMAC (Germany) / SILICONMEMS
16	Cylinder Seals	PARKER (U.S.A)
17	Air Filter	DONALDSON (U.S.A)

Free spare parts list

Serial	Parts in English	Spec.	Code	Qty
1	O Sealing Ring	6.0*1.5 mm	GB1235-76	15
2	O Sealing Ring	7.5*1.5 mm	GB1235-76	15
3	O Sealing Ring	9.0*1.5 mm	GB1235-76	15
4	O Sealing Ring	10.0*2.0 mm	GB1235-76	10
5	O Sealing Ring	12.0*2.0 mm	GB1235-76	5
6	O Sealing Ring	16.3*2.4 mm	GB1235-76	10
7	O Sealing Ring	20.0*2.0 mm	GB1235-76	5
8	O Sealing Ring	20.3*2.4 mm	GB1235-76	5
9	O Sealing Ring	25.3*2.4 mm	GB1235-76	5
10	O Sealing Ring	20*2.4 mm	GB1235-76	2
11	O Sealing Ring	30*2.4 mm	GB1235-76	1
12	O Sealing Ring	32*3.1 mm	GB1235-76	3
13	O Sealing Ring	60*3.1 mm	GB1235-76	2
14	Combined Sealing Ring	33 mm	JB982-77	5
15	Combined Sealing Ring	42 mm	JB982-77	5
16	Combined Sealing Ring	48 mm	JB982-77	5
17	O Sealing Ring	28*3.55 mm	GB/T3452.1-92	10
18	O Sealing Ring	30*3.55 mm	GB/T3452.1-92	10
19	O Sealing Ring	19*1.8 mm	GB/T3452.1-92	10
20	O Sealing Ring	22.4*2.65 mm	GB/T3452.1-92	10
21	O Sealing Ring	20*1.8 mm	GB/T3452.1-92	10
22	Suction Filter		WUI-250*80F-J	2
23	Filter Core		FAX-250*3	1
24	Filter Core		YD0110D3BN/HC	2
25	Oil Pressure Tester Kit		PBT-H2/P2-40-1000	2
26	Oil Pressure Tester Kit		PBT-H2/P2-6-1000	1
27	Oil Cup	M10*1	GB/T1152-1989	10
28	Oil Cup	M10*1	GB/T1153-1989	10
29	Fuse	10A ○6*30		10
30	Fuse	20A ○6*30		5
31	Combined Sealing Ring	14 mm	JB982-77	5
32	Connector		DI-3/9/16-18UNF	1
33	Connector		CSH G1/4"/WD	1
34	Plug		VSCH-R 1/4"/WD	2
35	Plug		VSCH-R 3/8"/WD	2
36	Plug		XVSCHK 10-L	2
37	Plug		XVSCHK 12-L	2

Free tool Kit

Serial	Name in English	Qty
1	Adjustable Spanner 450mm	1
2	Adjustable Spanner 250mm	1
3	Plus Driver 150#	1
4	Screw Driver 150#	1
5	Straight Tip Shaft Circlip Pliers 150	1
6	Straight Tip Hole Circlip Pliers 150	1
7	Sleeve Wrench 4	1
8	Double End Solid Wrench 5.5*7	1
9	Double End Solid Wrench 8*10	1
10	Double End Solid Wrench 13*16	1
11	Double End Solid Wrench 16*18	1
12	Double End Solid Wrench 18*21	1
13	Double End Solid Wrench 22*24	1
14	Double End Solid Wrench 30*32	1
15	Double End Solid Wrench 34*36	1
16	Hexagona Wrench 5	1
17	Hexagona Wrench 6	1
18	Hexagona Wrench 8	1
19	Hexagona Wrench 10	1
20	Hexagona Wrench 12	1
21	Tool Kit 160*160*330mm	1
22	Strap Wrench 9"	1

IV. Training and Inspection

1. The Technical Training course

SINOBOOM will provide technical training courses on the operation and basic maintenance at SINOBOOM factory.

2. The Training Table

Training Item	Status	Result
1.Mechanism structure		
Chassis		
Turntable		
Boom		
Platform		
2、Hydraulic part		
Basic principle		
Basic structure		
Function module (position, function)		
Basic maintenance		
Replacement of the hydraulic components		
Replacement of the filter elements		
Failure search and remove		
3、Electric part		
Basic principle		
Basic structure		
Controller		
Failure diagnosis		
4、Controller		
Ground controller		
Extend or retract		
Steering		
Amplitude variety		
Platform Controller		
Travelling		
Extend or retract		
Steering		
Amplitude variety		
5、Daily maintenance		
Inspection before starting		
Coolant system		

Air system		
Hydraulic pump		
Engine		
Oil-filling		
Butter oil		
Hydraulic oil		
Gear oil		
Diesel oil		
Replacement of gaskets		
Replacement of the filter elements		

3. The Inspection, tuning and testing

SINOBOOM will notify the customer the actual delivery date before the latest shipping date specified in the contract, and provide a delivery list for customer's reference.

The inspection and Tuning and testing table:

Final Inspection Item	Status	Result
1.Overall inspection		
Surface inspection		
Mechanical leak inspection		
Bolts state inspection		
Engine condition		
Labels		
Instrumentation		
Engine rotating-out function		
2、Ground control		
Key switch		
Engine operation/start/stop		
Emergency stop		
Auxiliary power		
Re-start delay		
Turret/platform rotation		
Boom function		
3、Platform control		
Engine operation/start/stop		
Emergency stop		
Re-start delay		
Auxiliary power		
Turret/platform rotation		
Axle stowed/extended		

Axle steering		
Boom/cable guiderail/cable		
Boom extended		
Boom stowed		
Boom raised		
Boom lowed		
Limit switch for boom extended		
Limit switch for boom extended		
Limit switch for driving confirmation		
High-speed travel		
Low-speed travel		
4、Safety		
Load test		
Level warning		
Foot switch		
Gradeability		
Lock function for boom raise		

V. After-sale Service

1. General

Under normal operating conditions, Sinoboom provide the following warranty service based on that the aerial lifts are operated and maintained correctly as per instruction in the Operation and Maintenance Manual.

Warranty range:

Failures caused by design, manufacture or quality problem of parts.
Failures caused by welding.
Operation failures or hydraulics problems caused by manufacture or assembly.
Note: Free spare parts and tools are exclusive, fast moving parts are exclusive which including cylinder seal kit, filter element of engine and hydraulics.

Warranty period:

12-month or accumulative operation time 2000 hrs for the complete appliance, whichever comes earlier.
5 years for the structural parts.
Note: Warranty of engine and hydraulic pumps should follow the policy of manufacturer; warranty period of battery is 3-month.
After the warranty period, SINOBOOM or SINOBOOM partner still offer life-long maintenance, spare parts supply and technical support services with cost charged.

2. Service content

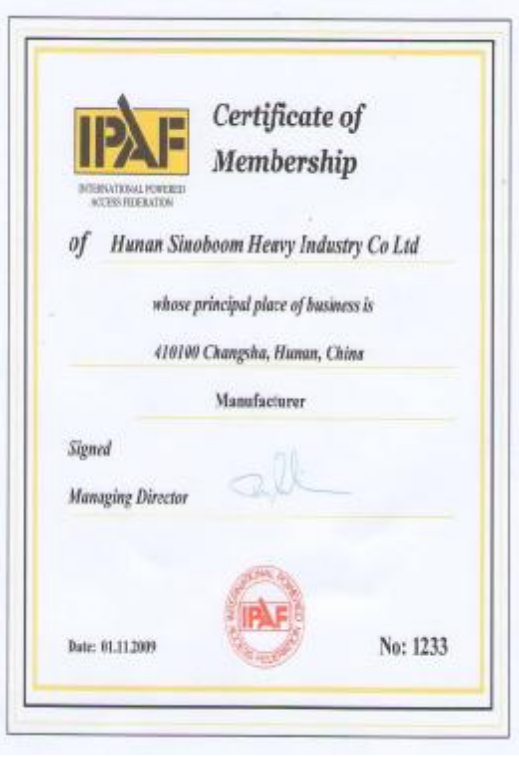
(1). **FREE** installation and adjustment instruction.
(2). **FREE** professional technical training for you to train qualified operators.
(3). Inspect periodically the operation of machines and instruct maintenance and repair for your operators.
(4). Warranty service and life-long maintenance services out of warranty period (charge of material and labor cost).

3. Vendor's commitment

(1). The vendor shall renovate within the limited period if any unqualified items occur in the inspection.
(2). The vendor shall make respond within 24 hours after receiving the complaint call or fax if any malfunction within the warranty period, and instruct the repair.
(3). If machine fails due to vendor's responsibility, vendor should assign technician and arrive at the work site to provide free maintenance, vary from the distance and other force majeure.
(4). The vendor shall provide broad preferential technical support, service and prior accessory supply.

VI. Certificates Documents

IPAF certificate of membership (International power access federation)



IPAF

INTERNATIONAL POWERED ACCESS FEDERATION

Certificate of Membership

of Hunan Sinoboom Heavy Industry Co Ltd

whose principal place of business is

410100 Changsha, Hunan, China

Manufacturer

Signed

Managing Director

Date: 01.11.2009

No: 1233

ISO9001-2000 certificate

北京中水卓越认证有限公司

Beijing Zhongshui Brilliant Certification Co.,Ltd

CERTIFICATE OF CONFORMITY OF QUALITY MANAGEMENT SYSTEM CERTIFICATION

HUNAN SINOBOCM HEAVY INDUSTRY CO.,LTD

GB/T19001-2000 idt ISO9001:2000 Standard

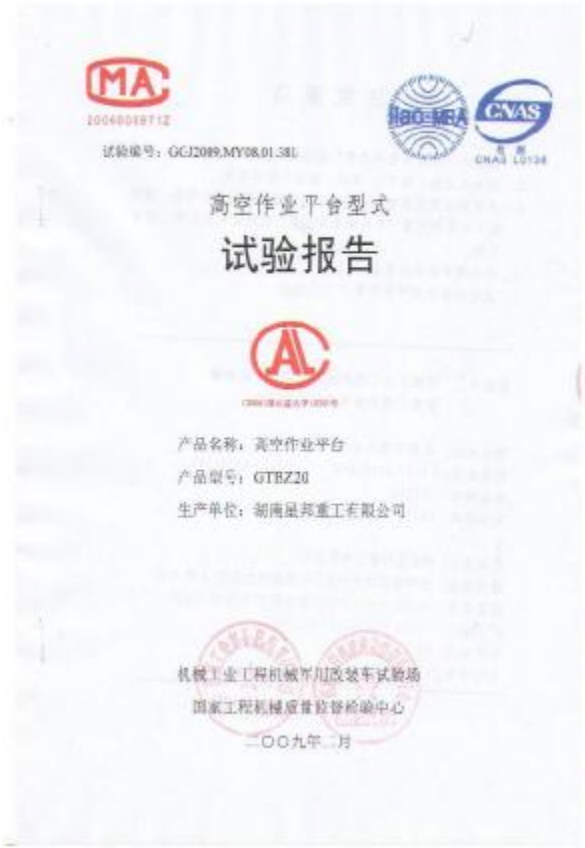
IAF

CNAS

Type Approval Test Certificates

China National Construction Machinery Quality Supervising Test Center and MMI Proving Ground for Construction Machinery and Refit Military Vehicles

GTBZ20



GTBZ25

GTBZ36

SINOBOOM Patent Certificates

The self-patent certificate of self-propelled aerial work platform; A telescopic taw chain unit with mobile bracket;

A embedded taw chain unit

A telescopic taw chain unit ; An anti-crash unit of the telescopic cylinder and steel rope bracket

An anti-crash unit of the telescopic cylinder and steel.

SINOBOOM CE Certificates

Client: Hunan Sinoboom Heavy Industry Co., Ltd.
27# Nan'er Road,
Changsha,
Hunan,
P.R.China

SGS United Kingdom Limited
Unit 10
Bowburn South Industrial Estate
Bowburn
Durham

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CERTIFICATE OF ADEQUACY

Certificate No MDC 741
SGS United Kingdom Ltd is a Notified Body appointed by the DTI under the Machinery Directive 2006/42/EC.
Appointment Number 0353

Date of Issue	17th May 2010
SGS Reference	CST135860/1/TF
Details of Product	Telescopic boom aerial work platform MODEL TYPE: GTBZ 20, GTBZ 22, GTBZ 25, GTBZ 27, GTBZ 30, GTBZ 32
Technical File Reference No.	OUCE10106
Date of Assessment	7th May to 17th May 2010
Assessment Performed	Assessed for compliance with the requirements of Annex VII of the Machinery Directive 2006/42/EC (Technical File).
Conclusion	In the opinion of SGS the submitted technical file referenced as OUCE 10106 satisfies the requirements of the Machinery Directive 2006/42/EC.
Issue No.	1 — Valid until 16th May 2015

This certificate refers only to the sample submitted for test. This certificate shall not be reproduced except in full without the written approval of SGS United Kingdom Limited.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

CE

Authorised Signatory

F. Huggins
Principal Test Engineer

All enquiries relating to this certificate must be directed to the Test Engineer

SGSPAPER 10063017

Client: Hunan Sinoboom Heavy Industry Co., Ltd.
27# Nan'er Road,
Changsha,
Hunan,
P.R.China

SGS United Kingdom Limited
Unit 10
Bowburn South Industrial Estate
Bowburn
Durham

Page 1 of 1

EC TYPE EXAMINATION CERTIFICATE

Certificate No MDC 742
SGS United Kingdom Ltd is a Notified Body appointed by the DTI under the Machinery Directive 2006/42/EC
Appointment Number 0353

Date of Issue	17th May 2010
Details of Product	Telescopic boom aerial work platform MODEL TYPE: GTBZ 20, GTBZ 22, GTBZ 25, GTBZ 27, GTBZ 30, GTBZ 32
Manufacturer	Hunan Sinoboom Heavy Industry Co., Ltd.
Date of Receipt	6th May 2010
Technical File Reference No.	OUCE10106
Assessment Performed	Type examination with reference to: Conformity to Annex 4 and Annex 1, the Essential Health and Safety Requirements of the Machinery Directive 2006/42/EC section 1.
Standards Referenced	EN 280: 2001+A2:2009; EN ISO 14121-1:2007
Conditions Subject to Issue	Acceptance of information detailed in Technical File OUCE 10106 and referenced against job file CST135860/1/TF
Declaration	In the opinion of SGS the submitted technical file satisfies the requirements of the Machinery Directive 2006/42/EC
Issue No.	1 — Valid until 16th May 2015

This certificate is only valid for the equipment and configuration described in conjunction with the data detailed above. This certificate shall not be reproduced except in full without the written approval of SGS United Kingdom Limited.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

CE

Test Engineer

F. Huggins
Principal Test Engineer

All enquiries relating to this certificate must be directed to the Test Engineer

SGSPAPER 10063019

VII. SINOBOOM photo

For the world biggest port Machinery producer.
The photo shows Sinoboom GTBZ38
working in Nantong base, Jiangsu, P.R.China

Below shows Sinoboom GTBZ36 & GTBZ25 working in Nantong base, Jiangsu, P.R.China

For the Chinese top 5 shipbuilding plant.
Below shows Sinoboom GTBZ30, GTBZ25 working in Nantong, Jiangsu, P.R.China

For Hongkong, Sinoboom GTBZ30 in Hongkong

Sinoboom GTZZ15 in Malaysia

For Singapore
Sinoboom GTBZ22 working for huge Santosa project, Singapore

For Australia
Sinoboom GTJZ08, GTZZ15, GTBZ22,GTBZ27, GTBZ32

Sinoboom Machines used in overseas project:
GTZZ15, GTBZ20, GTBZ25,GTBZ38,GTBZ42:


sinoboom GTBZ42
sarens

Sinoboom GTBZ30 used in Saudi Aramco