



**DONGHAE MACHINERY & AVIATION Co., Ltd**

# TECHNICAL SPECIFICATION

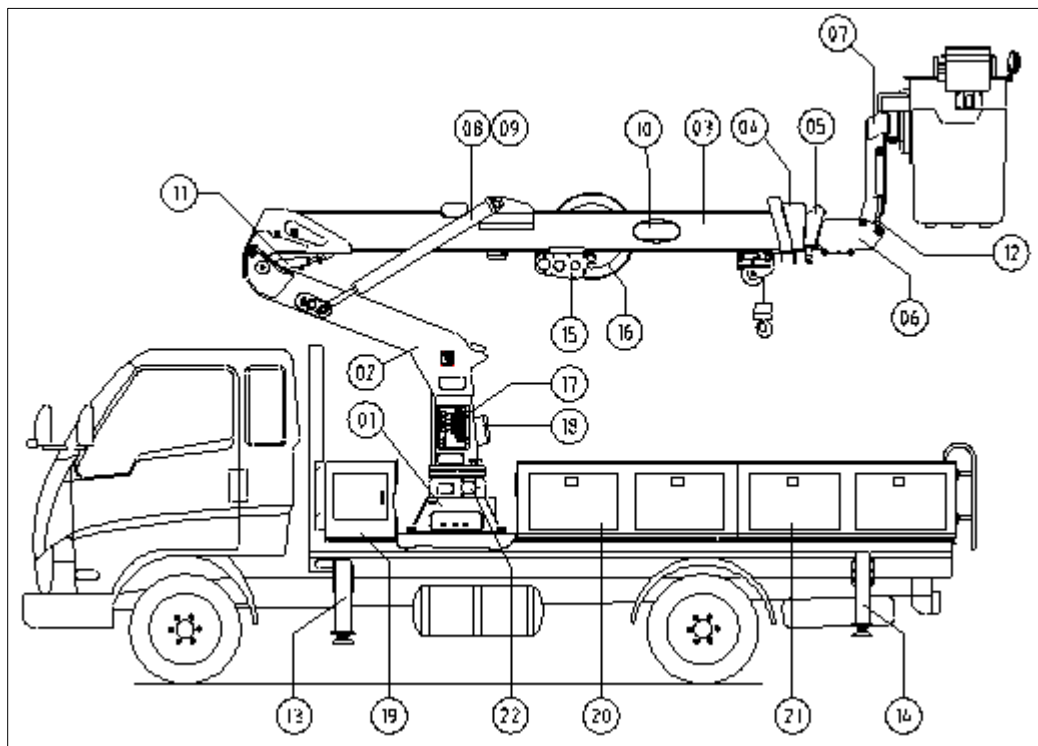
## MODEL - DHS 1800



Model	DHS 1800
Revision	05
Date	May 16, 2012

# DHS 1800 AP --- Hydraulic Crane Leader

## 1. Terminology Diagram/DHS 1800



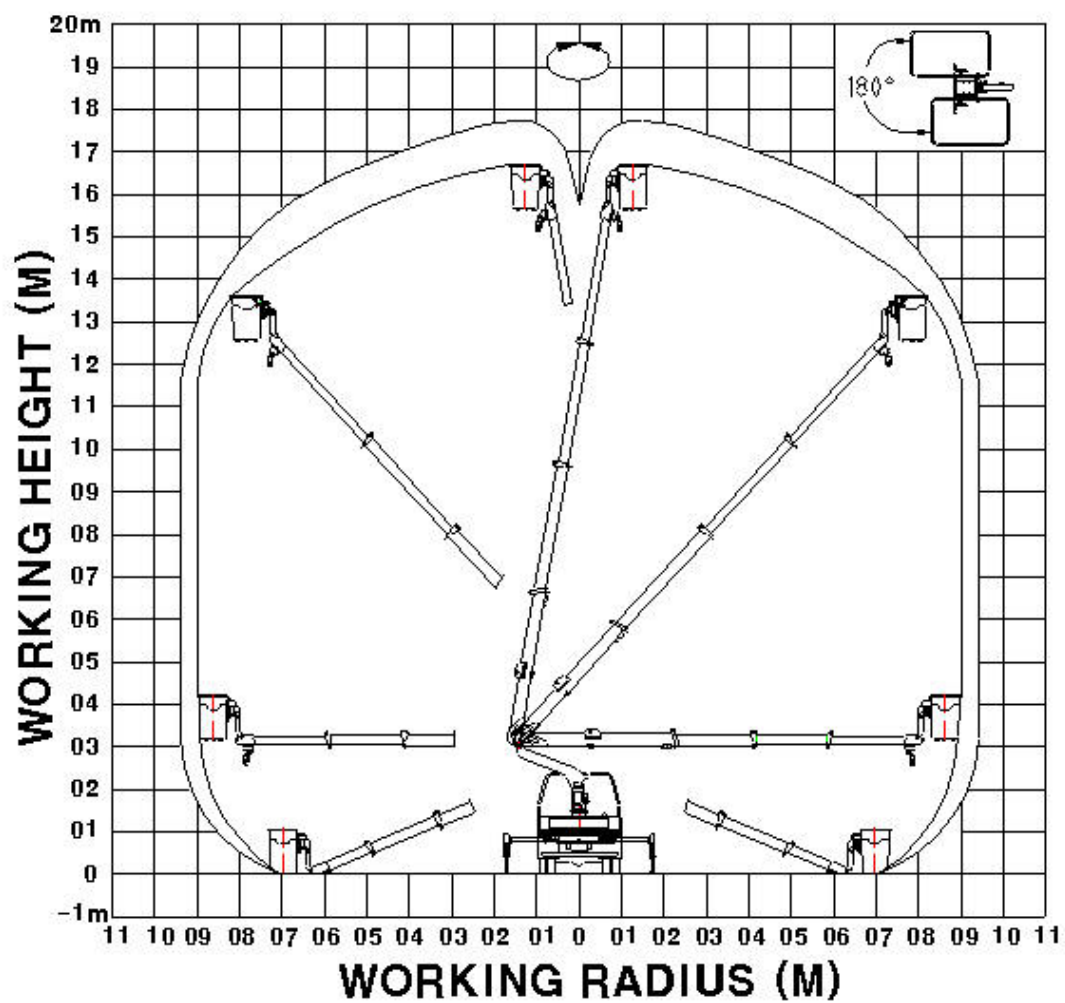
No.	Description	No.	Description
1	Unit	12	Platform leveling cylinder
2	Column	13	Front outrigger
3	1 <sup>st</sup> stage boom	14	Rear outrigger
4	2 <sup>nd</sup> stage boom	15	Winch (Option)
5	3 <sup>rd</sup> stage boom	16	Hose reel
6	4 <sup>th</sup> stage boom	17	Emergency manual valve
7	FRP rotary platform	18	Receiver box
8	Derrick cylinder (L)	19	Left steel compartment (Option)
9	Derrick cylinder (R)	20	Left-front steel compartment (Option)
10	Telescopic cylinder	21	Left-rear steel compartment (Option)
11	Leveling cylinder	22	Slewing cylinder

**CAUTION!**

**Steel Compartment is an option item.**

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## 2. Working Radius/DHS 1800



## DHS 1800 AP --- Hydraulic Crane Leader

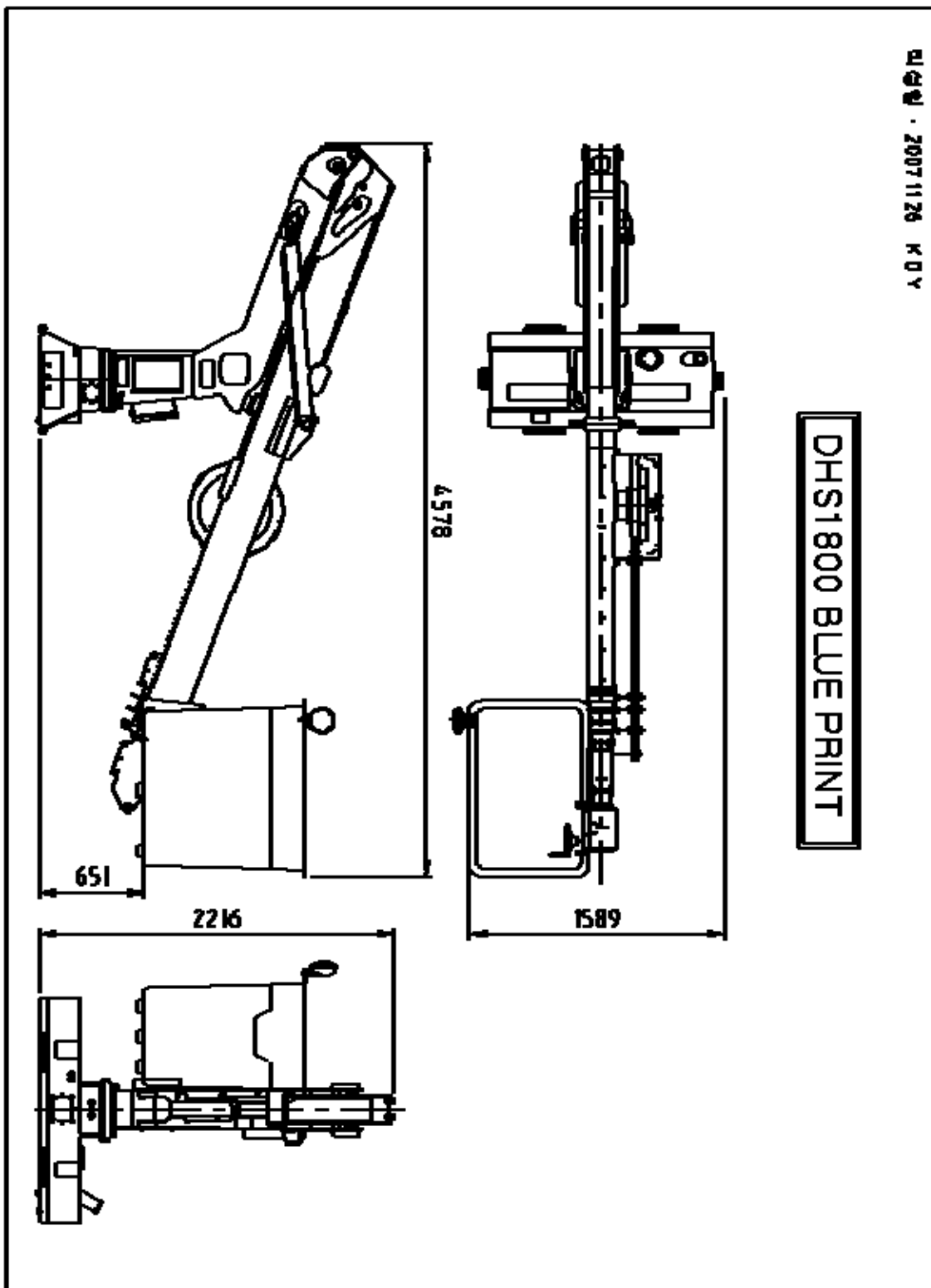
### 3. Specification

Specification of DHS 1800			
No.	Description	Standard	
1	Product Name	DHS 1800 Platform Type	
2	Manufacturer Name	DONGHAE MACNIHERY& AVIATION Co., Ltd	
3	Dimension (L x W x H)	4,578(mm) x 1,589 (mm) x 2,216 (mm)	
4	Permissible Vehicle for Mounting	Not less than 3.5 MT payload truck	
5	Maximum Work Height	17m	
6	Maximum Side Reach	9m	
7	Boom Type	Type	1 <sup>st</sup> stage-Fixed type / 2 <sup>nd</sup> ~ 4 <sup>th</sup> stage-Telescopic Type
		Material	High tensile steel
		Structure	Hexagonal boom
8	Rotation Angle/Speed	Clockwise 180° & Counter clockwise -180°	
9	Rotation Device	Hydraulic Cylinder	
10	Bucket	Material	F.R.P (Fiberglass Reinforced Plastic)
		Swing Angle	180° / Manual Wheel Bar
		Leveling	Auto horizontality by Hydraulic Cylinder
		Load Capacity	200kg (Including Operator)
		Occupancy	2 Personnel
		Feature	Platform Tilt & Arc Rotation
11	Winch (Option)	300 kg - Single line	
12	Operation Method	Wire or Wireless Transmitter / OP DESK Controller	
13	Front Outrigger	Auto-Horizontal & Vertical Extending Type	
14	Maximum Outrigger Span	4.2 (m)	
15	Hydraulic Oil Reservoir Capacity	50 (ℓ)	
16	KC Items	Outrigger sensor, emergency stop switch, emergency manual control lever, emergency power pack, Boom rest bracket & interlock	
17	Safety Devices	Relief Valve, Counter Balance Valve, Proportional Control Valve, Platform Safe Angle Control Valve,	

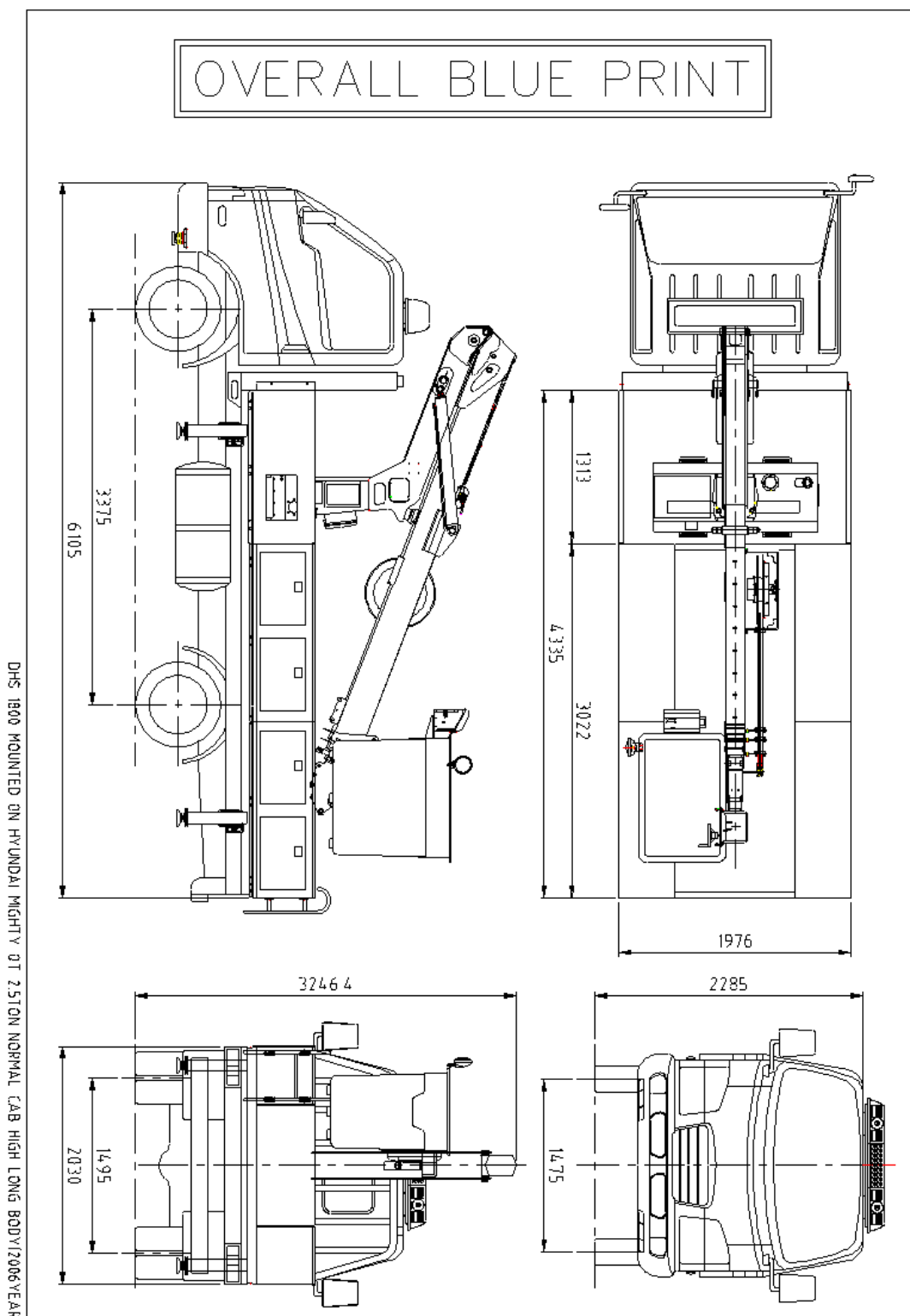
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- IT IS SUBJECTED TO CHANGE FOR THE IMPROVEMENT OF THE QUALITY WITHOUT PRIOR NOTICE.

# DHS 1800 AP Hydraulic Crane Leader

## 4. Overall Sketch



# DHS 1800 AP --- Hydraulic Crane Leader



◆ Truck Specification may be different up to customer's selection.

# DHS 1800 AP --- Hydraulic Crane Leader

## 5. Main components

### (1) Unit;

1) Unit is designed for fixing this crane to vehicle and it is connected with swing part of the crane.

2) The part for fixing base and vehicle is fixed by special steel bolts with heat treatment.

3) Column is mounted over the bearing of rotary shaft.

Rotation system is driven by rack gear and spur one. Hydraulic cylinder pushes rack gear and the rack gear rotates spur gear and then it makes the column rotated.

Rotation angle is  $0^{\circ} \sim 180^{\circ}$  and  $0^{\circ} \sim (-180^{\circ})$ .

### (2) Outrigger:

1) There are two set of outriggers in this unit, one in front and the other in rear.

2) Manual valve lever controls raise and lowering the outriggers and extending & retracting of the outriggers are operated by automatically or manually according to option.

3) The outriggers are composed of beams and legs. The appearance of beam is rectangle and a double-acting cylinder is used.

4) To prevent shake of the vehicle, the outriggers are used when the unit operates.

5) Pilot check valve prevents up & down joggle of the outrigger legs and prevents also tilt of the vehicle when hose breakage happens.

### (3) Column;

1) The column is assembled with rotary bearing on the frame and connected with the 1st stage boom.

2) In the inside of the column, there are solenoid valve and block to discharge and distribute hydraulic oil to every cylinder. Also a buzzer is inside to make a sound and notify the control device works. And there are switch, fuse, work lamp switch and receiver outside of the platform.

### (4) Oil Tank;

1) The oil tank locates at the floor of base and its capacity is 50 liters.

2) Oil amount is shown at the oil gauge of the side of oil tank. Make sure the oil amount always should be over the maximum limit of the oil gauge.

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- 3) There are one oil feeder, one oil filter and a drain outside of the tank and another oil filter is inside of the oil tank.
- 4) Hydraulic oil influences the expected life span of the main components of the unit.

### **(5) Boom System;**

- 1) The booms are composed of 1st, 2nd, 3rd and 4th stage boom.  
The boom section is pentagonal to minimize the rolling and as it is made of high tensile steel, its durability is excellent than others.
- 2) The 1st stage boom is fixed to the column operated by the derrick cylinder and its articulated angle is  $-21 \text{ deg} \sim 80 \text{ deg}$ . There are winch and hose reel installed on the 1<sup>st</sup> stage boom.
- 3) The 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> stage boom are made by high tensile steel and these are tested for the unit.
- 4) The 2<sup>nd</sup> stage boom is fixed inside of the 1st stage boom and extended & retracted by the telescopic stage cylinder. The length of boom extension and retraction is 2,850mm.
- 5) The 3<sup>rd</sup> stage boom is fixed inside of the 2<sup>nd</sup> stage boom and extended & retracted by the telescopic stage cylinder. The length of boom extension and retraction is 2,850mm.
- 6) The 4<sup>th</sup> stage boom is fixed inside of the 3<sup>rd</sup> stage boom and extended & retracted by wire, which is driven by the telescopic stage cylinder. The length of boom extension and retraction is 2,850mm. And bucket and winch can be installed at the 4<sup>th</sup> stage boom.

### **(6) Winch (Option)**

- 1) It is a hydraulic winch for lifting a heavy material.
- 2) It is composed of a hydraulic motor, a gear, a drum and a brake. Its lifting capacity is 300 kg.

### **(7) Bucket;**

- 1) It is used for aerial work and fixed and connected at the end of 3rd stage boom by the hinge assembly.
- 2) Using a hydraulic cylinder, it keeps the horizontality automatically when the bucket changes its angle. And it rotates the platform within 180 degrees by a manual wheel bar.
- 3) To clean inside of the bucket, the bucket tilt is adopted and it is convenient for maintenance and repair.
- 4) The bucket angle can be controlled up and down within 10 degrees by the transmitter.



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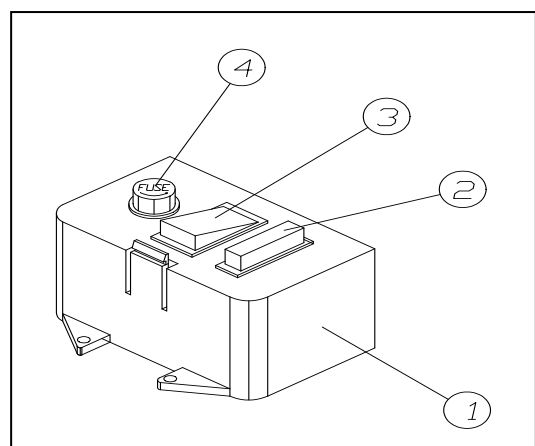
< FRP bucket for 2 person >

■ Bucket is not insulated. Extremely be careful not to get electric shock.

### (8) P.T.O.;

The oil pump is driven by the P.T.O via Propeller shaft. The P.T.O conversion switch box locates at the cabin of the vehicle.

- ① P.T.O Switch Box
- ② P.T.O Lamp
- ③ P.T.O Switch
- ④ P.T.O Fuse



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### **6. Safety Devices**

#### **1. Proportional Valve;**

It prevents rapid movement when the unit operates and makes the cylinder operated smoothly.

#### **2. Pilot Check Valve and Counter Balance Valve;**

These prevent boom falling abruptly if there is a hydraulic line failure or cutting off.

#### **3. Vehicle Overturning Prevention Device;**

1) Swing angle check sensor

If the vehicle tilts more than 3 degrees to the front and the boom swings in 120 degrees to the front side of the vehicle, the swing is limited as the swing angle check sensor is connected with a front angle check sensor.

2) Vehicle side angle check sensor

When platform is overloaded and the vehicle tilts more than 2 degrees in right or left side, the movement of boom and column are limited.

3) Vehicle front angle check sensor

It perceives the tilt of the front side of the vehicle and when the vehicle tilts more than 3 degrees, the movement of boom and column are limited.

#### **4. Overload Check Sensor;**

It makes alarm sound and shut down the movement when lifting an overloaded material beyond rated capacity with winch.

The more closer to the vehicle with fully retracted boom, the more heavy material can be lifted.

#### **5. Auto Leveling Cylinder;**

It makes horizontality of the platform automatically.

#### **6. Alarm;**

It makes alarm sound when safety device is working.

Stop operation and remove the cause of the alarm sound.

#### **7. Swing Angle Check Sensor;**

If the vehicle tilts more than 3 degrees in the front and the boom swings in 120 degrees in the front side of the vehicle, the swing is limited.

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### 8. Safe Angle Deviation Preventer of Platform;

When occupying the platform and the platform tilts over 10 degrees up and down, the platform movement is limited.

### 9. Emergency Manual lever:

- 1), Its usage is for the case that battery and transmitter are out of order when the engine is on.
- 2), Before operating, contact with headquarter or A/S center for more safe work.
- 3), Detach the Emergency manual valve cover from column.
- 4), Lock the metering valve located on behind outrigger manual valve.
- 5), Check the label on column, expect the crane operation.
- 6), Make the equipment return to safe condition by operating the lever as slowly as it can.
- 7), Get the metering valve to the original position.



### 10. Emergency power pack

When truck engine is out of order, this emergency power pack can operate aerial platform such as boom rotation, boom extension and retraction, outrigger extension and retraction etc. In an engine failure case, an operator who is in the bucket can get back to the ground using this unit.



### 11. Outrigger Sensor

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It is a kind of interlock device. Without full stabilizing of outrigger on the ground, boom rotation, boom extension and retraction are limited.

### **12. Boom interlock**

Before driving the chassis, boom should be fully retracted. If not, outrigger can't be raised and retracted.

### **13. Boom Angle Gauge**

It shows boom angle to an operator. Referring to this gauge, operator can easily recognize the bucket angle.

### **14. Bucket Rest Bracket**

It is used for bucket stowing before chassis traveling. If not, outrigger can't be raised and retracted.

### **15. Chassis horizontal Sensor**

To prevent overturning of the chassis, outrigger should stabilize the chassis and make it on the surface level. If not, boom extension and retraction, boom rotation is limited.

### **16. Emergency stop switch**



It is fitted at the unit and makes stop of all crane function in emergency. To restore function, turn to the switch to the clockwise.

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7. Efficiency of the control (OP DESK CONTROLLER)

**Operation method of the OP DESK.**

**OP DESK CONTROLLER**

- Power
  - Turn on the power switch
- Starting the engine
  - Keeping the safety switch down and push the engine start switch.
- Operation method of the crane.
  - Push any joystick which you want to do and then hold joystick until the crane answer up to your choice.
  - To make the operation of the crane, push the joystick that you want to operate.
- Looop
  - Turn on the switch in the right time.
- The all looop
  - Turn on the switch in the right time.
- Extension of Pump
  - In case of chassis engine malfunction, push the "PUMP" switch and then push joystick button simultaneously.
- Engine stop
  - Push emergency stop button.

**DHS 1800 AP** 

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- The End -