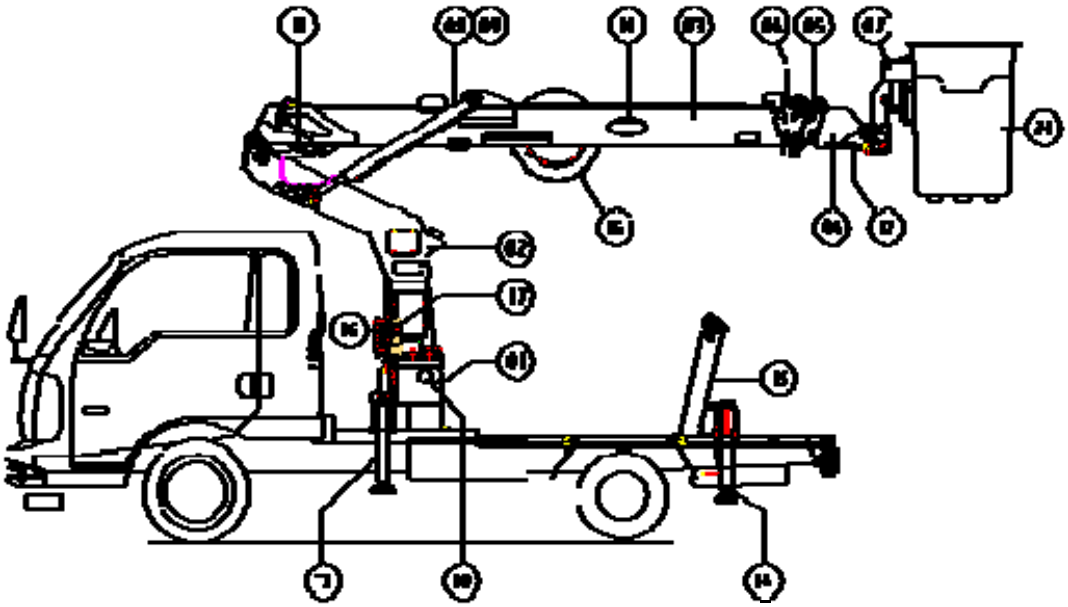
**DONGHAE MACHINERY & AVIATION Co., Ltd**

# TECHNICAL SPECIFICATION

# MODEL - DHS 17 AP

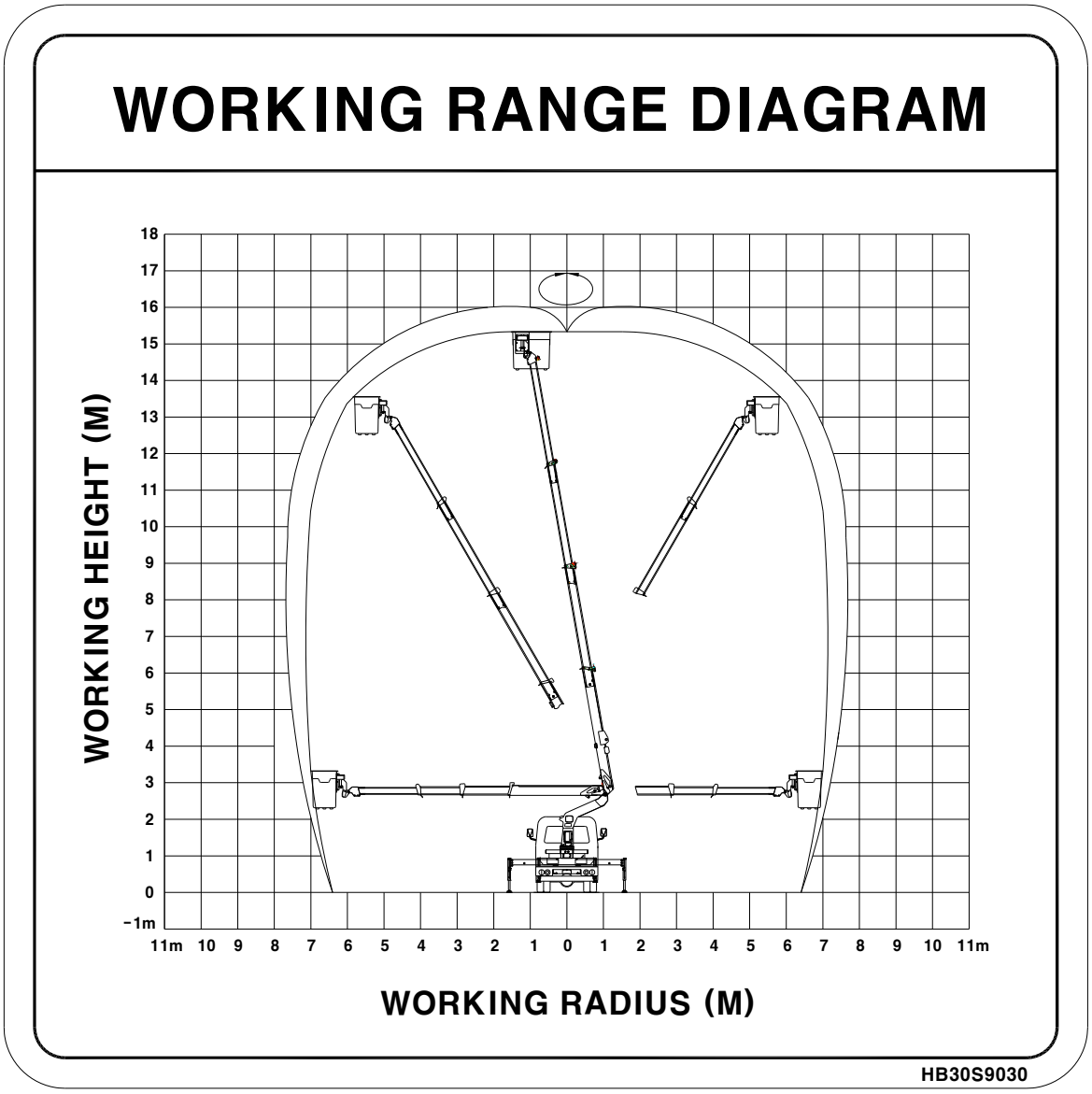

| | |
|---|---|
| Model | DHS 17 AP |
| Revision | 01 |
| Date | 2012-05-09 |

# 1. Terminology Diagram/DHS 17 AP



| No. | Description | No. | Description |
|---|---|---|---|
| **1** | Unit | **11** | Leveling Cylinder |
| **2** | Column | **12** | Platform Leveling Cylinder |
| **3** | 1st Stage Boom | **13** | Front Outrigger |
| **4** | 2nd Stage Boom | **14** | Rear Outrigger |
| **5** | 3rd Stage Boom | **15** | Winch (Option) |
| **6** | 4th Stage Boom | **16** | Hose Reel |
| **7** | Rotary Platform | **17** | Solenoid Manual Valve |
| **8** | Derrick Cylinder (L) | **18** | Receiver Box |
| **9** | Derrick Cylinder (R) | **19** | Rotary Cylinder |
| **10** | Telescopic Cylinder | | |

## 2. Working Radius/DHS 17 AP



# 3. SPECIFICATION

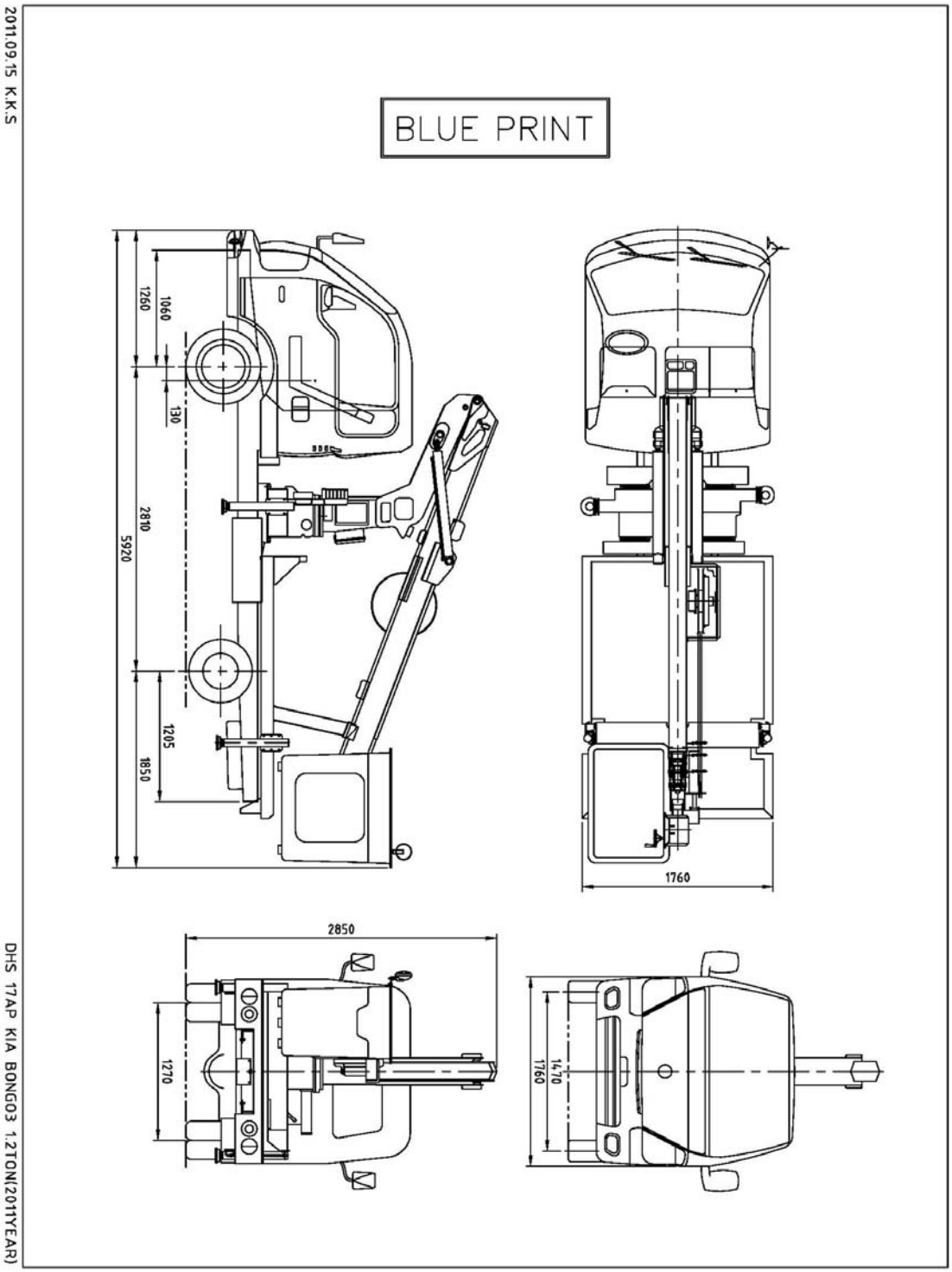
| Specification of DHS 17 AP | | | |
|---|---|---|---|
| **No.** | **Description** | | **Standard** |
| 1 | Product Name | | DHS 17 AP |
| 2 | Manufacturer Name | | DONGHAE MACNIHERY& AVIATION Co., Ltd |
| 3 | Dimension (L x W x H) | | 3,835(mm) x 1,750(mm) x 2,109(mm) |
| 4 | Permissible Vehicle for Mounting | | Not less than 1.2 MT truck |
| 5 | Maximum Work Height | | 16m |
| 6 | Maximum Side Reach | | 7m |
| 7 | Boom Type | 1st Stage | Fixed Type |
| | | 2nd ~ 4th Stage | Telescopic |
| 8 | Boom Material | 1st ~ 4th Stage | High tensile hexagonal steel |
| 9 | Rotation Angle/Speed | | Clockwise 180° & Counter clockwise -180° |
| 10 | Rotation Device | | Hydraulic Cylinder |
| 11 | Platform | Material | F.R.P (Fiberglass Reinforced Plastic) |
| | | Dimension | 1,000 x 645 x 1,000(mm) |
| | | 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 |
| 12 | Winch (Option) | | 300 kg / Single line<br>600 kg / Double line |
| 13 | Operation Method | | Wire or Wireless Transmitter |
| 14 | Front Outrigger | | Auto-Horizontal & Vertical Extending Type |
| 15 | Rear Outrigger | | X-type/ H-Type |
| 16 | Maximum Outrigger Span | | 3.5 (m) |
| 17 | Hydraulic Oil Reservoir Capacity | | 50 (ℓ) |
| 18 | KC Items | | Outrigger sensor, emergency stop switch, emergency manual control lever, emergency power pack, Boom rest bracket & interlock |
| 19 | Operation Method | | Transmitter(Standard), OP Desk Controller (Option) |

# DHS 17 AP Hydraulic Crane Leader

| No. | Description | Standard |
|---|---|---|
| 20 | Safety Devices | Relief Valve, Counter Balance Valve, Proportional Control Valve, Platform Safe Angle Control Valve, Pilot Check Valve, Vehicle Overturning Preventer, Column Swing Fixing Device, Overload Check Sensor |
| 21 | Standard Items | Crane, Wire transmitter, Platform automatic rotation device, Front outrigger, Rear outrigger, PTO, Engine accelerator, Engine starter, Working lamp, FRP platform for 2 person, Platform leveling device |
| 22 | Option Items | Steel platform for 2 person, Winch, Tool box, Emergency hydraulic unit, Entrance ladder, OP Desk controller, Wood pads |

- **ALL TECHNICAL SPECIFICATION IS BASED ON STANDARD ITEM OF DONGHAE MACHINERY & AVIATION Co., Ltd.**
- **IT IS SUBJECTED TO CHANGE FOR THE IMPROVEMENT OF THE QUALITY WITHOUT PRIOR NOTICE.**

# 4. Overall Sketch




◆ **Truck Specification may be different from each mounting vehicle.**

# 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°～ 180°and 0°～(-180°).

**(2) Outrigger:**

1) There are three set of outriggers in this unit, sub front, front and rear outriggers are equipped to secure safety.
2) Manual valve lever controls raising 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. If the outrigger are not firmly grounded, the structure of chassis may be damaged and turned over.
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, working 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 35 liters in 1.2 MT truck. Over 2.5 MT truck, the oil tank 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.
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 and its section is hexagonal to minimize the shaking. Using high tensile steel, it is strong and durable.
2) The 1st stage boom is fixed to the column and boozer, which sounds operation of control devices.
3) The material of 2nd ~ 4th stage boom is high tensile steel and these are fully tested and manufactured for the unit.
4) The 2nd stage boom is fixed at the end of 1st stage boom and bended by 1st stage cylinder. Its articulating angle is -24 ~ 80 degrees
5) The 3rd stage boom is extended and retracted inside of the 2nd stage boom by driving of telescopic cylinder. And the length is 2,740mm.
6) The 4th stage boom is extended and retracted inside of the 3rd stage boom by driving of telescopic cylinder and wire. And the length is 2,740mm. Also it is produced to attaché platform and winch.

**(6) Winch (Option);**

1) To lift heavy material, hydraulic winch is adopted as option item.
2) Winch is composed of hydraulic motor, gear, drum and brake. Its lifting capacity is 300 kgs.

**(7) Bucket;**

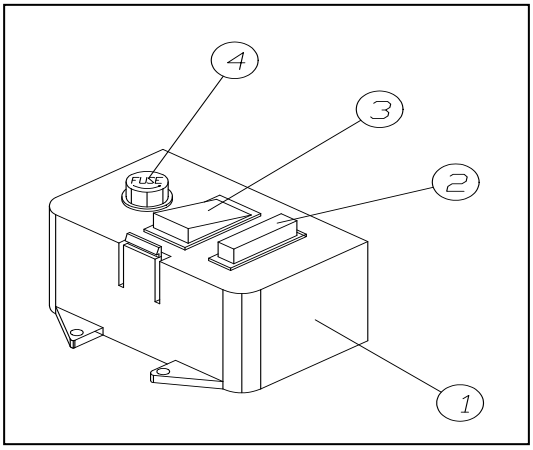
1) It is used for aerial work and fixed and connected at the end of 4th stage boom by the hinge assembly.

2) Using a hydraulic cylinder, it keeps the horizontality automatically when the bucket

changes its angle. And it rotates the bucket 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.

**(8) PTO;**

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

# 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.

**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 Valve:**

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

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.

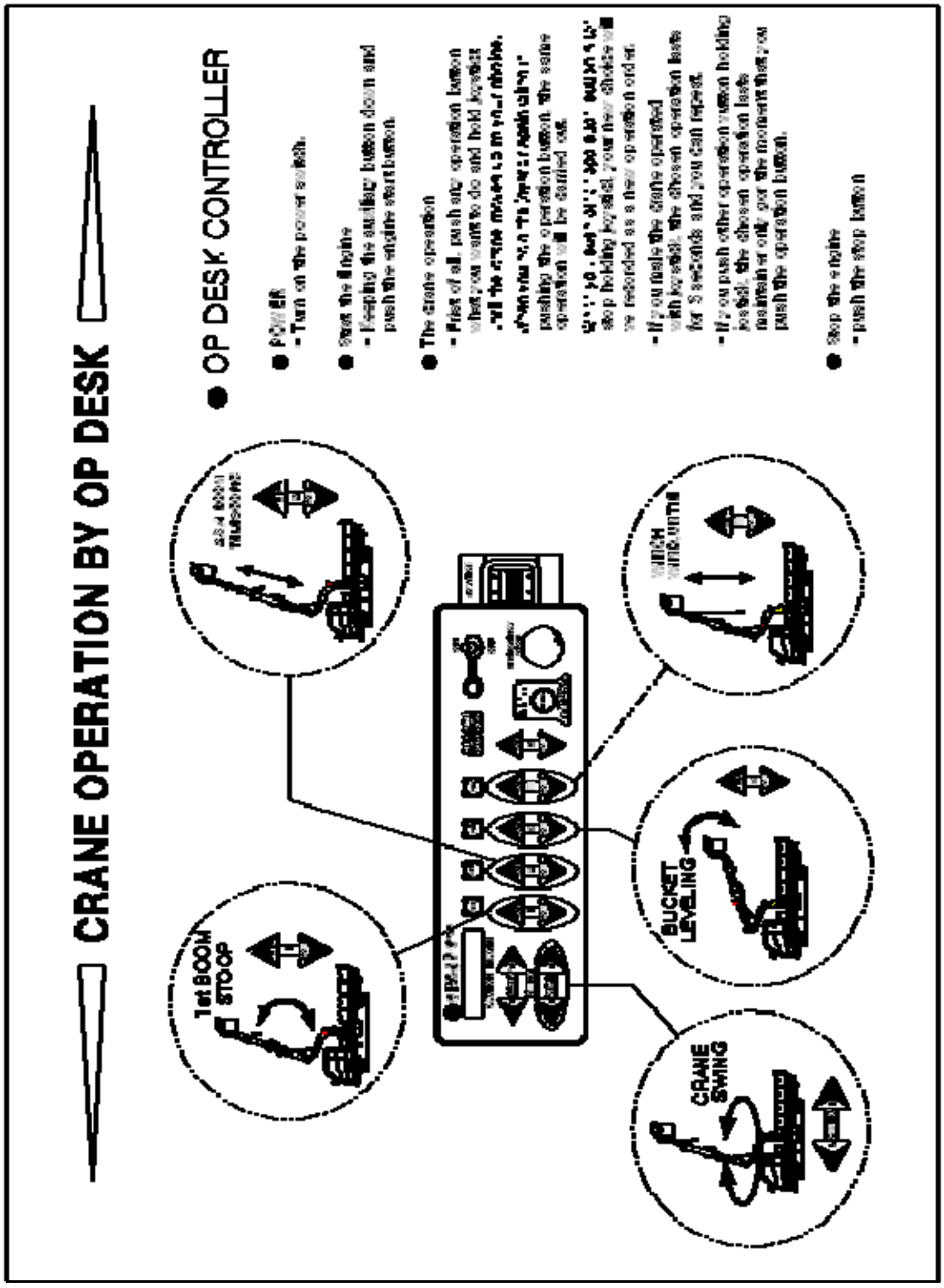
**14. Bucket Rest Bracket**

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.

## 7. Efficiency of the control (OP DESK CONTROLLER)



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