# FY-50YH2Handling System

# Operation and Maintenance Manual

We have passed through ISO9001 Quality System Authentication from China ISO9001 International Certification Center for Quality System. One product was awarded with API authentication of U.S.A. Some products have passed through ABS inspection of U.S.A and CCS inspection of China and were awarded with Inspection Certificate.

Our Factory was titled as a “Faithful to Contract and Loyal to Customer Enterprise” by administration for Industry and Commerce and authorized as a “A Class Taxpayer” by the State Taxation Bureau＆Local Taxation Bureau.

Our Factory has awarded with more than ten (10) national patent certificates. Many products have owned proprietary intellectual property rights.

**Warmly welcome to our Factory and cooperating with us in any form.**

## 1 General

FY-50YH2BOP handling system is equipped for installation of drilling rig, dismantlement of BOP Lifting and Moving Device. It mainly consists of two sets of BOP handling system, respectively suspended on left and right guiding rail and can be individually travelled. 2) Hydraulic ctrl box. 3) Hydraulic ctrl lines (two groups) etc.,See Fig.1.Hydraulic oil is adopted as power to the device,which is characterized by explosion-proof. Main performance of the devic es is to lift single BOP or assembled BOP Group for installation，or to lift tool,auxiliary etc by single lifting device at lateral.Its operation is realized by hydraulic ctrl box far away from the BOP,which ensure operator security during installation of BOP. It is characterized by simple,safe and reliable operation.

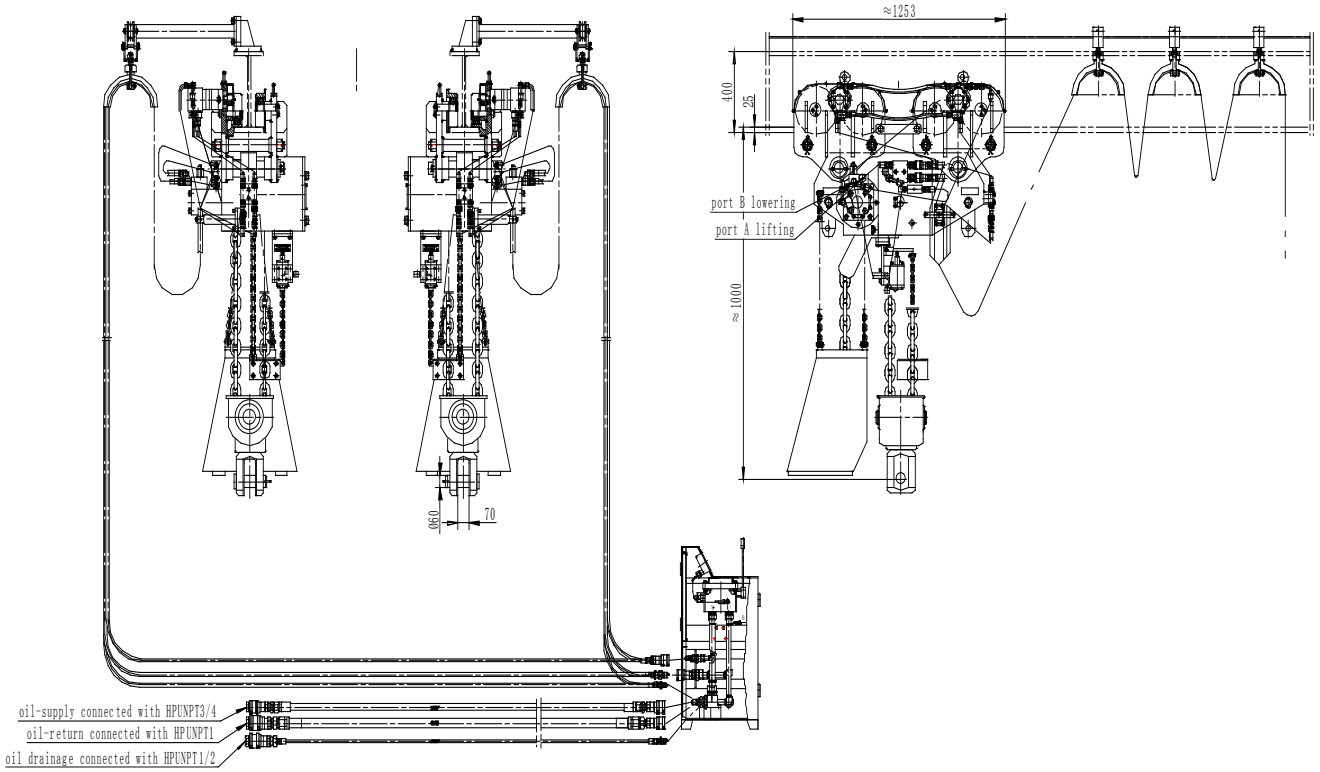


**Fig.1 Bop Handing System**

## 2 Main Technical Data

| | |
|---|---|
| Max.lifting load（double chains hoist motor） | 2×250=500kN |
| Max.lifting stroke | 6m |
| Max. lifting speed | 1m/min |
| Max. moving speed | 10m/min |
| System rated pressure | 16MPa |
| Rated flow | 85L/min |
| Qty' and specification of chain | 4-18×54 |
| Ambient temperature | -20℃～＋50℃ |

## 3 Structure and Principle

3.1 BOP handling system consists of two sets of individual lifting device at left and right lateral, respectively suspended on the guide rail under bottom of the drilling floor of rig. Max.lifting capacity of each lifting device is 250kN, half of the rated load of the BOP handling system.

3.2 Each lifting device consists of chain hoist motor powered by lifting motor, travel crane powered by running motor and hydraulic ctrl system etc.

3.3 Load of the lifting device is distributed to every travelling wheel evenly. Wheel pressure is reasonable to ensure moving relibility.

3.4 Hydraulic ctrl is adopted to the device, and hydraulic power is provided by hydraulic station of drilling rig.

3.5 Ctrl to the device is carried out by operating to hydraulic ctrl box. The following can be carried out.

a Lifting or lowering at the same time;

b Move forward and backward at the same time;

c Lifting or lowering separatly;

d Move forward and backward separatly.

3.6 Chain hoist motor is adopted to lifting mechanism，lifting chain can be equipped according to lifting distance.Application scape is wide.

3.7 Chain on which lifting is not carried can be stored in the chain box in order.

3.8 Hydraulic octrl is adopted to the device,which is characterized by explosion-proof.

3.9 Height limitation device is mounted. When the device reaches to limited height, hook holds up stop block to loosen chain, Pressing plate of reversing valve is lifted up, valve element of reversing valve is extended to cut off oil line and stop working in order to prevent gear box from damaging and chain from being blocked.See Fig.2.

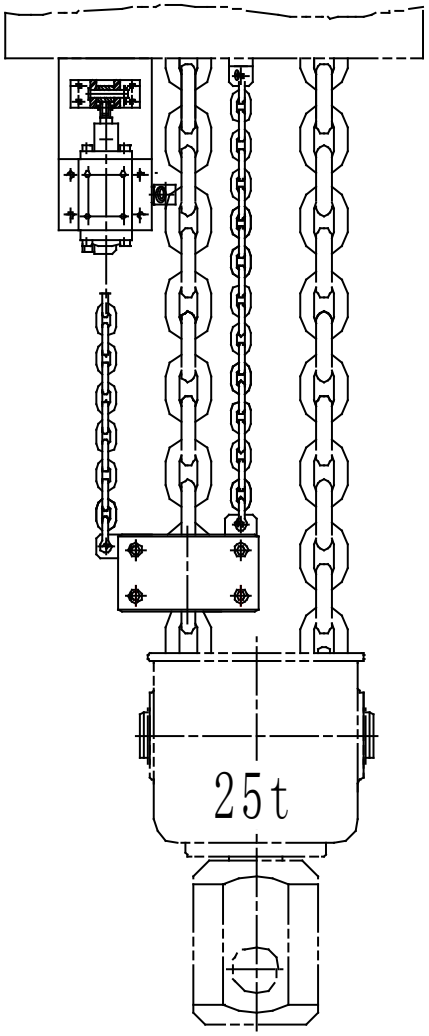


**Fig.2 Height Limitation Device**

## 4 Installation and Commissioning

4.1 Installation

4.1.1 Respectively insert lifting devices at two sides into left and right ends of bottom of drilling platform, then fix stop pin into guide rail ends.

4.1.2 Connect oil enter,return and drainage hose of ctrl box with mechanized hydraulic station (hydro-neumatic tong hydraulic station) of the rig well mouth.

4.1.3 Weld suspension wire hose susport on the beam of guide rail.(generally at midium of the beam）.

4.1.4 Connect all hoses of ctrl box with lifting and moving device.

**Attention**：Hose adapter should be cleaned and no dirt.

4.2 Commissioning

4.2.1 After line is connected properly, start up hydraulic station of rig (Hydro-neumatic tong hydraulic station） to supply BOP handling system oil. Adjust the P port overflow valve valve on the multi-way valve in the control box to ensure the pressure is 13 ~ 14MPa.

4.2.2 Comissioning of no-load operation: Operate handle of the ctrl box,check whether nameplate indicating of the handle is in accrdance with motion of the lifting device or not,otherwise,adjust line. Respectively test all motions two times.

4.2.3 Comissioning of load operation

4.2.3.1 Generally speaking, balance valve mounted on the lifting motor has been adjusted properly before ex-works and not be adjusted by end user any more.

4.2.3.2 When slow lifting and dropping motion occurs, check whether ctrl line pressure is normal or not, otherwise, the pressure of P port overflow valve on the multi-way valve in the control box should be adjusted to the normal value of 13 ~ 14MPa.

## 5. Attention

5.1 Frist check whether oil supply pressure meets the requirements or not when

operating，Indicating on pressure gauge of the ctrl box is 10MPa.

5.2 During lifting load, it is forbidden to do reversing operation suddenly in case of damage.

5.3 During lifting operation, it is forbidden to stand under the load object and work with overload to ensure staff and equipment safety.

5.4 During lifting operation, if obnormal phenomenon occurs, stop immediately and inspect.

5.5 Check whether hook is hunged tightly or not,chain is twisted or not when operating. Grease chain in case of block casued by rust.

5.6 It is forbidden to roll the BOP Device in case of damage during transporting. Avoid being exposed to sun and rain at storage.

5.7 Expel line air of the BOP lifting and Moving Device for fist use or after long time storage.

**6 Hydraulic Principle（See Maintenance Manual ）**

6.1 Ctrl to left and right lifting device are centralized in a ctrl box,operated easily.

6.2 Operate handle according to indicating on the ctrl panel and required motion shall be available.

**7. Maintenance**

7.1 After long time storage, periodically carry out operation and maintenance per two weeks. After greasing chain and put it in order,operate BOP handlingf system to run up and down,forward and backward.

7.2 Carry out maintenance before every installation to handling system. For each BOP handling system,there are eight (8) lubricating points on driving wheel gear,two (2) sets of lubricating points on chain, two (2) lubricating points on lifting gear box.Fill grease in lubricating points on driving wheel gear，coat lubricating oil on surface of chain lubricating points. There are five (5) lubricating points on lifting gear box，filled with lubriacting oil.Other lubricating positions: four (4) on travel reducing box, eight (8) on driving wheel bearing, eight (8) on driven wheel bearing. Fill lubricating oil for all positions at time of overhaul. See Fig.3 for Lubricating Position

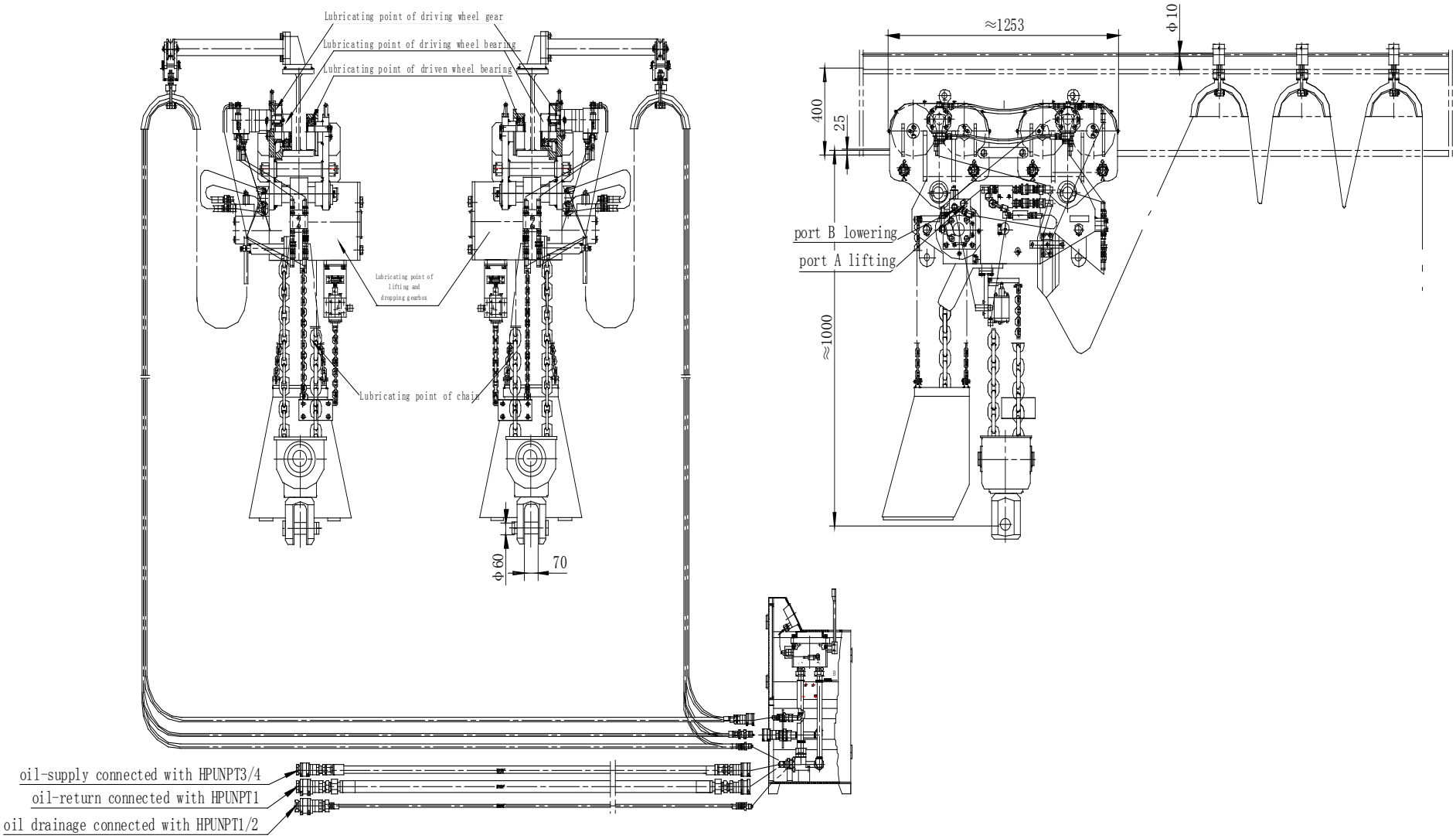


**Fig.3 Lubricating Drawing**

### 7.3 Lubricating Period

| Item | Lubricating position | Lubricating Qty' | Lubricating period | Remarks |
|---|---|---|---|---|
| 1 | Driving wheel gear | 8 | 2 weeks | |
| 2 | Chain | 2 | 2 weeks | |
| 3 | Lifting reducing box | 5 | 2 weeks | |
| 4 | Running reducing box | 4 | 500 hours | Replace lubricating grease when overhauling. |
| 5 | Driving wheel bearing | 8 | 500 hours | Replace lubricating grease when overhauling. |
| 6 | Driven wheel bearing | 8 | 500 hours | Replace lubricating grease when overhauling. |

## 8. Breakdown and Removal

| Phenomenon | Reason | Removal |
|---|---|---|
| No motion | Oil inter and return line are blocked<br>Wrong line connected. | Check whether line is connected or not, especially check fast adapter<br>Check whether line is connected or not according to Principle Drawing. |
| Low pressure or no pressure | Too low adjusted system overflow valve<br>Breakdown in system overflow valve.<br>Breakdown in ctrl box reducing valve | Increase pressure of system overflow valve.<br>Clean or replace overflow valve, ctrl box reducing valve. |
| No motion with load | Wearing of hydraulic motor | Replace hydraulic motor |
| Hydraulic motor can not be up to normal rotating speed | Insufficient pressure<br>Insufficient flow | Adjust pressure of overflow valve and reducing valve.<br>Adjust flow of hydraulic station and system cut-off valve. |
| Oil leakage | Sealing elements damaged | Replace sealing elements |

## 9. Environmental protection

9.1.In case of oil leakage or oil seepage during the use of the equipment, the seal should be replaced in time, and the fastener and joint or replacement pipeline should be tightened.

9.2.For disposal of plastic packaging, should comply with the local environmental protection requirements.

9.3.During the use of the equipment, the disposal of waste hydraulic oil and other oil should meet the local environmental protection requirements.

9.4.When the equipment is scrapped, the disposal of oil such as paint and residual hydraulic oil should meet the local environmental protection requirements.