

## HB48A III Truck-Mounted Concrete Pump



### I. Parts and System

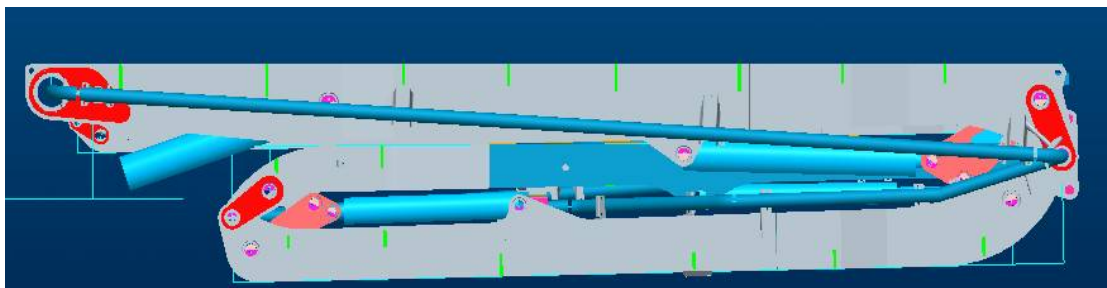
#### 1. Carrier

The carrier is original 4-axle chassis imported from Isuzu, Japan. It complies with Euro III emission control regulations and is designed in accordance with heavy duty chassis, suitable for tough road conditions of China construction site.

#### 2. Structural Parts

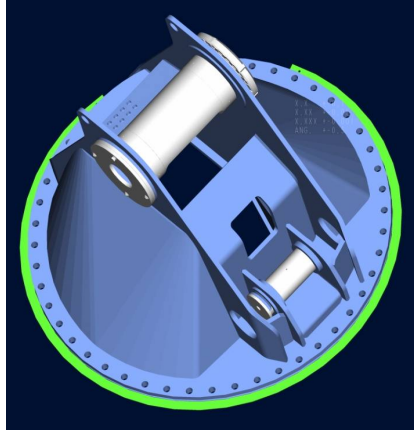
##### 2.1 Placing boom

It is designed with FEM analysis and equal strength of variable cross-section, light weight. Each pivot is in optimized state with better stability, so the placing boom can be operated on narrow construction site.



##### 2.2 Turntable

The turntable is plate frame box type structure; the steel is from Sweden WELDOX700E. Its upper part is connected with the placing boom and the lower part connected with swivel base through slewing ring. The turntable can swing  $\pm 270^\circ$ .



### 2.3 Swivel base

The swivel base is plate frame box type structure and amalgamates with the front outrigger box as a body; the steel is imported from Sweden and the upper part is connected with slewing ring and the lower part connected with sub-frame; the outrigger and extension cylinder are articulated on the swivel base.

### 2.4 Outrigger

The outrigger is “X” type with two-stage telescoping; the rear outrigger is swivel type. The cross-section is box type with reinforced structure.



### 2.5 Sub-frame

The sub-frame rear section has catwalks; the middle part connects with central pump water

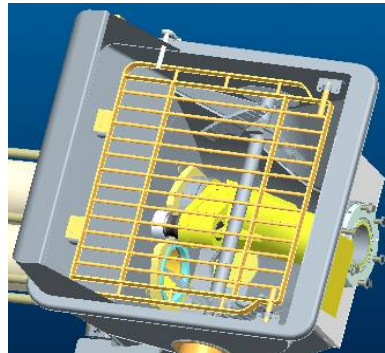
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tank and the rear connects with central pump hopper and upper/lower and left/right pedals; the main frame and sub-frame are connected with each other by connection parts which are welded to the sub-frame and connected to the main frame by high-strength bolts; the sub-frame is divided into front and rear sections, the middle interval part for hydraulic piping.



## 2.6 Hopper

The hopper is new type hopper, with large pipe and large passing, considerably reduces pumping resistance and increases suction sufficiency and absorption efficiency.



## 2.7 Delivery pipe

The delivery pipe is made of high wear resistance material, with inner surface high-frequency quenched, has a service life of 30,000m<sup>3</sup>.

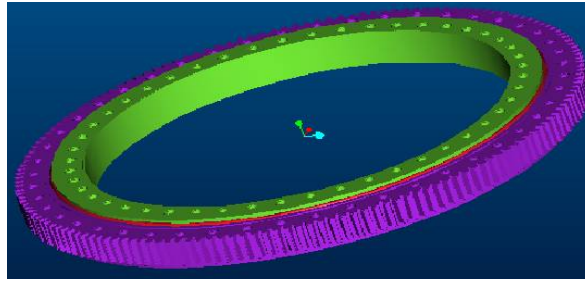


## 3. Slewing System

### 3.1 Slewing ring

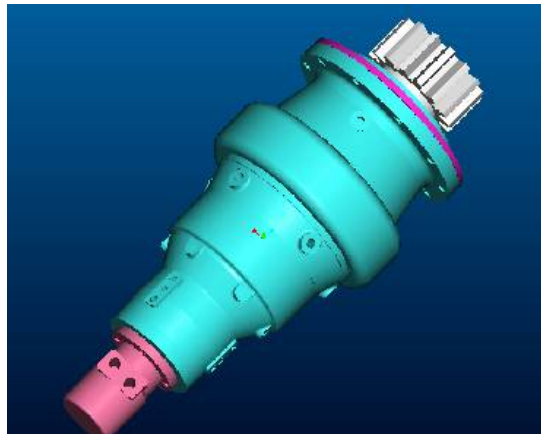
The slewing ring is single-row cross roller external meshed slewing ring made by Xuzhou

Rothe Erde, can swing 360° continuously; the roller track is waterproof and dustproof.



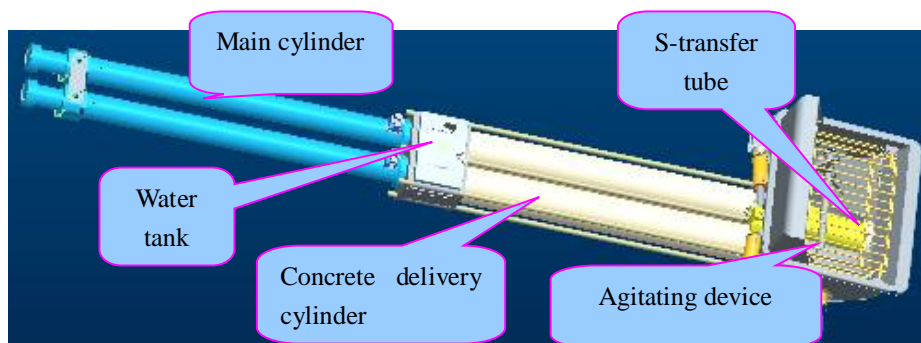
### 3.2 Slewing reducer

The slewing reducer is made by Italian Dinamic Company, with features of compact structure, heavy load bearing capacity and high transmission efficiency.



## 4. Central Pumping System

The central pumping system consists of pumping cylinder, water tank, concrete delivery cylinder and other parts. The pumping cylinder, water tank, concrete delivery cylinder and hopper are fixed together by cross feed screws and connecting bolts.



#### **4.1 Main Cylinder**

The main cylinder guide sleeve seal is designed with XCMG patented seal, easy for assembly and disassembly. The guide sleeve seal can be replaced without removing the main cylinder, which reduces replacement time greatly and is unique to the industry.

#### **4.2 Water tank**

The water tank is full of water during pumping work and it is used for cooling and lubricating the piston head; meanwhile the centralized pumping system is connected with sub-frame through the water tank.

#### **4.3 Concrete delivery cylinder**

It sucks concrete from hopper and then pumps the concrete into delivery pipe; its inner surface is treated specially, with higher abrasion resistance.

#### **4.4 S-transfer tube**

It takes floating seal structure and can compensate abrasion clearance automatically, with longer service life. The driving axle is made of 38CrMoAl high strength alloy steel treated by nitriding, with features of optimized structure, dispersed stress and longer service life (100000m<sup>3</sup>).

#### **4.5 Agitating device**

It is driven by single motor. The motor's assembling and positioning are assured completely by machining tolerance of flange and axle. When replacement of blade and S-transfer tube needs dismount and assemble the motor, the precision is easily kept, thus the motor shaking is avoided and the motor working reliability is improved.

### **5. Hydraulic System**

The main hydraulic oil pump and boom pump are imported from Rexroth, Germany; The placing boom control valve, oil cylinder lock, high-pressure hose, hydraulic pipe fitting, solenoid valve and hydraulic valve all use world-famous company's parts and components to ensure high reliability of our product.

The pumping hydraulic system is the latest closed constant power variable displacement system, less pressure loss, little heating, no impact in direction change and smooth operation. The high-pressure automatic unloading system can automatically reduce pumping pilot pressure to 1MPa below and stop pumping when the main pump oil pressure exceeds 35MPa, which can reduce energy loss and system heating, meanwhile the pulse shocking pressure can effectively solve the pipe clogging.

The placing boom hydraulic system is variable displacement pump electro-hydraulic proportional remote control load sensitive system. The use of pilot pressure-relief balance

valve makes the operation of placing boom more convenient, flexible, good fine motion, less power loss, smooth work and little vibration.

## **6. Electrical System**

The machine has a color display, can dynamically display variable working parameters and real-time record variable working histories, and has the function of fault warning and automatic cut-off.

The electric system is equipped with HBC remote controller, easy for carrying and operating, can realize remote control of multiple functions and increase convenience of operation; meanwhile it has the industry's unique step-less remote control of pumping operation.

The system can realize automatic control of engine rev and idle speed, with features of energy-saving and automatic control of hydraulic oil temperature.

## **7. Centralized Lubricating System**

The imported progressive lubricating system can give grease to each key lubricating point from point to point, by time and ration, which makes the vehicle self maintain automatically and has a longer service life.

The lubrication point: S transfer tube, agitating device, pumping cylinder.

## **8. Cleaning System**

The outrigger has an external water tank to avoid the lack of water on construction site; high-pressure water pump can facilitate after-work cleaning of pumping system, delivery pipe and the whole vehicle.

## **9. Radiator System**

The radiator is driven by hydraulic motor and has an automatic checking device; when the oil temperature reaches the system specified  $55^{\circ}\text{C}$ , the radiator motor starts working to reduce system oil temperature, so as to ensure the normal work of hydraulic system and increase the service life of hydraulic components.

# **II. Safety Protection System**

## **1. Engine overload protection**

The system has a power limit valve; when engine overload occurs, pump can automatically reduce delivery amount to avoid engine damage caused by overload.

## **2. Engine low speed protection**

The system has no pumping function when engine speed is lower than 800rpm, so as to avoid engine running with load at low speed and prolong engine service life.

## **3. Main pump overload protection**

The system has a pressure cut-off valve; the system pressure will reach the highest when

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pump is clogged; at this time main pump displacement will automatically return to zero to avoid overflow heat loss; engine in low load state and delivery pressure pulsation impact is easy to resolve pipe clogging; if there is no pressure cut-off valve, engine will be in maximum load state and even shutdown, which reduces the engine service life.

#### **4. Hydraulic oil automatic cooling**

When hydraulic oil temperature reaches 55°C, the oil cooler sensor automatically turns on the cooling fan to bring oil temperature down; when the system temperature reaches 90°C, the main pump sensor stops pumping work to protect hydraulic system.

#### **5. Pump suction protection**

When oil level is too low or filter is dirty, a vacuum meter will give warning to remind you of filling oil or replacing filter element, which greatly reduces the possibility of pump suction and increases the pump service life.

#### **6. Automatic reverse agitating function**

When bigger stone blocks agitating fan, agitating motor stops, oil temperature rises and pressure relay sends signals. Then electric solenoid change valve changes direction and the agitating motor turns reversely. After several seconds, the electric magnet resets and agitating motor rotates normally. This process avoids the hopper damage and protects the agitating motor and oil pump effectively.

#### **7. Automatic centralized lubrication protection**

The lubrication system can use thin hydraulic oil for lubrication when users forget to refill lubricating oil.

#### **8. Anti-tip-over protection**

The electronic level meter and pressure sensor installed can real-time monitor the pump truck inclination angle change and the controller can automatically analyze inclination angle and outrigger pressure and estimate the possibility of overall machine tipping over; when the longitudinal inclination angle exceeds 5° and lateral inclination angle exceeds 3°, or the inclination angle changes quickly during pumping work, the controller will give a warning automatically.

The controller can also real-time monitor the force received by each outrigger. When the force applied outrigger is less than two, the controller can automatically send a warning signal and restrict boom operation, which increases the safety and intelligent level of pump truck operation.

### III. Main Technical Parameters

#### 1. Main technical parameters for travel state

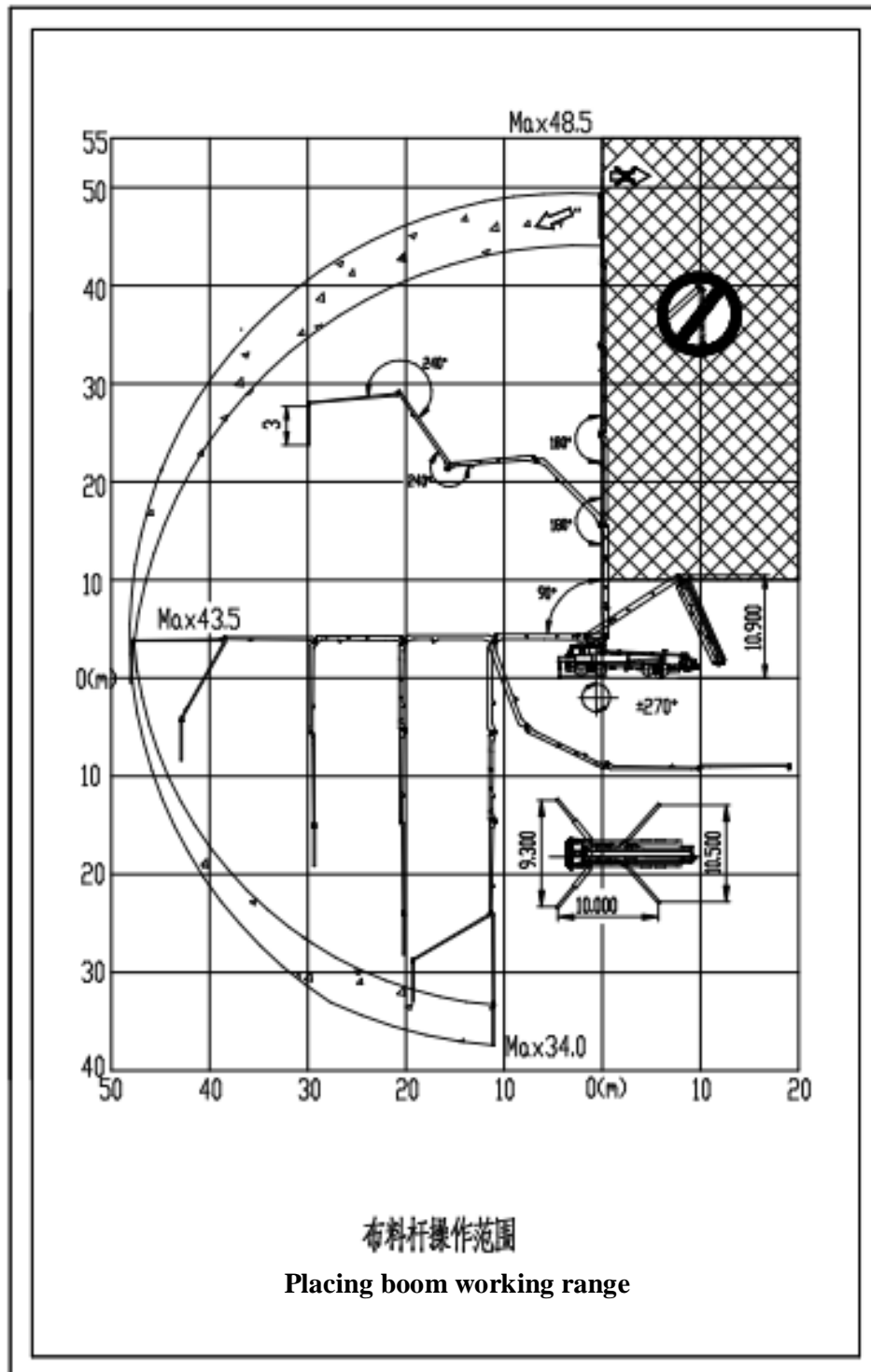
Item		Parameter
Overall dimensions (L×W×H)		mm
		12850×2500×4000
Fuel		Diesel
Engine emission standard		China III
Displacement/power		ml/kW
		14256/287
Steering type		Steering wheel
Axle numbers		4
Wheelbase		mm
		1850+4605+1310
Steel spring leafs (front/rear)		8/7/9
Tire		295/80R22.5
Tread (front /rear)		mm
		2065/1850
Tire numbers ( spare tire excluded )		12
Total curb mass	Overall mass	kg
	Front axle	kg
	Middle/rear axle	kg
Max. overall mass	Overall mass	kg
	Front axle	kg
	Middle &rear axle	kg
Permitted number in the driver' cab		2
Approach/departure angle		23°/10°
Front/rear overhang		mm
		1400/3390
Front/rear extension		mm
		0/295
Max. driving speed		km/h
		89
Min. ground clearance		mm
		240
Max. grade-ability		34%
Oil consumption for 100km		L/100km
		40
Chassis	Model	CYH51Y
	Type	Category II
	Manufacturer	ISUZU
Engine	Model	6WF1D
	Manufacturer	ISUZU



## 2. Main technical parameters for pumping operation

Category	Items	Unit	Parameter	
Pumping system	Theoretical output (high/low pressure)	m <sup>3</sup> /h	90/150	
	Concrete delivery pressure (high/low)	MPa	13/8	
	Theoretical cycle (high/low pressure)	cycle/min	13/22	
	Delivery cylinder bore×stroke	mm	Φ 260×2000	
	Max. aggregate size	mm	40	
	Concrete filling height	mm	1570	
	Hopper capacity	m <sup>3</sup>	0.8	
	Concrete slump	cm	12~23	
Placing boom	Max. reach height	m	48.5	
	Max. reach depth	m	34	
	Slewing radius	m	43.5	
	Slewing angle	°	±270	
	1st section unfolding angle	°	90	
	2nd section unfolding angle	°	180	
	3rd section unfolding angle	°	180	
	4th section unfolding angle	°	240	
	5th section unfolding angle	°	240	
	Boom speed (from vertical position to horizontal)	1 <sup>st</sup> section (up, down)	s	100~120
		2 <sup>nd</sup> section (up, down)	s	90~100
		3 <sup>rd</sup> section (up, down)	s	75~85
		4 <sup>th</sup> section (up, down)	s	40~50
		5 <sup>th</sup> section (up, down)	s	25~35
360°swing		s	221~299	
Stabilizer span	Longitudinal span	mm	10000	
	Front stabilizer transverse span	mm	9300	
	Rear stabilizer transverse span	mm	10500	
Transfer tube			S-Valve	
Others	Lubrication		Automatic	
	Control type		Manual/Remote	
	Water tank capacity	L	600	
	Water pump max. pressure	MPa	2	

#### IV. Placing Boom Working Range



## V. Main Parts List

No.	Name	Model	Data	Qty.	Manufacturer
1	Placing boom			1	XCMG, BMC
2	Swivel base			1	XCMG, BMC
3	Turntable			1	XCMG, BMC
4	Outrigger			1	XCMG, BMC
5	Slewing ring	011.50.1390.101.24.03D3		1	Xuzhou Rothe Erde
6	Slewing system	RE1022-TS-FRENO...		1	Dinamic, Italy
7	Chassis	CYH51Y		1	Isuzu, Japan
8	Transfer case	4496.21		1	STIEBEL, Germany
9	Boom pump	A7V055	55ml/r 38MPa	1	Rexroth, Germany
10	Quadruple pump	A4VG125...	125ml/r 42MPa	1	Rexroth, Germany
11	Superstructure multi-way valve	PSV4S1/390-3...	40MPa	1	HAWE, Germany
12	Undercarriage multi-way valve	SD5/4-P(KG4-250).../AE	25MPa	1	Walvoil, Italy
		SD5/4-P(SV)/18L.../AET-PSA		1	
13	Cleaning water pump	BZ-320	20L/min	1	Jiebao, Suzhou
14	Agitator motor	BM5-985K3AY	985ml/r	1	Zhongyi, Ningbo
15	High-pressure filter	28P-2-10QM298C2C21	10 $\mu$		Parker
16	Accumulator	SB330-10A1/112A-330A	10L 10MPa		Hydac, Germany
17	Radiator	BCFL5310.76-00	53kW	1	Helinde, Shanghai
18	Lubricating system	BV4+MX-F4+EP-S+FAZ02706-01		1	BEKA
19	Display	ST064-A-C-Y-06	Color 6.4 inch	1	Palfin
20	Controller	TTC PC1000	9~32VDC IP67	1	TTC, Italy
21	Remote controller	FST727A		1	HBC, Germany

**VI. Supplied Spare Parts List**

No.	Name and Spec.	SAP Code	Unit	Qty.	Remarks
1	O ring 12.5×2.65G	801100162	Piece	2	
2	O ring 25×3.55G	801100120	Piece	2	
3	O ring 37.5×2.65G	801100175	Piece	1	
4	O ring 37.5×3.55G	801100040	Piece	4	
5	O ring 40×2.65G	801100177	Piece	1	
6	O ring 63×3.55G	801100239	Piece	2	
7	O ring 200×7.0G	801100301	Piece	3	
8	O ring 258×7.0G	801100169	Piece	1	
9	O ring 90×2.65G	801100056	Piece	2	
10	O ring 100×5.3G	801100054	Piece	1	
11	O ring 122×5.3G	801100073	Piece	1	
12	O ring 47.5×3.55G	801100180	Piece	1	
13	O ring 33.5×3.55G	801100144	Piece	1	
14	O ring 236×5.3G	801100251	Piece	1	
15	O ring 272×7.0G	803107822	Piece	2	
16	O ring 265×5.3G	801100062	Piece	4	
17	Y-seal ring 240×220	803107848	Piece	3	
18	Support ring 220×225×24.5	800500001	Piece	1	
19	Dust ring A1M010P5008	803200400	Piece	1	
20	Y-seal ring 120×100×16	803107861	Piece	1	
21	Filter cartridge EF-109	803100125	Piece	1	
22	Filter cartridge EF-108	803100124	Piece	3	
23	Filter cartridge TFX-400×100	803169490	Piece	1	
24	Filter cartridge G04268	803108676	Piece	1	
25	Splice cartridge BO-ZR8L/S	803111057	Piece	2	
26	Splice cartridge BO-ZR10L	803111582	Piece	1	
27	Splice cartridge BO-ZR12L/S	803111028	Piece	4	
28	Splice cartridge BO-ZR12L	803111039	Piece	4	
29	Splice cartridge BO-ZR15L	803110641	Piece	4	
30	Splice cartridge BO-ZR18L	803111031	Piece	4	
31	Splice cartridge BO-ZR16S	803111291	Piece	4	

32	Splice cartridge BO-ZR20S	803111399	Piece	4	
33	Splice cartridge BO-ZR25S	803111042	Piece	2	
34	Tapered tube( $\phi$ 150- $\phi$ 125 L=1500)	150102268	Piece	1	
35	Concrete seal polyester	152601245	Piece	2	
36	Seal ring butyl rubber	152601236	Piece	2	
37	Wear sleeve	150102113	Piece	1	
38	$\Phi$ 125 Pipe clip (inc. seal ring)	150102183	Piece	2	
39	$\Phi$ 150 Pipe clip (inc. seal ring)	150102198	Piece	1	
40	$\Phi$ 180 Pipe clip	150102181	Piece	1	
41	36° Bended tube ZG30Mn	150102188	Piece	1	R240 36°
42	90° Bended tube ZG30Mn	150102123	Piece	1	R241 90° 275/275
43	90° Bended tube ZGMn 13-4	150501840	Piece	1	R147.5 90°225/225
44	90° Bended tube ZGMn 13-4	150501712	Piece	2	R147.5 90°180/180
45	15° Bended tube ZGMn 13-4	150501713	Piece	1	R240 15°
46	30° Bended tube ZGMn 13-4	150501714			
47	90° Bended tube ZGMn 13-4	151301322			
48	Cleaning ball, foam rubber	150102145	Piece	1	R240 30°
49	Proximity switch XS630B4PAL2	803602560	Piece	1	R241 90° 275/362
50	Relay RH2B-U DC24V	803602450	Piece	1	
51	Fuse 10A 5×20	803600932	Piece	2	
52	Fuse 20A 5×20	803600934	Piece	2	
53	Water pump supplied spare parts	803006927	Piece	5	

**VII. Supplied Tools List**

No.	Name and Spec.	SAP Code	Unit	Qty.	Remarks
1	NST-402 tools box (Pump truck)	819904746	Piece	1	
2	Inner-hexagon spanner 2.5 Imported	840500694	Piece	1	The tools encased in the NST-402 toolbox
3	Inner-hexagon spanner 3 Imported	840500695	Piece	1	
4	Inner-hexagon spanner 4 Imported	840500696	Piece	1	
5	Inner-hexagon spanner 5	840500268	Piece	1	
6	Inner-hexagon spanner 6 Imported	840500698	Piece	1	
7	Inner-hexagon spanner 8mm	840500699	Piece	1	
8	Inner-hexagon spanner 10mm	840500700	Piece	1	
9	Inner-hexagon spanner 12 Imported	840500701	Piece	1	
10	Inner-hexagon spanner 14 Imported	840500702	Piece	1	
11	Double-end spanner 6×7 Imported	840500452	Piece	1	
12	Double-end spanner 8×10 Imported	840500703	Piece	1	
13	Double-end spanner 12×14 Imported	840500689	Piece	1	
14	Double-end spanner 13×15 Imported	840500764	Piece	1	
15	Double-end spanner 16×18 Imported	840500208	Piece	1	
16	Double-end spanner 17×19 Imported	840500690	Piece	1	
17	Double-end spanner 22×24 Imported	840500766	Piece	1	
18	Double-end spanner 27×30 Imported	840500691	Piece	1	
19	Double-end spanner 32×36 Imported	840500692	Piece	1	
20	Double-end spanner 41×46 Imported	840500693	Piece	1	
21	Double-end ring spanner 12×14 Imported	840500777	Piece	1	
22	Double-end ring spanner 17×19 Imported	840500763	Piece	1	
23	Cross-head screwdriver 100×6 Imported	840500767	Piece	1	
24	Plain-head screwdriver 100×6 Imported	840500768	Piece	1	
25	Square head hammer 0.5KG Imported	801500802	Piece	1	
26	Wire pliers L=150 Imported	840500674	Piece	1	
27	Adjustable spanner 150×18 Imported	840500675	Piece	1	
28	Adjustable spanner 300×36 Imported	840500676	Piece	1	
29	Grease gun (lever type) 120CC Imported	819904310	Piece	1	
30	Socket spanner Socket 10mm Imported	840500677	Piece	1	
31	Socket spanner Socket 11mm Imported	840500678	Piece	1	

32	Socket spanner Socket 12mm Imported	840500679	Piece	1	
33	Socket spanner Socket 14mm Imported	840500680	Piece	1	
34	Socket spanner Socket 17mm Imported	840500681	Piece	1	
35	Socket spanner Socket 19mm Imported	840500682	Piece	1	
36	Socket spanner Socket 22mm Imported	840500683	Piece	1	
37	Socket spanner Socket 24mm Imported	840500684	Piece	1	
38	Socket spanner Socket 27mm Imported	840500685	Piece	1	
39	Socket spanner Socket 30mm Imported	840500686	Piece	1	
40	Socket spanner Socket 32mm Imported	840500687	Piece	1	
41	Ring ratchet spanner 10 Imported	840500688	Piece	1	
42	Sliding lever 10 Imported	801500777	Piece	1	
43	Quick rocker 16-1/4 Imported	819904312	Piece	1	
44	Connection rod 5 inch Imported	801500780	Piece	1	
45	Connection rod 10 inch Imported	801500781	Piece	1	
46	Tire pressure gun GAS-1	819904311	Piece	1	
47	CQJ-BC Inflation tool	819904497	Piece	1	
48	Water pump assembly (inc. cleaning pump)	839900194	Piece	1	
49	Outlet pipe (Suzhou Blackcat)	800700083	Piece	1	
50	Suction pipe (Suzhou Blackcat)	800700084	Piece	1	
51	Water pump pressure gauge (Suzhou Blackcat)	803000734	Piece	1	
52	AK-120 First-aid kit Domestic	819900454	Piece	1	
53	Brush 3	839900089	Piece	1	
54	Chassis supplied tools	—	Bag	1	
55	Tie-rod bag	819900607	Piece	1	
56	Single-end spanner 65	840500228	Piece	1	

Note: when equipped with Weidong Lubrication system, use SJB-50 manual fuel charger (803000602); when equipped with BEKA Lubrication system, use shot lubricator (208103026); when equipped with BIJUR Lubrication system, use manual greaser; select one of the three.

**VIII. Packing List**

No.	Name	Qty.	Package	Remarks
1	HB48AIII Truck-Mounted Concrete Pump	1	Nude packing	With 20L fuel in fuel tank
2	HB48AIII Product Certificate	1		
3	HB48AIII Operation Manual	1		
4	HB48AIII Parts Catalogue	1		
5	HB48AIII Maintenance Manual	1		
6	HB48AIII Supplied Tools	1	In iron box	
7	HB48AIII Supplied Spare Parts	1	In wood case	
8	Chassis Packing List and the Involved Documents	1	Original package	
9	Reducer Packing List and the Involved Documents	1	Original package	
10	Transfer Case Packing List and the Involved Documents	1	Original package	
11	Lubrication System Packing List and the Involved Documents	1	Original package	



**IX. 3000 Hour Easy Wear Parts List****Optional parts, not included in the total bid price**

No.	Spare parts name	SAP Code	Qty.	Manufacturer
1	Luffing cylinder I big cavity balance valve	803113324	1	HAWE
2	Luffing cylinder I small cavity balance valve	803002079	1	HAWE
3	Luffing cylinder II big cavity balance valve	803113330	1	HAWE
4	Luffing cylinder II small cavity balance valve	803002079	1	HAWE
5	Luffing cylinder III big cavity balance valve	803002079	1	HAWE
6	Luffing cylinder III small cavity balance valve	803002081	1	HAWE
7	Luffing cylinder IV big cavity balance valve	803002081	1	HAWE
8	Luffing cylinder IV small cavity balance valve	803002082	1	HAWE
9	Luffing cylinder V big cavity balance valve	803002083	1	HAWE
10	Luffing cylinder V small cavity balance valve	803002083	1	HAWE
11	Outrigger two-way hydraulic lock	803001667	4	Jiujiang
12	Outrigger one-way hydraulic lock	803000213	4	Jiujiang
13	High-pressure filter	803109595	1	Helinde
14	Outrigger jack backpressure valve	803001591	4	HAWE
15	Front outrigger slewing cylinder	152000011	2	Xuzhou Hydraulics
16	Front outrigger telescopic cylinder	152000014	2	Xuzhou Hydraulics
17	Outrigger jack cylinder	150501940	4	Xuzhou Hydraulics
18	Rear outrigger slewing cylinder	152000018	2	Xuzhou Hydraulics
19	Solenoid valve	803001633	2	Rexroth
20	Solenoid valve	803001634	1	Rexroth
21	Speed limit lock	803000293	1	Jiujiang
22	Proportional overflow valve	803002338	1	HAWE
23	Shuttle valve	803001599	1	Rexroth
24	S Pipe assy.	152601233	1	
25	Bearing ring assy.	150102095	1	
26	Cutting ring	152601234	1	
27	Spectacle plate	152601235	1	
28	Y type seal ring	803107848	3	
29	Supporting ring	800500001	1	
30	Seal ring	152601236	2	
31	Support ring	152601244	1	
32	Concrete seal body	152601245	1	
33	Crank	152601263	1	
34	Flange bearing	150102018	1	
35	Wear sleeve	150102113	1	
36	Retaining plate	150102078	2	
37	Retaining plate	150102079	2	
38	Ball type base	150102114	4	
39	Support ring	150102112	1	
40	Y-seal ring	803107861	1	

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41	O-ring	801100056	2	
42	O-ring	801100054	1	
43	O-ring	801100073	1	
44	S Pipe drive cylinder	152601220	2	
45	Flange assy.	152601264	1	
46	Flange assy.	152601268	1	
47	Nylon sleeve	150102328	2	
48	Nylon sleeve	152601269	1	
49	Clamp plate assy. 1	152601441	2	
50	Clamp plate assy. 2	152601442	2	
51	Y-seal ring	803107848	3	
52	Rubber washer	152601270	2	
53	Rubber washer	152601271	2	
54	Rubber washer	150102048	2	
55	Slewing motor	803000505	1	
56	Seal ring	803108429	1	
57	Frame seal	803107826	1	
58	Flange	152601330	1	
59	3-way bended tube	150102122	1	
60	Chain bended tube	152601331	1	
61	Tapered tube	150102268	1	
62	Tapered tube	150601335	1	
63	Φ180 Pipe clip	150102181	3	
64	Φ150 Pipe clip	150102198	2	
65	Φ125 Pipe clip	150102183	40	
66	90°bended tube	150102123	1	
67	Bended tube	150501714	2	
68	Bended tube	151301300	1	
69	End hose	152601232	1	
70	Relay	803602452	2	
71	Relay	803602450	2	
72	Relay	803602449	2	
73	Proximity switch	803602542	2	
74	Proximity switch	803602395	1	Schneider
75	Position limit switch	803602534	1	
76	Proximity switch	803602560	1	
77	Temperature sensor	803501025	1	
78	Horn	803501002	1	
79	Fuse	803600934	10	
80	Fuse	803600933	10	
81	Fuse	803600932	10	
82	Fuse	803600946	10	