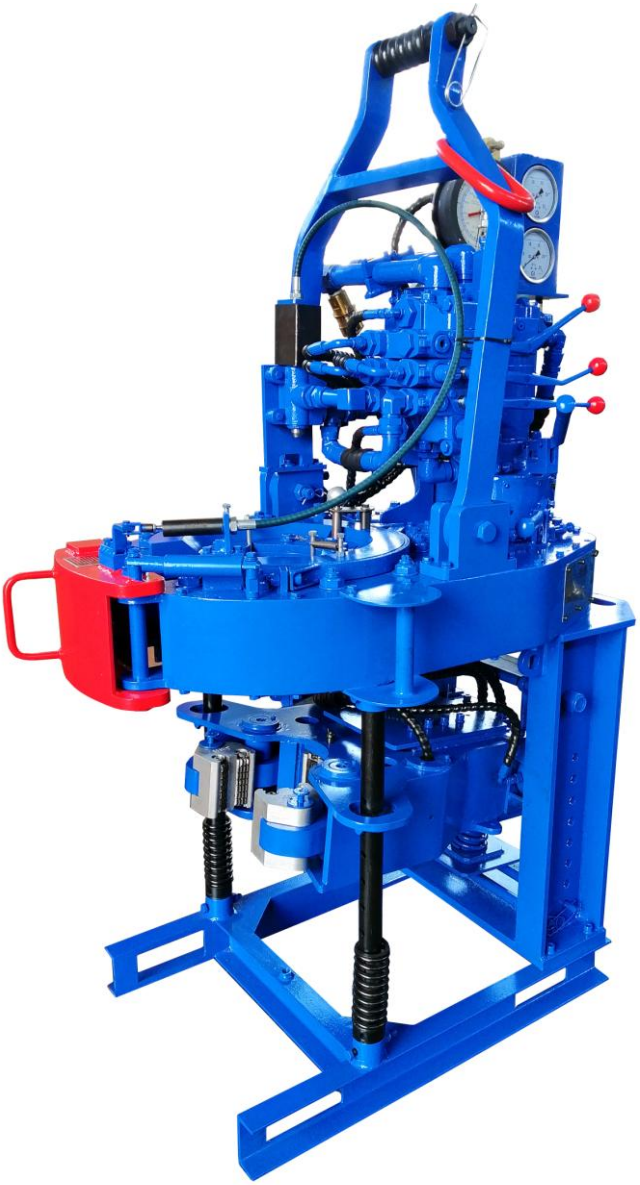
# Operating Manual for

# KHT5500/22 Hydraulic Power Tongs



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# Safety Instructions

1. The operator must read and grasp the manual.
2. The operator must wear working clothing, safety shoes, safety helmet, protective glasses, safety gloves, etc.
3. Tie tail rope as required in the manual. And the rope should be in the right direction.
4. The operation should be carried out on the operation side.
5. During making up and breaking out, the safety door should be closed.
6. During the operation of power tongs, it is prohibited to stretch hands into the operating parts.
7. Other sundries should not be placed in operation area of power tongs.
8. During maintenance and replacement of jaw plate, tooth seat, Die, etc., pump or hydraulic source should be stopped or cut off.
9. The over-pressure and over-torque operation is prohibited.
10. Do not disassemble or add parts arbitrarily.
11. Original supporting parts of Big Rig Supply CO., LTD. should be used.

# Chapter I Summary

KHT5500/22 hydraulic power tongs is the open power tongs which is applicable to make up or break out $2^{3}/_{8}$"-$3^{1}/_{2}$" drill pipes, $2^{3}/_{8}$"-$4^{1}/_{2}$" tubing and $4^{1}/_{2}$"-$5^{1}/_{2}$" casing during oil field work over operation. And three-jaw-plate clamping device is adopted in the master tong and back tongs. The device may ensure minimum string damage. It has high operation efficiency and may reduce working intensity of the workers. It can enhance screwing quality of the string and reduce string accidents caused by improper work over operation.

Characteristics:

1. The tong head is the open structure which is quick and convenient for entering and retreating working position. The integral tong head has good hardness and rigidity;
2. Master tong is roller climbing two jaw plate structure，can install arc tooth die ，the contact surface is more larger and clamp no deformation。The assembly and disassembly is very convenient. The optimum tangent-diameter ratio design ensures reliable clamping and easy slope retreating.The back tong is the three-jaw-plate structure pushed by hydraulic cylinder. The structure is simple and the clamping is reliable;The minimum damage to the tubular column can be ensured, and the main body of the pipe string can be clamped.
3. Four-gear rotation is adopted for large speed regulation range. And the rated torque is large;
4. It has the braking mode with braking staple. The braking torque is large. The operation is simple. And it is convenient for repair and replacement;
5. Using Safety protection device.As long as the door opened, power tongs will stop running，safe and reliable.
6. With the open large gear supporting structure, hardness and rigidity of open large gear is enhanced considerably;
7. The shell is made of steel plate with high hardness. The overall hardness is good. Various jaw plates are made with fine casting and forging process. It has beautiful appearance and high hardness;
8. Master and back tong adopt integral frame structure，back tong is floating connection， The master and back tong adjustable distance, reduce the damage of pipe string shackle;
9. Hydraulic torque indicator is provided. And installation interface of turning torque instrument is provided for computerized management.

# Chapter II Technical parameters

| | | | |
|---|---|---|---|
| 1. | Applicable range | Master tong: $2^3/_8$″--$5^1/_2$″; Back tong: $2^3/_8$″--$6^1/_2$″ | |
| 2. | Opening size (master tong) | 5 7/8″ (150 mm) | |
| 3. | Tong head speed: | High gear | 78 RPM |
| | (@40GPM / 150 LPM) | Second high gear | 33 RPM |
| | | Second low gear | 22 RPM |
| | | Low gear | 9.5 RPM |
| 4. | Torque | High gear | 2500 ft.lb/3400 N ṁ |
| | (@2000PSI / 14 MPa) | Second high gear | 5900 ft.lb/8000 N ṁ |
| | | Second low gear | 8800 ft.lb/12000 N ṁ |
| | | Low gear | 20000 ft.lb/27000 N ṁ |

5. Max Torque (@2250PSI / 15.5 MPa) Low gear 22000 ft.lb / 30000 N ṁ
6. Overall dimensions (L×W×H) 48″×33.9″×67.3″ / 1220×860×1708 mm
7. Torque arm： Master tong 750 mm/29.5"
   Composite tong 542 mm/21.34"
8. Measured velocity ratio: 2.545
9. Weight: Master tong: 1230 lb/ 560 kg
   Composite tong: 2100 lb/ 950 kg
10. Specifications of jaw plates: 5.5″(139.7mm), 5″(127mm), 4.5″(114.3mm), 3.5″(88.9mm), 2.88″(73mm), 2.38″(60.3mm) and 6.5″(165.1mm)

## Chapter Ⅲ Installation of Power Tongs

I. Hang the tongs

1. Fix the single pulley (with the load of 5 tons) on the bottom girder of the crown.

2. Put the Slip wire rope (which has a diameter of not less than 1/2″) through the pulley. One end of wire rope fastened on the bottom girder, and other end fastened on the lift bucket（master tong can choose to use spring lift bucket、combined tong can choose to use hydraulic lift bucket）,The height of power tongs should be equal to the average height of connectors for tripping string.

II. Leveling Power Tongs

It is necessary to level the tongs after Hang the tongs. Otherwise, it will lead to tong tooth slipping.

Front-rear leveling: it is adjusted through the left and right two horizontal bolts at the connection position between lifting bracket and tong body of the power tongs.

Transverse leveling: it is adjusted through leveling bolts on the upper part of lifting bracket. And it may be adjusted through turning the bolts.

Ⅲ. Connection between removal frame and back guy.

Tail rope diameter should be no less than 5/8″. One end of tail rope is fixed on tong tail seat. And another end is fixed on drilling platform or the derrick. Note: when tail rope is tightened, it should be in the same level with power tongs and perpendicular to median line of tong body.

Removal air cylinder pressure 0.6-0.9mpa; air cylinder hose connection threads are M22×1.5 (sphere) and NPT 1/4.

IV. Refueling Torque Cylinder

Master tong: when stretched length of piston rod of tension cylinder reaches 1 1/8″ (28 mm), it is necessary to add oil.

Composite tong: when the piston of tension cylinder is retreated to the position which is 1/4″ (6.35 mm) away from cylinder end, it is necessary to add oil.

When filling is required, remove the quick coupling (P/N: KHT5500/22-492) connected to the pressure gauge from the master tong and insert it into the quick coupling (P/N: KHT5500/22-491) on the torque gauge.Observe the reading on the torque gauge, loosen the plug on the torque cylinder as needed or push the center of the quick coupling when oil is flow out, and make the reading of the torque gauge pointer return to zero.

**Note: Torque testing system of master tong and Torque testing assembly can be selected according to user needs.**

V. Pipe Connection

High-pressure oil feeding pipe: NPT1″ port is connected with high-pressure hose from hydraulic station;

Low-pressure oil return pipe: NPT1 1/4″ port is connected with low-pressure hose from hydraulic station;

**Note :We will supply High-pressure oil feeding pipe and Low-pressure oil return pipe for the users**

**according to their requirement on the length connection thread.**

VI. Safety protection device

Safety door protection device is reliable protection for power tongs, insure the safety of operating personnel.

Hydraulic control safety device consists of hydraulic controlled check valve, plunger type directional control valve and the door control unit. Plunger type directional control valve and the door control unit has a linkage, and between hydraulic controlled check valve and hydraulic motor, drives by the safety door to the movement of the plunger type directional control valve, then the hydraulic controlled check valve opened or closed. As long as the door opened, power tongs will stop running; when it is closed, power tong can return to normal work, realizing the linkage protection between safety door and hydraulic circuit.

**Note: 1. The power tongs rated system pressure is 16MPa, overpressure use is not allowed, it will cause damage to the power tongs;**

**2. Before using, the safety door must be closed, otherwise the power tong will fail to work.**

**3. This device can be selected according to the needs of users.**

Ⅶ.Making-up torque control device

The torque control device of the making-up is composed of a pressure reducing valve and a pressure gauge, which can control the pressure in the direction of the making-up of the power tongs (which has no effect on the direction of the breaking-out), so as to control the torque in the direction of the making-up. The torque control device of the making-up is installed on the pipeline in the direction of the making-up of the hydraulic motor, and the handle of the pressure reducing valve is rotated clockwise to increase the torque of the making-up. If Counterclockwise rotation of the valve handle, the making-up torque will decrease.

Ⅷ.Before operation of this tong, according to the requirement of pipe working, we can adjust the backup height by the pin of front and rear guide pole.

Ⅸ.The safety rope should be fastened firmly before the suspending of the hydraulic lifting cylinder.

# Chapter IV Operation Regulation

I. Operator's Requirements

1. Learn overall structure and performance of power tongs basically;

2. Be familiar with the operation of hydraulic reversing handle on power tongs:

When manual reversing valve of control master tong is pushed, large gear on master tong turns in the making-up tong direction; when manual reversing valve of control master tong is pulled, large gear on master tong turns in the braking-out tong direction;

When manual reversing valve of control back tong is pushed, back tong is clamped; when manual reversing valve of control back tong is pulled, back tong is released.

3. Be familiar with the operation of shifting handle (various gears of shifting handle are shown in Figure 4-1):

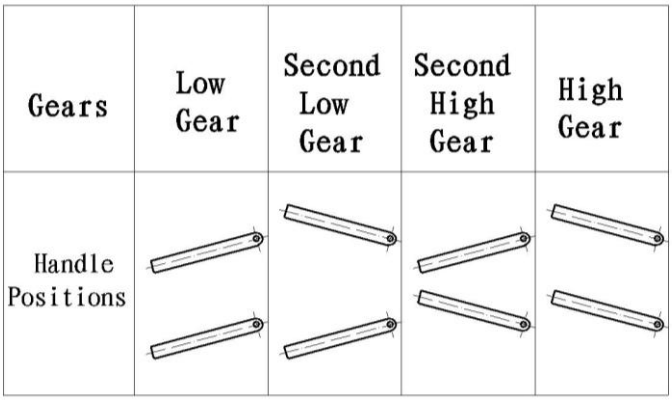



Figure 4-1

4. The relationship between pressure on the gauge and torque is shown in the Figure 4-2.

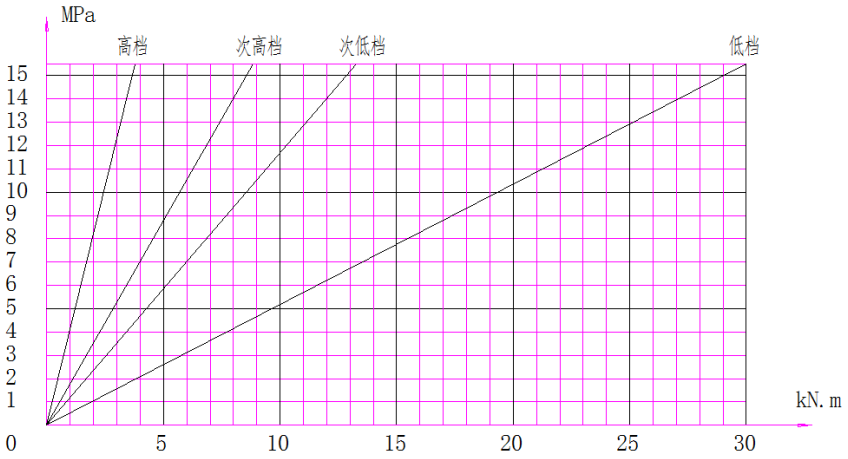
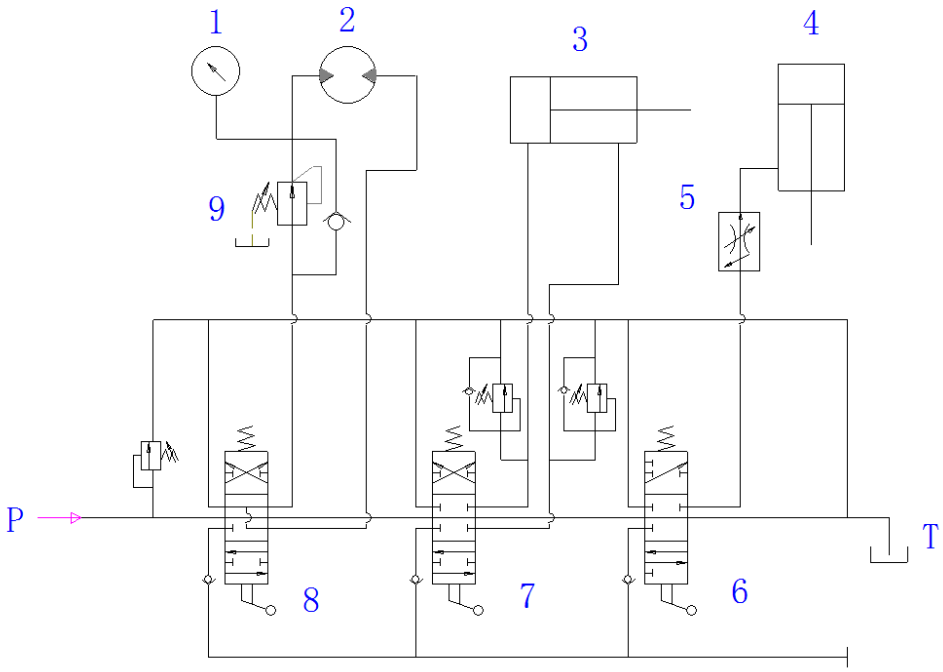



Figure 4-2

5. Hydraulic schematic




In the figure: 1.pressure gauge 2.hydraulci motor 3.clamping oil cylinder of backup 4.hydraulic lifting assy. 5.speed control valve 6.hydraulic lifting control valve 7.backup control valve 8.master tong control valve 9.making-up torque control valve (pressure relief valve)

6. Learn operation sequence and safety requirements;

7. Be familiar with the instrument operation.

II. Operation of Power Tongs

1. Learn specifications of jaw plates and Die: jaw plates of master tong has 6 specifications and jaw plates of back tong has 7 specifications. Each specification has three jaw plates including 2 front jaw plates and one rear jaw plate (as shown in Figure 2 and Figure 3). The front two jaw plates are the same and may be installed on the left and right. During installing jaw plate, it is necessary to check whether Die is worn or clean. It is necessary to tighten fixation bolts of Die.

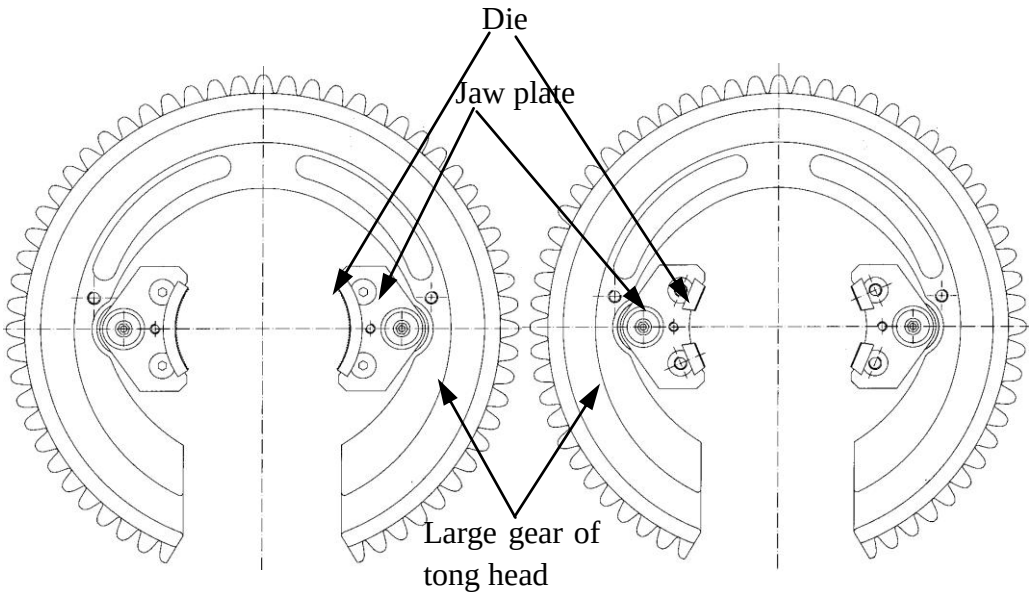



Figure 2 Tong head and jaw plate of the master tong

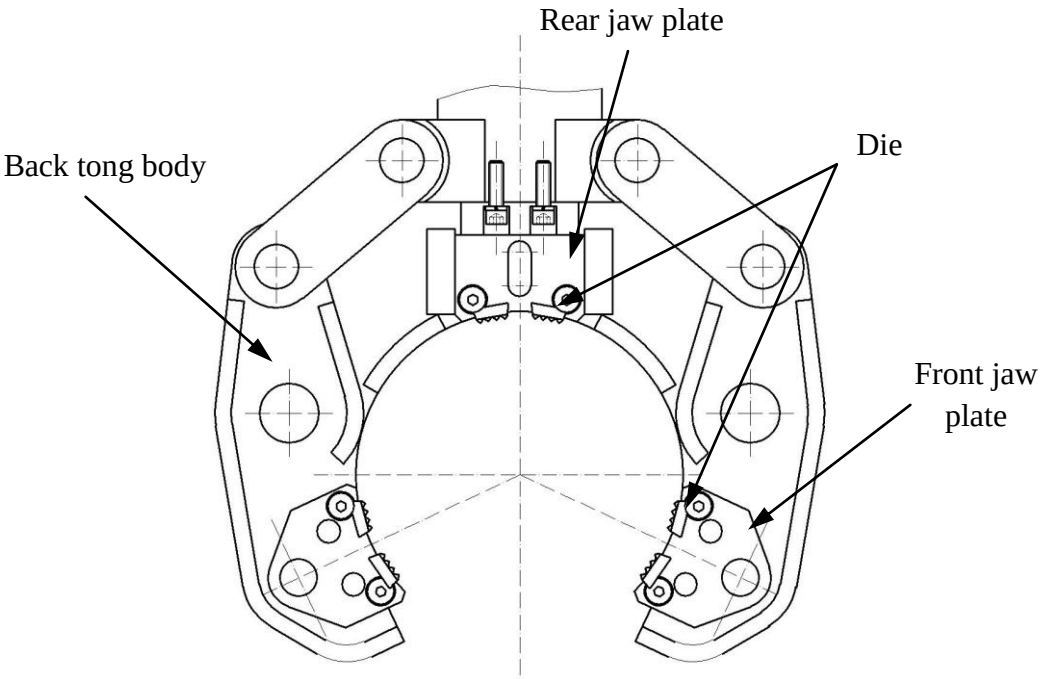



Figure 3 Back tong body and jaw plate

2. Install jaw plate and Die with corresponding size for the string.
3. Put shifting handle of the upper and lower shifting device on the neutral position;
4. Start hydraulic power station;
5. When hydraulic reversing handle is pushed or pulled, rotation noise of hydraulic motor should be heard and open gear of tong head should not rotate;
6. When shifting handle is put on any gear and hydraulic reversing handle is pushed or pulled, positive or negative rotation of open gear of tong head should be flexible;

Note: shifting should be carried out when hydraulic motor stops the rotation.

III. Working Process

1. Align the opening of large gear of tong head with the opening of jaw plate bracket.

2. Insert reversing pin into making-up and breaking-out hole according to the operation requirements and adjust the tight degree of braking staple.

3. Align the opening of large gear of tong head with the shell opening.

4. Pull out safety door, push power tongs toward the string to allow the string to be on the central position of tong head and close safety door.

5. Making-up operation regulation

a. Put shifting handle on high gear and push reversing valve handle of back tong to allow back tong to clamp the string. Release reversing valve handle of back tong to allow reversing valve handle to return median position. Then push reversing valve handle of master tong to allow jaw plate to clamp the string. Large gear of tong head drives the string to rotate in the making-up direction. At the same time, observe the torque: if the readings do not reach the required value, it is necessary to shift the second high gear, the second low gear and low gear. Then push reversing valve handle of the master tong to allow jaw plate to clamp the string. And large gear of tong head drives the string to rotate. At the same time, observe the torque meter. When the readings reach the required value, release reversing valve handle of the master tong to allow reversing valve handle to return the median position.

b. Pull reversing valve handle of back tong to allow back tong to release the string; then pull reversing valve handle of the master tong. According the familiar degree and open gear position, the operator should select the low gear. The jaw plate will release the string. Large gear of tong head rotates in breaking-out direction until it is aligned with the shell opening. Release manual reversing valve handle to allow reversing valve handle to return the median position.

c. Open the safety door and remove power tongs from the string. Then one making-up operation is completed.

6. Breaking-out operation regulation

a. Put shifting handle on the second high gear, the second low gear and low gear and push reversing valve handle of back tong to allow back tong to clamp the string. Release reversing valve handle of back tong to allow reversing valve handle to return median position. Then pull reversing valve handle of master tong to allow jaw plate to clamp the string. Large gear of tong head drives the string to rotate in the breaking-out direction.

b. When the string rotates in certain degree and high gear may rotate, put shifting handle on high gear. Pull reversing valve handle of the master tong to allow jaw plate to clamp the string. And large gear of tong head drives the string to rotate in the breaking-out direction quickly.

c. At the end of breaking-out the tong, pull reversing valve handle of back tong to allow back tong to release the string; then push reversing valve handle of the master tong. According the familiar degree and opening position, the operator should select the low gear. The jaw plate will release the string. Large gear

of tong head rotates in making-up direction until it is aligned with the shell opening. Release reversing valve handle of the master tong to allow reversing valve handle to return the median position.

d. Open safety door and remove power tongs from the string. Then one breaking-out operation is completed.

IV. Cautions

1. During the disassembly and assembly of jaw plates, you must shut down the hydraulic power unit to prevent accidents.
2. Ensure that lifting suspension of power tongs was is leveled;
3. Ensure that all the pipelines are connected properly;
4. During assembling jaw plates, jaw plates with corresponding pipe diameter should be adopted.
5. During shifting, hydraulic motor should be stopped.
6. Before safety door is closed, manual reversing valve should not be operated to avoid hands or other parts of the operator to enter the opening to lead to damage.
7. Check the clearance between safety door and the shell at any time for normal opening/closing safety door. If the clearance is too large, power tongs will be damaged.
8. Check the safety reliability of lifting rope and tail rope at any time.
9. When the pressure of overflow valve of hydraulic power unit is adjusted to 2320PSI (16MPa), pressure adjustment handle should be locked firmly.
10. When the tongs is operating under the torque higher than 15000ft.lb, it is necessary to ensure that two intermediate wheels are engaged in large open gear.

# Chapter V Care and Maintenance

I.Maintenance for machine

1. Establish post responsibility system;

2. Inspection and maintenance before operation;

a. Apply the lubricant to grease fittings and sliding surfaces.

b. Check whether the dies is worn or broken seriously. it should be replaced If it has reached the scrap standard.

c. Check and adjust the brake belt to generate sufficient braking force. it should be replaced If it has reached the scrap standard.

d. Check and rotate the jaw roller. If the roller or roller shaft is worn or damaged, it should be replaced.

e. According to the second step of chapter four operation, then use.

3.Clean up after using, and add lubricant to the rotation of the tong head to prevent corrosion.

II. Storage recommendations

1. When the tongs is not used, it should be stored in a place far away from the drill floor, the storage place should be clean and dry with appropriate temperature.

2. The exposed part of the tong head should be coated with lubricant.

3. Spare moving parts (such as gears, shafts, etc.) if need be stored for a long time, the outer surface should be coated with anti-rust paint and placed in a dry and ventilated environment.

4. All of spare sealings should be placed in a dry vessel.

5. All spare bearings, shafts, rollers and other parts shall be stored in a dustproof and moisture-proof box with lubricating oil.

6. When moving should be close the oil inlet and outlet, to prevent dirty into the pipeline.

III. Overhaul recommendation: After using about ten wells for pipe operation, overhaul is required for the power tongs.

# Chapter VI PROBLEM DIAGNOSIS

Proper maintenance of any hydraulic system should keep hydraulic problems to a minimum. Sometimes, trouble with hydraulic equipment can be prevented simply by proper selection of hydraulic oil and proper maintenance of both equipment and oil. Locating trouble in a hydraulic system is a job for a well-trained technician. He must be familiar with the equipment design, assembly and operation. He should be knowledgeable enough about hydraulic circuits and components to localize trouble areas and then pinpoint the particular problem.

The following notes on problem diagnosis are general in nature and are presented to serve as a guide to help analyze your hydraulic problems. Please refer any specific problems to our engineering department for their evaluation.

| Failure phenomena | Causes | Troubleshooting |
|---|---|---|
| Tong head does not rotate. | 1. Hydraulic power unit supplies no pressure.<br>2. Hydraulic manual reversing valve is damaged.<br>3. Shifting device fails. | 1. Check hydraulic power station.<br>2. Replace the valve.<br>3. It requires repair. |
| Tong head speed is not enough. | 1. Pressure or displacement of hydraulic power unit is not enough.<br>2. Loss of hydraulic motor or hydraulic reversing valve is large. | 1. Check hydraulic power<br>2. Replace the motor or manual reversing valve. |
| Tong head slips | 1. Jaw plate size is not suitable for the string size.<br>2. Power tongs is not leveled.<br>3. Tong tooth is worn.<br>4. Tong tooth groove is filled with filth.<br>5. Braking staple is too loose or worn.<br>6. Jaw plate roller does not rotate. | 1. Replace suitable jaw plate.<br>2. Adjust levels of power tongs.<br>3. Replace new tong tooth.<br>4. Remove filth with wire brush.<br>5. Adjust braking staple or replace new braking staple.<br>6. Repair and refuel jaw plate roller and piston shaft. |
| Torque does not reach the rated value. | 1. The pressure of hydraulic power unit is too low or pump displacement is not enough.<br>2. Hydraulic motor or reversing valve fails.<br>3. Oil in hydraulic cylinder is not enough or sealing ring is worn. | 1. Treat it according to the manual of hydraulic power unit.<br>2. Repair or replace it.<br>3. Add oil or replace sealing ring<br>4. Repair or replace torque meter. |

| | | |
|---|---|---|
| | 4. Torque meter fails. | |
| When motor is rotating, tong head does not rotate or rotate; under small load, tong head stops. | 1. Shifting device fails.<br>2. Loss of hydraulic motor or manual reversing valve is large.<br>3. Gearbox gear is damaged or worn badly. | 1. Repair or replace it.<br>2. Repair or replace the motor or reversing valve.<br>3. Check or repair the gearbox. |

# Chapter VII List of Parts

1. General assembly (Fig 7-1, Table 1)
2. Assembly of master tong (Fig 7-2, Table 2)
3. Assembly of tong head (Fig 7-3, Table 3)
4. Shell and Accessories Ⅰ(Fig 7-4, Table 4)
5. Shell and Accessories Ⅱ(Fig 7-5, Table 5)
6. Drive gear of master tong(Fig 7-6, Table 6)
7. Assembly of safety door(Fig 7-7, Table 7)
8. Gear engagement Assembly (Fig 7-8, Table 8)
9. Hydraulic pipeline (Fig 7-9, Table 9)
10. Quintuple valve(Fig 7-10, Table 10)
11. Quick coupling (1 7/8-12UN) (Fig 7-11, Table 11)
12. Bend sub (1 5/16-12UN) (Fig 7-12, Table 12)
13. Bend sub (9/16-18UNF) (Fig 7-13, Table 13)
14. Bend sub (NPT1 1/4-1 5/8-12UN) (Fig 7-14, Table 14)
15. Bend sub (NPT1-1 5/16-12UN) (Fig 7-15, Table 15)
16. Safety protection device (Fig 7-16， Table 16)
17. Assembly of suspension rod (Fig 7-17, Table 17)
18. Assembly of back tong (Fig 7-18, Table 18)
19. Assembly of back tong drive(Fig 7-19, Table 19)
20. Assembly of clamping cylinder(Fig 7-20, Table 20)
21. Assembly of suspension chain(Fig 7-21, Table 21)
22. Assembly of front guide rod (Fig 7-22, Table 22)
23. Hydraulic lift cylinder assembly (Fig 7-23, Table 23)
24. Torque testing assembly(Fig 7-24, Table 1)
25. Torque testing system of master tong(Fig 7-25, Table 25)
26. Oil filled equipment(Fig 7-26, Table 26)
27. Spring lift bucket assembly（Fig7-27， Table27）

1. General assembly (Fig 7-1, Table 1)

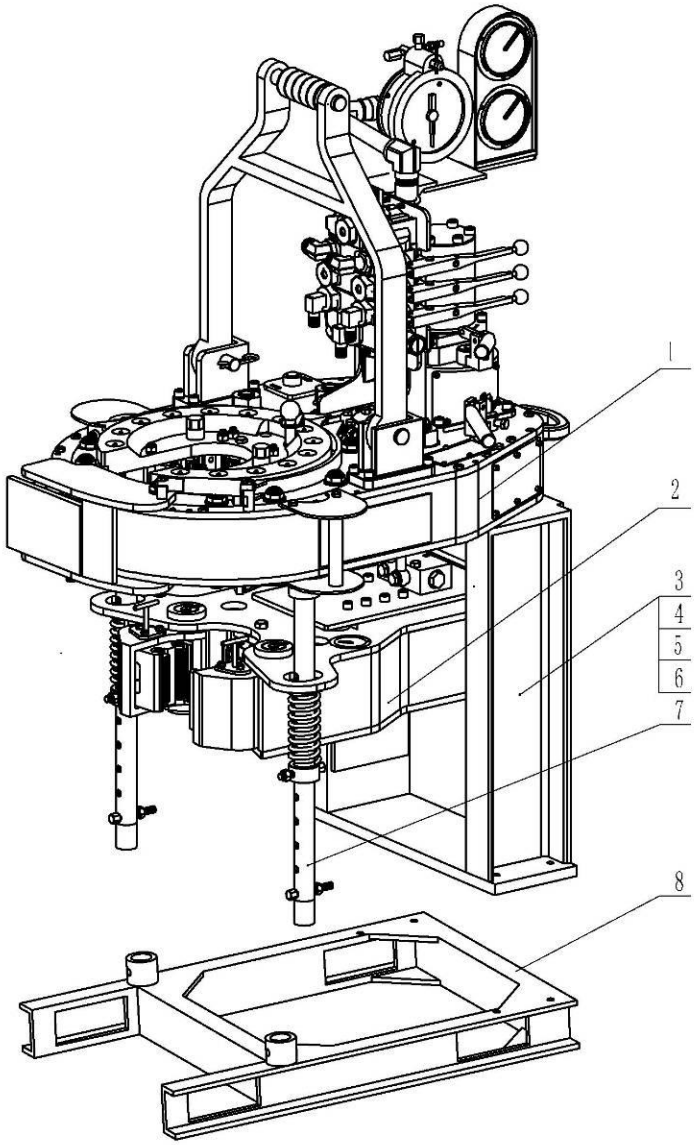



Fig. 7-1

Table 1 List of General assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-01 | HYQ5500.1 | Master tong | 1 |
| 2 | KHT5500/22-02 | HYQ5500.2 | Back tong | 1 |
| 3 | KHT5500/22-03 | HYQ5500.4.1 | Rear support | 1 |
| 4 | KHT5500/22-04 | HYQ5500.3 | Rear support assembly | 1 |
| 5 | KHT5500/22-05 | | Hexagon socket cap head screws 1/2″×1 1/4″ | 4 |
| 6 | KHT5500/22-06 | | Spring washer 1/2″ | 4 |
| 7 | KHT5500/22-07 | KHT5500.5 | Front guide assembly | 2 |
| 8 | KHT5500/22-08 | HYQ5500.4.2 | Fixed seat | 1 |

2. Assembly of master tong (Fig 7-2, Table 2)

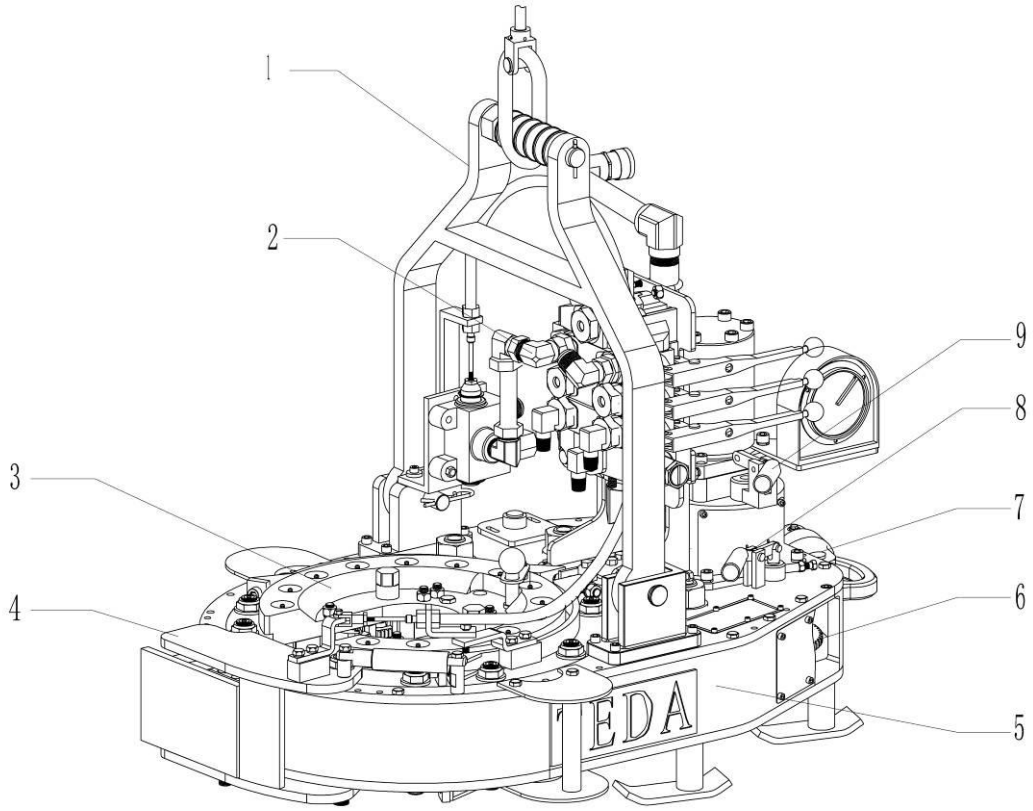



Fig. 7-2

Table 2 List of Master tong

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-09 | KHT5500.1.12 | Suspension rod assembly | 1 |
| 2 | KHT5500/22-10 | KHT5500.1.8 | Hydraulic valve and hydraulic pipeline | 1 |
| 3 | KHT5500/22-11 | HYQ5500.1.1 | Tong head assembly | 1 |
| 4 | KHT5500/22-12 | KHT5500.1.10 | Safety door assembly | 1 |
| 5 | KHT5500/22-13 | | Shell and Accessories Ⅰ | 1 |
| 6 | KHT5500/22-14 | | Drive gear of master tong | 1 |
| 7 | KHT5500/22-15 | KHT5500.1.14 | Torque testing assembly of master tong | 1 |
| 8 | KHT5500/22-16 | | Shell and Accessories Ⅱ | 1 |
| 9 | KHT5500/22-17 | KHT9625.1.14 | Gear engagement assembly (upper) | 1 |

3. Assembly of tong head (Fig 7-3, Table 3)

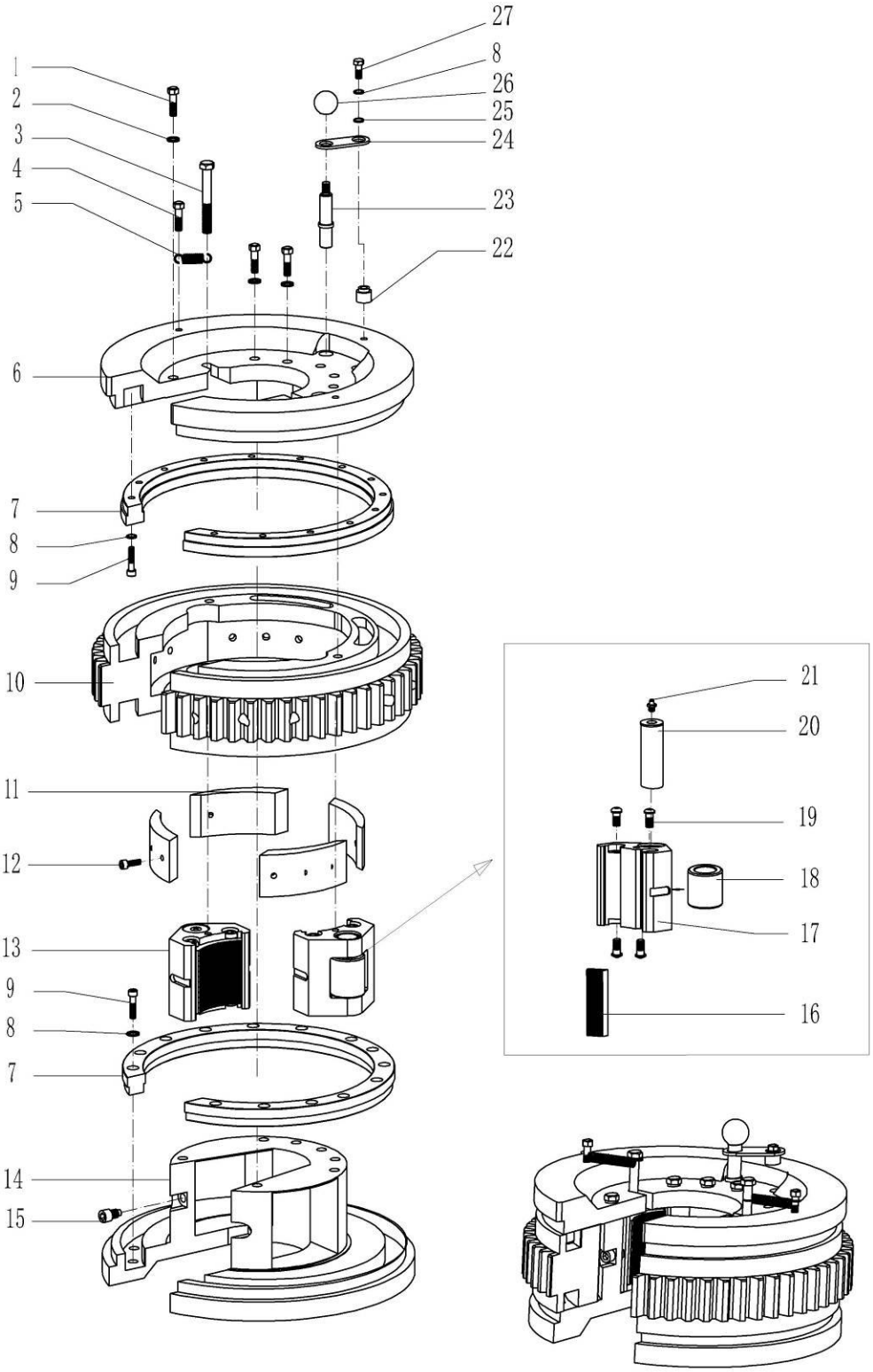



Fig. 7-3

Table 3 List of tong head

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-18 | | Hexagon bolt 5/8″×1 3/4″ | 7 |
| 2 | KHT5500/22-19 | | Spring washer 5/8″ | 7 |
| 3 | KHT5500/22-20 | HYQ5500.1.1-9 | Long t-bolt | 2 |
| 4 | KHT5500/22-21 | HYQ5500.1.1-10 | Short t-bolt | 2 |
| 5 | KHT5500/22-22 | HYQ5500.1.1-5 | Extension spring (Φ2×Φ12×93) | 2 |
| 6 | KHT5500/22-23 | HYQ5500.1.1-1 | Upper jaw plate bracke | 1 |
| 7 | KHT5500/22-24 | KHT5500.1.1-12A | Centering ring | 2 |
| 8 | KHT5500/22-25 | | Spring washer 3/8″ | 29 |
| 9 | KHT5500/22-26 | | Hexagon socket head cap screw 3/8″×1 1/2″ | 28 |
| 10 | KHT5500/22-27 | HYQ5500.1.1-2 | Open gear | 1 |
| 11 | KHT5500/22-28 | HYQ5500.1.1-6（1) | Ramp | 4 |
| | KHT5500/22-29 | HYQ5500.1.1-6（2) | Ramp | |
| 12 | KHT5500/22-31 | | Hexagon socket head cap screw 3/8″×3/4″ | 12 |
| 13 | KHT5500/22-32 | HYQ5500.1.1.1（1） | Jaw plate assembly（5 1/2″） | 2 |
| | KHT5500/22-33 | HYQ5500.1.1.1（2） | Jaw plate assembly（5″） | 2 |
| | KHT5500/22-34 | HYQ5500.1.1.1（3） | Jaw plate assembly（4 1/2″） | 2 |
| | KHT5500/22-35 | HYQ5500.1.1.1（4） | Jaw plate assembly（4 ″） | 2 |
| | KHT5500/22-36 | HYQ5500.1.1.1（5） | Jaw plate assembly（3 1/2″） | 2 |
| | KHT5500/22-37 | HYQ5500.1.1.1（6） | Jaw plate assembly（2 7/8″） | 2 |
| | KHT5500/22-38 | HYQ5500.1.1.1（7） | Jaw plate assembly（2 3/8″） | 2 |
| | KHT5500/22-39 | HYQ5500.1.1.1（8） | Jaw plate assembly（3 3/4″） | 2 |
| | KHT5500/22-40 | HYQ5500.1.1.1（9） | Jaw plate assembly（4 1/8″） | 2 |
| 14 | KHT5500/22-41 | HYQ5500.1.1-3 | Lower jaw plate bracket | 1 |
| 15 | KHT5500/22-42 | HYQ5500.1.1-4 | Limiting bolt | 2 |
| 16 | KHT5500/22-43 | KHT9625.1.1.1-2(2) | Die 2 | 4 |
| 17 | KHT5500/22-44 | HYQ5500.1.1.1-1-1（1） | Jaw（5 1/2″） | 2 |
| | KHT5500/22-45 | HYQ5500.1.1.1-1-1（2） | Jaw（5″） | 2 |
| | KHT5500/22-46 | HYQ5500.1.1.1-1-1（3） | Jaw（4 1/2″） | 2 |
| | KHT5500/22-47 | HYQ5500.1.1.1-1-1（4） | Jaw（4 ″） | 2 |
| | KHT5500/22-48 | HYQ5500.1.1.1-1-1（5） | Jaw（3 1/2″） | 2 |
| | KHT5500/22-49 | HYQ5500.1.1.1-1-1（6） | Jaw（2 7/8″） | 2 |
| | KHT5500/22-50 | HYQ5500.1.1.1-1-1（7） | Jaw（2 3/8″） | 2 |
| | KHT5500/22-51 | HYQ5500.1.1.1-1-1（8） | Jaw（3 3/4″） | 2 |
| | KHT5500/22-52 | HYQ5500.1.1.1-1-1（9） | Jaw（4 1/8″） | 2 |

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 18 | KHT5500/22-53 | KHT9625.1.1.1-4 | Roller | 2 |
| 19 | KHT5500/22-54 | | Hexagon socket head cap screw1/2″×1″ | 8 |
| 20 | KHT5500/22-55 | KHT9625.1.1.1-3 | Roller shaft | 2 |
| 21 | KHT5500/22-56 | GB/T1152 | Oil cup M6×1 | 2 |
| 22 | KHT5500/22-57 | HYQ5500.1.1-8 | Bushings | 1 |
| 23 | KHT5500/22-58 | HYQ5500.1.1-7 | Pin | 1 |
| 24 | KHT5500/22-59 | KHT5500.1.1-6 | Connection plate | 1 |
| 25 | KHT5500/22-60 | GB/T95 | Plain washer 10 | 1 |
| 26 | KHT5500/22-61 | TQ340/35Y.1.5.2-05 | Ball knob | 1 |
| 27 | KHT5500/22-62 | | Hexagon bolt 3/8″×2 1/4″ | 1 |

4. Shell and accessories Ⅰ (Fig 7-4, Table 4)

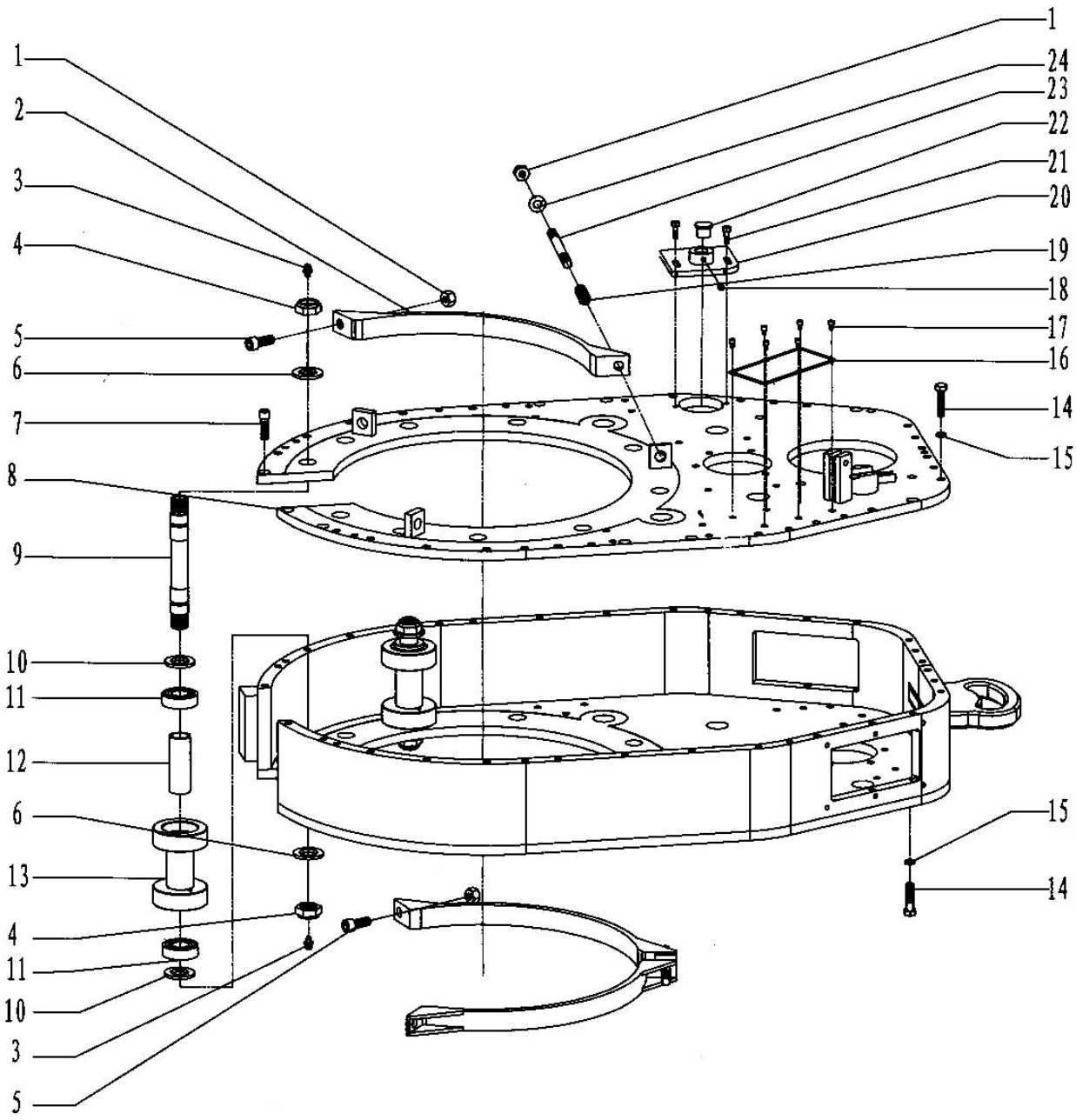



Fig. 7-4

Table 4 List of Shell and accessories Ⅰ

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-70 | | Hexagon check nut 1/2″ | 8 |
| 2 | KHT5500/22-71 | KHT5500.1.11.1 | Braking staple | 4 |
| 3 | KHT5500/22-56 | GB1152 | Oil cup M6 | 18 |
| 4 | KHT5500/22-72 | KHT5500.1.9.1 | Check nut 15/16″-1 2UN | 18 |
| 5 | KHT5500/22-73 | | Hexagon socket cap head screws 1/2"×1 1/2" | 4 |
| 6 | KHT5500/22-74 | GB/T95 | Washer 24 | 18 |
| 7 | KHT5500/22-75 | | Hexagon socket cap head screws 3/8″×1 ″ | 18 |
| 8 | KHT5500/22-76 | HYQ5500.1.2-1 | Shell | 1 |
| 9 | KHT5500/22-77 | HYQ5500.1.7-1 | Righting shaft | 10 |
| 10 | KHT5500/22-78 | KHT5500.1.9-1 | Washer | 20 |
| 11 | KHT5500/22-79 | GB/T276 | Aligning ball shaft 1205 | 20 |
| 12 | KHT5500/22-80 | KHT5500.1.9-2 | Lining | 10 |
| 13 | KHT5500/22-81 | KHT5500.1.9-3 | Alignment Idler wheel | 10 |
| 14 | KHT5500/22-82 | | Hexagon bolt 3/8"×1 1/2" | 38 |
| 15 | KHT5500/22-83 | | Spring washer 3/8″ | 58 |
| 16 | KHT5500/22-84 | HYQ5500.1.2-5 | Nameplate | 1 |
| 17 | KHT5500/22-85 | | Hexagon socket cap head screws 1/4″×5/16″ | 6 |
| 18 | KHT5500/22-86 | | Locking bolt | 1 |
| 19 | KHT5500/22-87 | TQ340/35Y.1.3-03 | Braking spring | 2 |
| 20 | KHT5500/22-88 | KJD9625.16 | Measuring speed gear seat | 1 |
| 21 | KHT5500/22-89 | | Hexagon socket cap head screws 1/4″×3/4″ | 50 |
| 22 | KHT5500/22-90 | KJD9625.16-1 | Measuring speed gear shaft | 1 |
| 23 | KHT5500/22-91 | KHT5500.1.11-1 | Double threaded stud | 1 |
| 24 | KHT5500/22-92 | GB/T95 | Plain washer 12 | 2 |

5. Shell and accessories Ⅱ (Fig 7-5, Table 5)

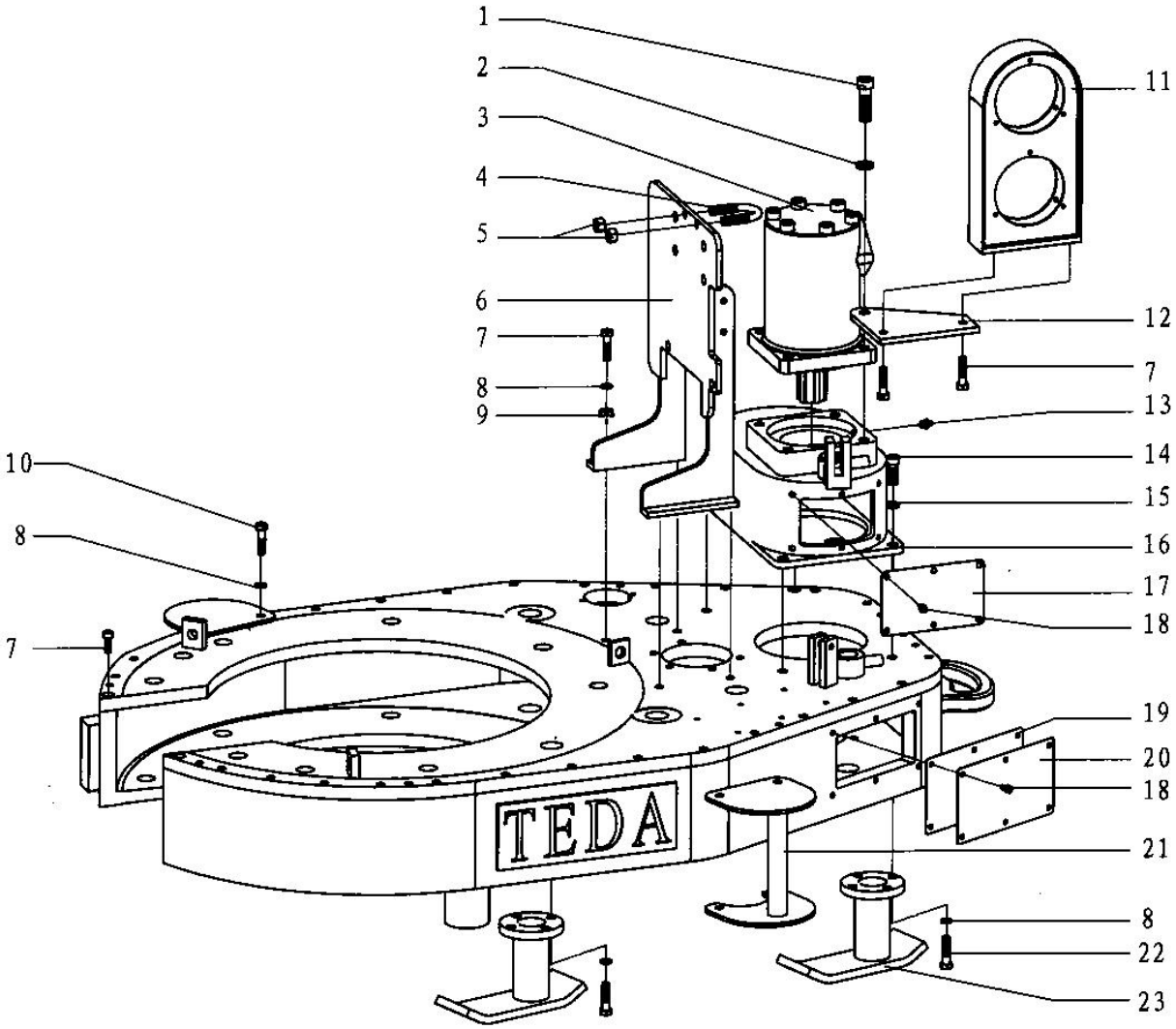



Fig. 7-5

Table 5 List of Shell and accessories Ⅱ

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-93 | KHT9625.1.11 | Hexagon socket cap head screws 5/8″×2″ | 4 |
| 2 | KHT5500/22-94 | | Spring washer 5/8″ | 4 |
| 3 | KHT5500/22-95 | | 6K-625 orbit hydraulic motor (tubular connection) | 1 |
| 4 | KHT5500/22-96 | KJD9625-5 | U-bolt | 1 |
| 5 | KHT5500/22-97 | | Check nut 3/8″ | 2 |
| 6 | KHT5500/22-98 | KHT5500.8.1 | Valve connection assembly | 1 |
| 7 | KHT5500/22-99 | | Hexagon socket cap head screws 3/8″×1″ | 24 |
| 8 | KHT5500/22-100 | | Spring washer 3/8″ | 78 |
| 9 | KHT5500/22-101 | KHT5500.8-1 | Stair seat | 4 |
| 10 | KHT5500/22-102 | | Hexagon bolt 3/8"×1 1/2" | 38 |
| 11 | KHT5500/22-103 | KJD9625.11 | Pressure gauge seat | 1 |
| 12 | KHT5500/22-104 | KJD9625-4(4) | Fixation plate of gauge seat | 1 |
| 13 | KHT5500/22-105 | | Forced filling oil cup NPT1/8″ | 1 |
| 14 | KHT5500/22-106 | | Hexagon socket cap head screws 1/2″×1 1/4″ | 4 |
| 15 | KHT5500/22-107 | | Spring washer 1/2″ | 4 |
| 16 | KHT5500/22-108 | KHT5500.1.7.1 | Small cabinet | 1 |
| 17 | KHT5500/22-109 | KHT5500.1.2-7 | Orifice plate | 1 |
| 18 | KHT5500/22-110 | | Hexagon socket cap head screws 1/4″×5/16″ | 12 |
| 19 | KHT5500/22-111 | KHT9625.1.7-1 | Orifice plate | 1 |
| 20 | KHT5500/22-112 | KHT9625.1.2-11 | Gear nameplate | 1 |
| 21 | KHT5500/22-113 | KHT5500.1.2.1 | Handler | 2 |
| 22 | KHT5500/22-114 | | Hexagon bolt 3/8"×1 1/8" | 16 |
| 23 | KHT5500/22-115 | TQ245.7 | Support leg | 4 |

6. Drive gear of master tong (Fig 7-6, Table 6)

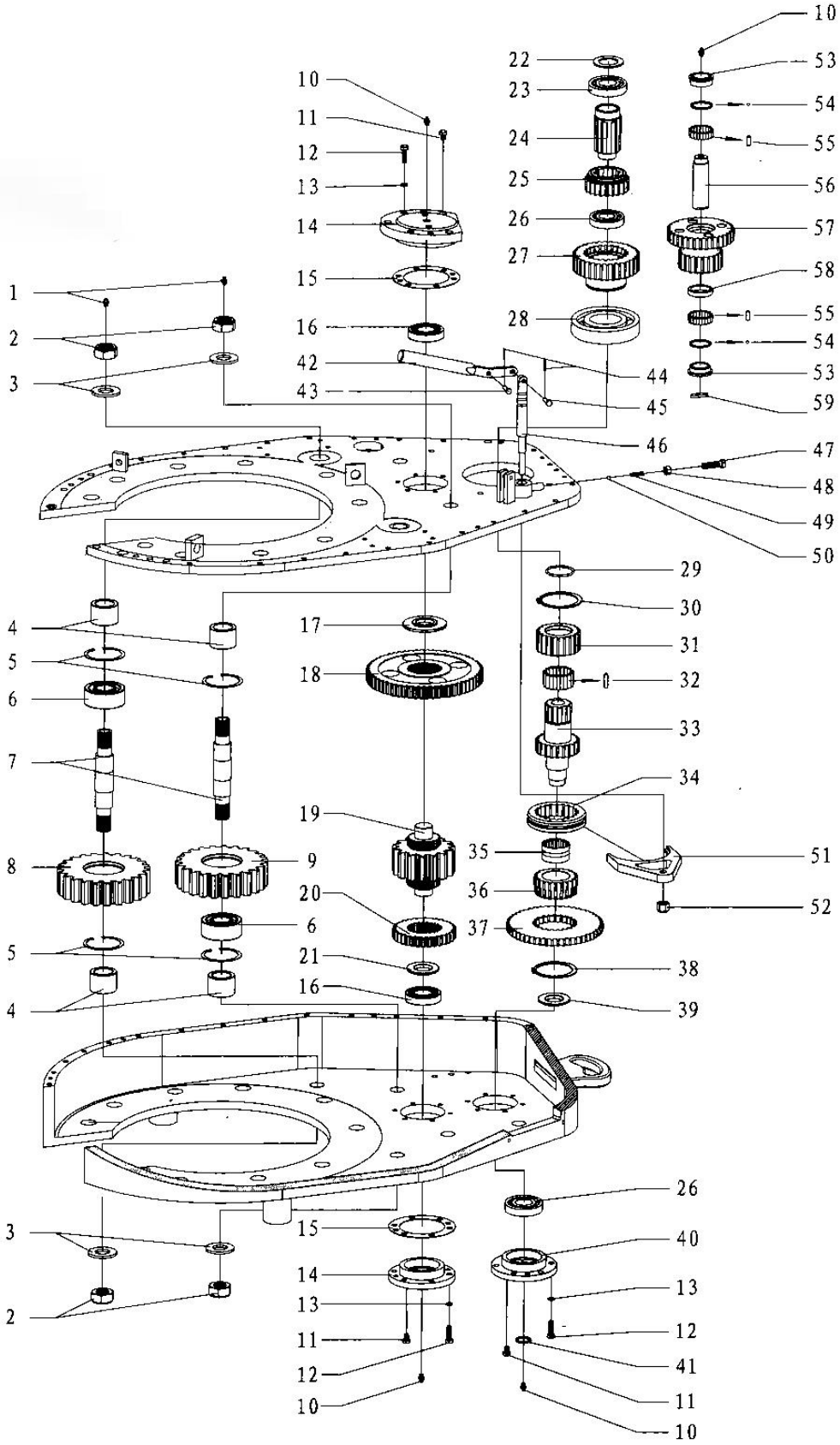



Fig. 7-6

Table 6 List of drive gear of master tong

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-56 | GB/T1152 | Oil cup M6×1 | 4 |
| 2 | KHT5500/22-116 | | Hexagon check nut 1 1/4-7UNC | 8 |
| 3 | KHT5500/22-117 | KHT9625.1.3-1 | Washer | 8 |
| 4 | KHT5500/22-118 | KHT9625.1.3-3 | Lining ring | 8 |
| 5 | KHT5500/22-119 | GB/T893.1 | Elastic retainer ring for hole 90 | 8 |
| 6 | KHT5500/22-120 | GB/T296 | Double row angular contact ball bearing 3308 | 4 |
| 7 | KHT5500/22-121 | HYQ5500.1.3-1 | Small intermediate wheel shaft | 4 |
| 8 | KHT5500/22-122 | KHT5500.1.3-2 | Small intermediate wheel | 2 |
| 9 | KHT5500/22-123 | KHT5500.1.4-1 | Large intermediate wheel | 2 |
| 10 | KHT5500/22-124 | | Forced filling oil cup NPT1/8″ | 4 |
| 11 | KHT5500/22-125 | | Hexagon bolt 3/8″×1/2″ | 6 |
| 12 | KHT5500/22-126 | | Hexagon bolt 3/8″×1 1/4″ | 17 |
| 13 | KHT5500/22-127 | | Spring washer 3/8″ | 17 |
| 14 | KHT5500/22-128 | KHT5500.1.5-1 | Upper bearing cover | 2 |
| 15 | KHT5500/22-129 | KHT9625.1.5-2 | Spacer shim | 2 |
| 16 | KHT5500/22-130 | GB/T283 | Cylindrical roller bearing NJ208E | 2 |
| 17 | KHT5500/22-131 | KHT9625.1.5-7 | Washer | 1 |
| 18 | KHT5500/22-132 | KHT5500.1.5-2 | Large gear | 1 |
| 19 | KHT5500/22-133 | KHT5500.1.5-3 | Gear shaft | 1 |
| 20 | KHT5500/22-134 | KHT5500.1.5-4 | Small gear | 1 |
| 21 | KHT5500/22-135 | KHT5500.1.5-6 | Bearing strip | 1 |
| 22 | KHT5500/22-136 | XYQ12.Z-23 | Gasket | 1 |
| 23 | KHT5500/22-137 | GB/T276 | Ball bearing 111 | 1 |
| 24 | KHT5500/22-138 | KHT9625.1.6-1 | Spline shaft | 1 |
| 25 | KHT5500/22-139 | KHT9625.1.6-2 | Shift engagement gear (upper) | 1 |
| 26 | KHT5500/22-140 | GB/T276 | Ball bearing 208 | 2 |
| 27 | KHT5500/22-141 | KHT9625.1.6-3 | Main shaft gear | 1 |
| 28 | KHT5500/22-142 | GB/T276 | Ball bearing 218 | 1 |
| 29 | KHT5500/22-143 | GB/T895.2 | Wire retainer ring for shaft 60 | 1 |
| 30 | KHT5500/22-144 | GB/T893.1 | Flexible retainer ring for shaft 90 | 1 |
| 31 | KHT5500/22-145 | KHT9625.1.6-4 | Clutch gear (upper) | 1 |
| 32 | KHT5500/22-146 | GB/T309 | Rolling needle φ5×29.8 | 41 |
| 33 | KHT5500/22-147 | KHT9625.1.6-5 | Main shaft | 1 |
| 34 | KHT5500/22-148 | KHT9625.1.6-6 | Inner geared sleeve | 1 |
| 35 | KHT5500/22-149 | GB/T5801 | Single row needle roller bearing without inner ring NK50/35 | 1 |
| 36 | KHT5500/22-150 | KHT9625.1.6-7 | Small clutch gear | 1 |

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 37 | KHT5500/22-151 | KHT5500.1.6-1 | Large clutch gear | 1 |
| 38 | KHT5500/22-152 | GB/T893.1 | Flexible retainer ring for shaft 95 | 1 |
| 39 | KHT5500/22-153 | KHT9625.1.6-9 | Bearing strip | 1 |
| 40 | KHT5500/22-154 | KHT5500.1.6-1 | Bearing cover | 1 |
| 41 | KHT5500/22-155 | GB/T3452 | O-ring 35.5×3.55 | 1 |
| 42 | KHT5500/22-156 | TQ245.8-1 | Operation rod | 1 |
| 43 | KHT5500/22-157 | GB882-86 | Pin roll B8×35 | 1 |
| 44 | KHT5500/22-158 | GB91-86 | split pin 2.5×12 | 2 |
| 45 | KHT5500/22-159 | GB882-86 | Pin roll B8×28 | 1 |
| 46 | KHT5500/22-160 | KHT9625.1.13-1 | Declutch shift shaft (Lower) | 1 |
| 47 | KHT5500/22-161 | | Hexagon bolt 1/2″×1 3/4″ | 1 |
| 48 | KHT5500/22-162 | | Hexagon nut 1/2″ | 1 |
| 49 | KHT5500/22-163 | TQ245.8-2 | Positioning spring | 1 |
| 50 | KHT5500/22-164 | | Steel ball 5/16″ | 1 |
| 51 | KHT5500/22-165 | KHT9625.1.13-2 | Declutch shift (Lower) | 1 |
| 52 | KHT5500/22-166 | | Check nut 5/8″ | 1 |
| 53 | KHT5500/22-167 | XYQ12.Z-27A | Support ring (2) | 2 |
| 54 | KHT5500/22-168 | GB/T308 | Steel ball φ6 | 56 |
| 55 | KHT5500/22-169 | | Cylindrical roller 10×25 | 28 |
| 56 | KHT5500/22-170 | KHT9625.1.8-1 | Mandrel | 1 |
| 57 | KHT5500/22-171 | KHT9625.1.8-2 | Duplex gear | 1 |
| 58 | KHT5500/22-172 | XYQ12.Z-29 | Spacing ring | 1 |
| 59 | KHT5500/22-173 | XYQ12.Z-45 | Positioning piece | 1 |

7. Assembly of safety door (Fig 7-7, Table 7)

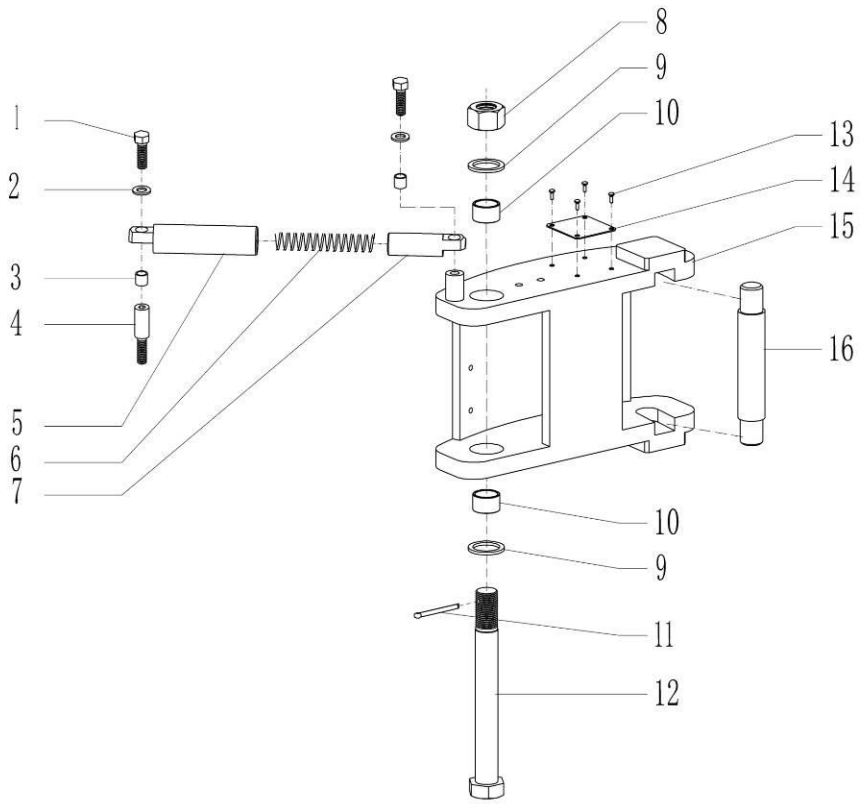



Fig. 7-7

Table 7 List of safety door assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-175 | | Hexagon bolt 3/8"×1/2" | 2 |
| 2 | KHT5500/22-176 | GB/T95 | Washer 10 | 2 |
| 3 | KHT5500/22-177 | TQ245.13-1 | Bushing (1) | 2 |
| 4 | KHT5500/22-178 | KHT5500.1.10-4 | Screw | 1 |
| 5 | KHT5500/22-179 | TQ245.13.2-1 | Sleeve | 1 |
| 6 | KHT5500/22-180 | TQ245.13.2-2 | Spring | 1 |
| 7 | KHT5500/22-181 | TQ245.13.2-3 | Sleeve rod | 1 |
| 8 | KHT5500/22-182 | GB/T6170 | Nut M24 | 1 |
| 9 | KHT5500/22-183 | KHT5500.1.10-6 | Washer | 2 |
| 10 | KHT5500/22-184 | KHT5500.1.10-5 | Lining | 2 |
| 11 | KHT5500/22-185 | GB/T91 | Split pin 5×40 | 1 |
| 12 | KHT5500/22-186 | HYQ5500.1.8-2 | Door spindle | 1 |
| 13 | KHT5500/22-187 | GB/T70 | Hexagon socket cap head screws M4×6 | 4 |
| 14 | KHT5500/22-188 | XYQ1.8.Z-38(3) | Warning plate | 1 |
| 15 | KHT5500/22-189 | HYQ5500.1.8.1 | Safety door | 1 |
| 16 | KHT5500/22-190 | HYQ5500.1.8-1 | Pin | 1 |

8. Gear engagement assembly (Fig7-8, Table 8)

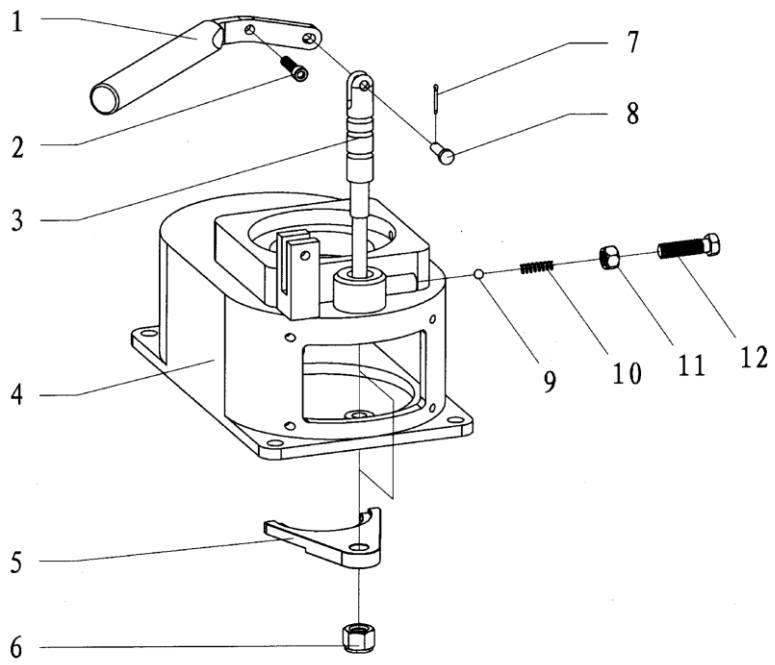



Fig. 7-8

Table 8 List of Gear engagement assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-191 | KHT9625.1.14-1 | Operation rod | 1 |
| 2 | KHT5500/22-192 | | Hexagon socket cap head screws 5/16″×1 1/4″ | 1 |
| 3 | KHT5500/22-193 | KHT9625.1.14-2 | Declutch shift shaft (Upper) | 1 |
| 4 | KHT5500/22-108 | KHT5500.1.7.1 | Small cabinet | 1 |
| 5 | KHT5500/22-194 | KHT9625.1.14-3 | Declutch shift (Upper) | 1 |
| 6 | KHT5500/22-195 | | Check nut 5/8″ | 1 |
| 7 | KHT5500/22-196 | GB91-86 | Split pin 2.5×12 | 1 |
| 8 | KHT5500/22-197 | GB882-86 | Pin Shaft B8×28 | 1 |
| 9 | KHT5500/22-198 | | Steel ball 5/16″ | 1 |
| 10 | KHT5500/22-199 | TQ245.8-2 | Positioning spring | 1 |
| 11 | KHT5500/22-163 | | Hexagon nut 1/2″ | 1 |
| 12 | KHT5500/22-200 | | Hexagon bolt 1/2″×1 3/4″ | 1 |

9. Hydraulic pipeline (Fig 7-9, Table 9)

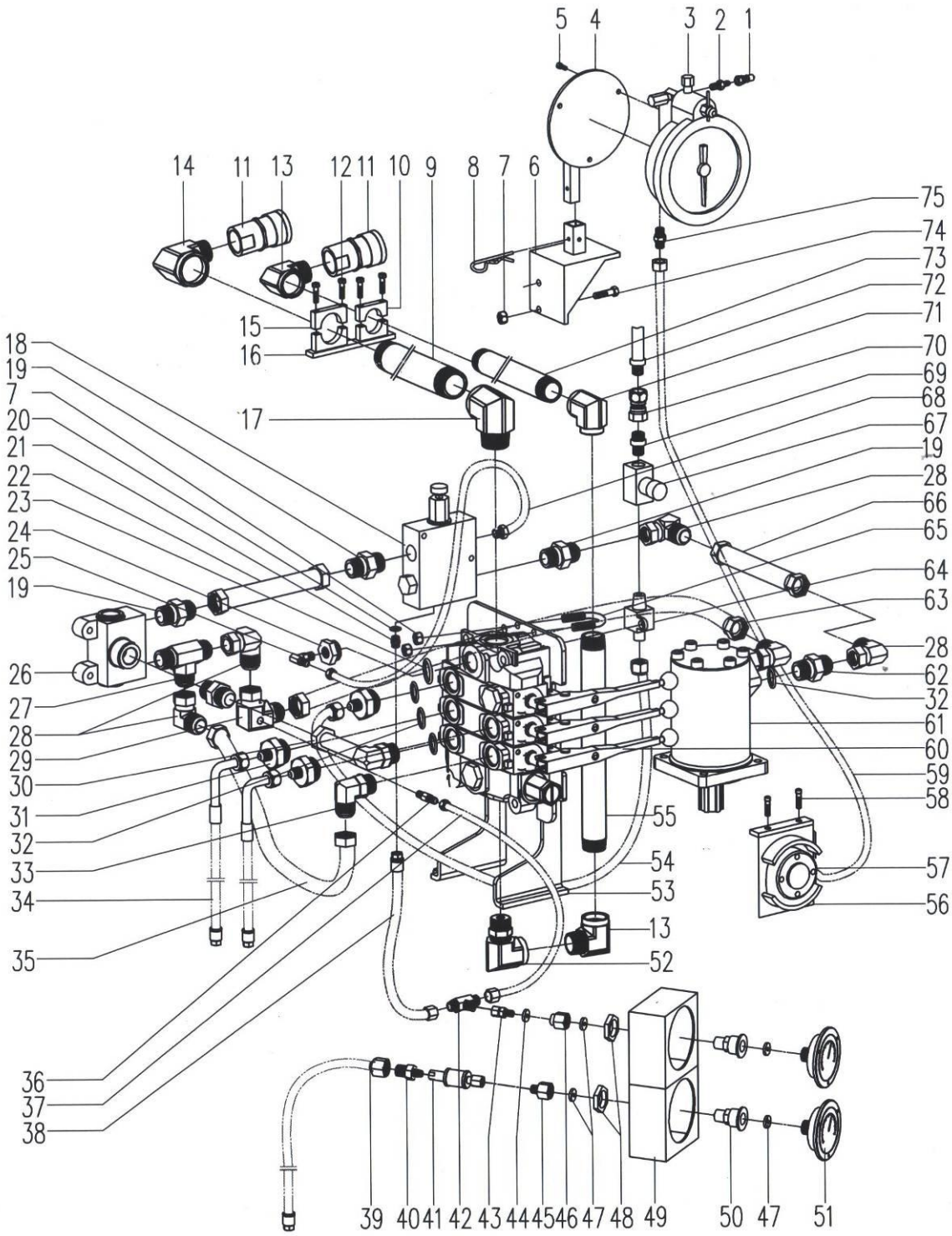



Fig. 7-9

Table 9 List of Hydraulic pipeline

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-201 | | Quick coupling（NPT1/4，outer） | 1 |
| 2 | KHT5500/22-202 | | One-way Adaptor（NPT1/4） | 1 |
| 3 | KHT5500/22-203 | CG600 | 6" Torque meter（-45℃） | 1 |
| 4 | KHT5500/22-204 | KJD9625.11（3） | Torque meter table | 1 |
| 5 | KHT5500/22-205 | | Hexagon Socket Head Screw1/4"×1/2" | 3 |
| 6 | KHT5500/22-206 | KJD9625-4（2） | Torque table frame | 1 |
| 7 | KHT5500/22-207 | | Check nut 3/8" | 8 |
| 8 | KHT5500/22-208 | TQ245-2 | Circlip | 1 |
| 9 | KHT5500/22-209 | KJD9625.18-6 | Tube （NPT1 1/4） | 1 |
| 10 | KHT5500/22-210 | KJD9625.18.7-1 | Pipe box | 1 |
| 11 | KHT5500/22-211 | | Quick couplingr（NPT 1） | 2 |
| 12 | KHT5500/22-212 | GB/T5782 | Hexagon bolt M8×45 | 4 |
| 13 | KHT5500/22-213 | KJD9625.18-8 | Adaptor（NPT1） | 2 |
| 14 | KHT5500/22-214 | KJD9625.18-5 | Adaptor(NPT1 1/4-NPT1) | 1 |
| 15 | KHT5500/22-215 | KJD9625.18.7-5 | Pipe clamp(Upper) | 1 |
| 16 | KHT5500/22-216 | KJD9625.18.7-2 | Pipe clamp(Low) | 1 |
| 17 | KHT5500/22-217 | KJD9625.18.5 | Adaptor（NPT1 1/4-1 5/8-12UN） | 1 |
| 18 | KHT5500/22-218 | | Reducing valve | 1 |
| 19 | KHT5500/22-219 | KHT5500.1.15C.1-9 | Adaptor1 5/16-12UN-NPT1 | 2 |
| 20 | KHT5500/22-220 | | Gasket 16.5×11.6×1.5 | 1 |
| 21 | KHT5500/22-221 | | Adaptor（G1/4-9/16UNF） | 1 |
| 22 | KHT5500/22-222 | KHT5500.1.8.4 | Bend adaptor（1 5/16″-12UN ） | 1 |
| 23 | KHT5500/22-223 | GB1235-76 | O-Ring 45×3.1 | 1 |
| 24 | KHT5500/22-224 | TQ508/70Y.10-4 | Adaptor1 5/8 | 1 |
| 25 | KHT5500/22-225 | KJD9625.18.1 | Adaptor（9/16-18UNF） | 1 |
| 26 | KHT5500/22-226 | RHF.0 | Valve body | 1 |
| 27 | KHT5500/22-227 | KHT5500.1.15C.1-8 | Three-way adaptor（NPT1-1 5/16-12UN) | 1 |
| 28 | KHT5500/22-228 | TQ508/70Y.10.8.4 | Adaptor1 5/16-12UN | 5 |
| 29 | KHT5500/22-229 | TQ508/70Y.10.8.4B | Adaptor1 5/16-12UN | 1 |
| 30 | KHT5500/22-230 | KJD9625.18.2(2) | Adaptor1 5/16-12UNC | 1 |
| 31 | KHT5500/22-231 | KHT5500.1.8-6 | Adaptor(1 5/16-12UN-3/4-UNF) | 3 |
| 32 | KHT5500/22-232 | As568 | O-Ring29.75×2.75 | 5 |
| 33 | KHT5500/22-233 | TQ508/70Y.10.8.3 | Adaptor | 3 |
| 34 | KHT5500/22-234 | | Hose 10 II -950(3/4-16UNF) | 2 |
| 35 | KHT5500/22-235 | KHT5500.1.15D-1 | Hose1 5/16-12UNC，290×80 | 1 |
| 36 | KHT5500/22-236 | YG-14 | Adaptor(NPT1/4-9/16UNF) | 1 |

| | | | | |
|---|---|---|---|---|
| 38a | KHT5500/22-237a | | Hose 8 II -1000(M16×1.5，9/16UN -90°，) | 1 |
| 38b | KHT5500/22-237b | | Hose8 II -700(M16×1.5，9/16UNF90°) | 1 |
| 39 | KHT5500/22-238 | | Hose6 II -2150(M20×1.5-9/16UNF，90°) | 1 |
| 40 | KHT5500/22-239 | YG-82 | AdaptorNPT1/4-M20×1.5 | 1 |
| 41 | KHT5500/22-240 | | Adaptor(NPT1/4″) | 1 |
| 42 | KHT5500/22-241 | | Shuttle valve M16×1.5 | 1 |
| 43 | KHT5500/22-242 | | Adaptor | 1 |
| 44 | KHT5500/22-243 | | ED Ring | 1 |
| 45 | KHT5500/22-244 | YG-52 | Adaptor(M20-NPT1/4) | 1 |
| 46 | KHT5500/22-245 | YG-145 | AdaptorG1/4-M20×1.5 | 1 |
| 47 | KHT5500/22-246 | | Washer | 1 |
| 48 | KHT5500/22-247 | KJD9625.11（2）-2 | Lock nut | 1 |
| 49 | KHT5500/22-248 | KJD9625.11（2）.1 | Pressure gauge seat | 1 |
| 50 | KHT5500/22-249 | KJD9625.11（2）-1 | Adaptor | 2 |
| 51 | KHT5500/22-250 | | Pressure gauge Y-60ZT(0-3600PSI) | 2 |
| 52 | KHT5500/22-251 | KJD9625.18.6 | Adaptor（NPT1-1 5/16-12UN） | 1 |
| 53 | KHT5500/22-252 | KHT5500.1.18.1（2） | Valve connection assembly | 1 |
| 54 | KHT5500/22-253 | | Hose10 II -850(3/4-16UN，90°) | 1 |
| 55 | KHT5500/22-254 | KJD9625.18-9（2） | Tube（NPT1） | 1 |
| 56 | KHT5500/22-255 | KHT5500.2.8 | Torque cylinder connected seat | 1 |
| 57 | KHT5500/22-256 | | Pressure cylinder（Φ60） | 1 |
| 58 | KHT5500/22-257 | KHT5500.2.10 | Wing bolt | 4 |
| 59 | KHT5500/22-258 | | Hose 6 II -1500 | 1 |
| 60 | KHT5500/22-259 | VG35-3-004 | Multi-way valve assembly（Parker） | 1 |
| 61 | KHT5500/22-260 | | 6K-625orbit hydraulic motor (tubular connection) | 1 |
| 62 | KHT5500/22-261 | TQ508/70Y.10.8-2 | Adaptor1 5/16-12UN | 2 |
| 63 | KHT5500/22-262 | KHT13625.1.8-1 | Hose25 II -580（1 5/16-12UNC） | 1 |
| 64 | KHT5500/22-263 | KHT9625.1.9-2 | Adaptor(NPT1/2-3/4UNF) | 1 |
| 65 | KHT5500/22-264 | KJD9625-5 | U-bolt | 1 |
| 66 | KHT5500/22-265 | KHT5500.1.8.5 | Tube 1 5/16-12UN(L=230) | 1 |
| 67 | KHT5500/22-266 | DV10 | Throttle valve | 1 |
| 68 | KHT5500/22-267 | | Hose10 II 1000(NPT 3/8-9/16UNF) | 1 |
| 69 | KHT5500/22-268 | YG-72 | Adaptor(NPT1/2) | 1 |
| 70 | KHT5500/22-269 | | Quick coupling NPT1/2 | 1 |
| 71 | KHT5500/22-270 | KJD9625.18-10 | Adaptor（NPT1） | 1 |
| 72 | KHT5500/22-271 | | Hose10 II -4500(3/4-16UNF、90°，NPT1/2) | 1 |
| 73 | KHT5500/22-272 | KJD9625.18-9 | Tube（NPT1） | 1 |
| 74 | KHT5500/22-273 | | Hexagon bolt 3/8"×1" | 4 |
| 75 | KHT5500/22-274 | | Adaptor（M14×1.-NPT1/4) | 1 |

10. Composite valve (Fig 7-10, Table 10)

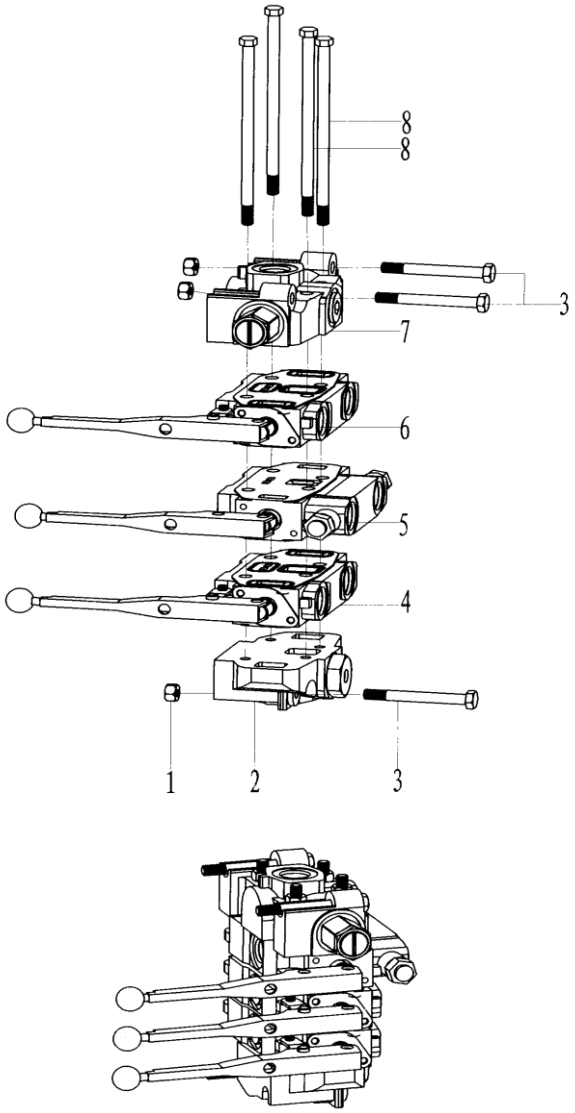



Fig. 7-10

Table 10 List of Composite valve

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-275 | | Hexagon check nut 1/2″ | 3 |
| 2 | KHT5500/22-276 | | Connection plate assembly | 1 |
| 3 | KHT5500/22-277 | | Hexagon bolt 1/2″UNC×4 1/2 〃 | 3 |
| 4 | KHT5500/22-278 | | Manual reversing valve (Y) | 1 |
| 5 | KHT5500/22-279 | | Manual reversing valve (O) | 1 |
| 6 | KHT5500/22-280 | | Manual reversing valve (Y) | 1 |
| 7 | KHT5500/22-281 | | Overflow valve assembly | 1 |
| 8 | KHT5500/22-282 | | Bolt 1/2″UNC | 4 |

11. Quick coupling (1 7/8-12UN) (Fig7-11, Table 11)

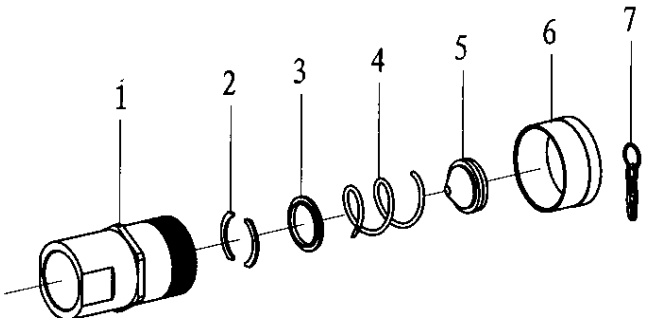



Fig. 7-11

Table 11 List of Quick coupling (1 7/8-12UN)

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-290 | KJD9625.18.4.1-2 | Connector body | 1 |
| 2 | KHT5500/22-291 | KJD9625.18.4.1-5 | Clamping piece | 2 |
| 3 | KHT5500/22-292 | KJD9625.18.4.1-4 | Washer | 1 |
| 4 | KHT5500/22-293 | KJD9625.18.4.1-3 | Spring | 1 |
| 5 | KHT5500/22-294 | KJD9625.18.4.1.1 | Connector element | 1 |
| 6 | KHT5500/22-295 | KJD9625.18.4.1-1 | End cover | 1 |
| 7 | KHT5500/22-296 | KJD9625.18..3.1.2 | Composite chain | 1 |

12. Bend sub (1 5/16-12UN) (Fig 7-12, Table 12)

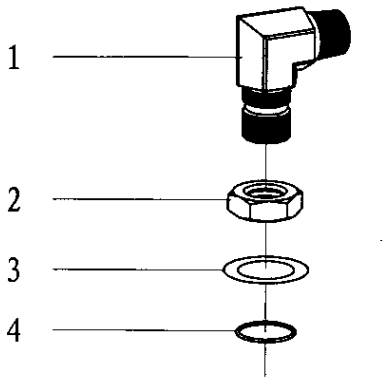



Fig. 12

Table 12 List of Bend sub (1 5/16-12UN)

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-297 | KJD9625.18.2-1 | Bend sub (1 5/16-12UN) | 1 |
| 2 | KHT5500/22-298 | KJD9625.18.2-2 | Hexagon nut 1 5/16 | 1 |
| 3 | KHT5500/22-299 | | Washer Φ44.5×Φ30.5×1.5 | 1 |
| 4 | KHT5500/22-300 | GB1235-76 | O-ring 35×3.1 | 1 |

13. Bend sub (9/16-18UNF) (Fig 7-13, Table 13)

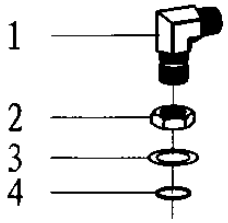



Fig. 7-13

Table 13 List of Bend sub (9/16-18UNF)

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-301 | KJD9625.18.1-1 | Bend sub (9/16-18UNF) | 1 |
| 2 | KHT5500/22-302 | KJD9625.18.1-2 | Hexagon nut 9/16 | 1 |
| 3 | KHT5500/22-303 | | Washer Φ20.3×Φ12.7×1 | 1 |
| 4 | KHT5500/22-304 | GB1235-76 | O-ring 16×2.4 | 1 |

14. Bend sub (NPT1 1/4-1 5/8-12UN) (Figure 7-14, Table 14)

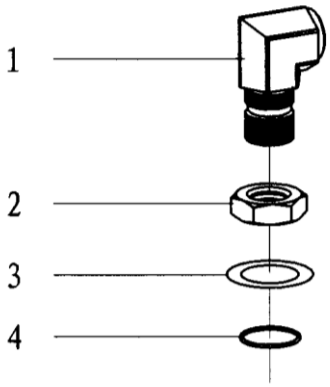



Fig.18

Table 14 List of Bend sub (NPT1 1/4-1 5/8-12UN)

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-305 | KJD9625.18.5-1 | Bend sub (NPT1 1/4-1 5/8-12UN) | 1 |
| 2 | KHT5500/22-306 | KJD9625.18.5-2 | Hexagon nut 1 5/8 | 1 |
| 3 | KHT5500/22-307 | | Washer Φ55×Φ38.5×1.5 | 1 |
| 4 | KHT5500/22-308 | GB1235-76 | O-ring 45×3.1 | 1 |

15. Bend sub (NPT1-1 5/16-12UN) (Fig 7-15, Table 15)

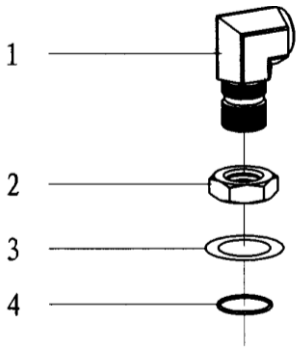



Fig.7-15

Table 15 List of Bend sub (NPT1-1 5/16-12UN)

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-309 | KJD9625.18.6-1 | Bend sub (NPT1-1 5/16-12UN) | 1 |
| 2 | KHT5500/22-310 | KJD9625.18.6-2 | Hexagon nut 1 5/16 | 1 |
| 3 | KHT5500/22-311 | | Washer Φ44.5×Φ30.5×1.5 | 1 |
| 4 | KHT5500/22-312 | GB1235-76 | O-ring 35×3.1 | 1 |

16. Safety protection device (Fig 7-16，Table 16)

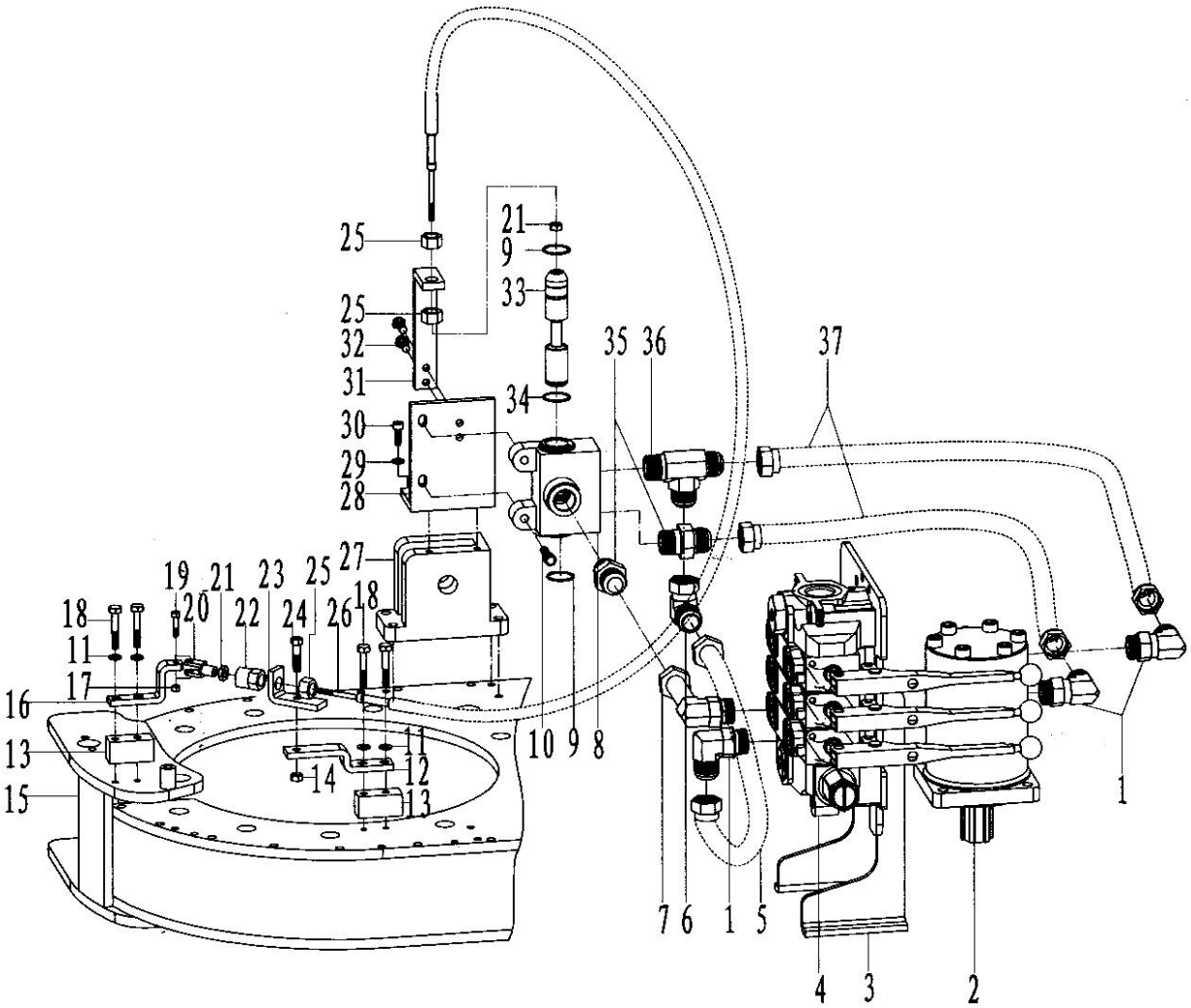



Fig 7- 16

Table 16 List of Safety protection device

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-233 | TQ508/70Y.10.8.3 | Bend adaptor（1 5/16″-12UN ） | 3 |
| 2 | KHT5500/22-313 | | 6K-625 orbit hydraulic motor (tubular connection) | 1 |
| 3 | KHT5500/22-252 | KHT5500.1.18.1（2） | Valve connection assembly | 1 |
| 4 | KHT5500/22-259 | VG35-3-004 | Multi-way valve assembly（Parker） | 1 |
| 5 | KHT5500/22-235 | KHT5500.1.15D-1 | Curved Hose（1 5/16-12UNC，290×80） | 1 |
| 6 | KHT5500/22-228 | TQ508/70Y.10.8.4 | Bend adaptor（1 5/16″-12UN ） | 1 |
| 7 | KHT5500/22-230 | KJD9625.18.2(2) | Bend adaptor（1 5/16-12UNC） | 1 |
| 8 | KHT5500/22-314 | RHF-1 | Valve body | 1 |
| 9 | KHT5500/22-315 | GB/T89.4.1 | Washer 30 | 2 |
| 10 | KHT5500/22-316 | | Hexagon bolt 3/8-16UNC×2 1/2 | 2 |

| | | | | |
|---|---|---|---|---|
| 11 | KHT5500/22-317 | | Spring washer 5/16" | 4 |
| 12 | KHT5500/22-318 | KHT5500.1.15C.1-5 | Connection plate （2） | 1 |
| 13 | KHT5500/22-319 | KHT5500.1.15C.1-1 | Plate | 2 |
| 14 | KHT5500/22-320 | | Nut 3/8"-16UNC | 3 |
| 15 | KHT5500/22-189 | KHT5500.1.10.2 | Safety door | 1 |
| 16 | KHT5500/22-321 | KHT5500.1.15C.1-2 | Connection plate（1） | 1 |
| 17 | KHT5500/22-322 | | Nut 1/4"-20UNC | 1 |
| 18 | KHT5500/22-323 | | Hexagon bolt 5/16"-18UNC×2" | 4 |
| 19 | KHT5500/22-324 | | Hexagon bolt 1/4"-20UNC×1 1/2" | 1 |
| 20 | KHT5500/22-325 | KHT5500.1.15C.1-3 | Rotary adaptor | 1 |
| 21 | KHT5500/22-326 | | Nut 1/4"-28UNC | 2 |
| 22 | KHT5500/22-327 | XQ4.5.Z.6-6 | Protective sleeve | 1 |
| 23 | KHT5500/22-328 | KHT5500.1.15C.1-4 | Rotary plate | 1 |
| 24 | KHT5500/22-329 | | Hexagon bolt 3/8"-16UNC×3/4" | 1 |
| 25 | KHT5500/22-330 | | Nut 5/8"-18UNF | 3 |
| 26 | KHT5500/22-331 | 173-LTT-1-71 | Flexible shaft | 1 |
| 27 | KHT5500/22-332 | KHT9625.1.16-1B | Suspension support | 2 |
| 28 | KHT5500/22-333 | KHT5500.1.15D.1-1 | Valve fixing plate（2） | 1 |
| 29 | KHT5500/22-334 | KHT5500.1.15C.1-10 | Washer | 2 |
| 30 | KHT5500/22-335 | GB/T70 | Hexagon Socket Head Screw M8×25-8.8 | 2 |
| 31 | KHT5500/22-336 | KHT5500.1.15C.1-6 | Valve fixing plate（1） | 1 |
| 32 | KHT5500/22-337 | | Hexagon bolt 3/8"-16UNC×2 1/2" | 2 |
| 33 | KHT5500/22-338 | RHF-2 | Valve core | 1 |
| 34 | KHT5500/22-339 | GB/T3452.1 | O-ring 25×2.65 | 2 |
| 35 | KHT5500/22-219 | KHT5500.1.15C.1-9 | Adaptor1 5/16-12UN-NPT1 | 2 |
| 36 | KHT5500/22-227 | KHT5500.1.15C.1-8 | Three-way adaptor（NPT1-1 5/16-12UN) | 1 |
| 37 | KHT5500/22-340 | KHT13625.1.8-1 | High-pressure hose 25Ⅱ-580 （ 1 5/16-12UNC） | 2 |

17. Assembly of suspension rod (Fig 7-17, Table 17)

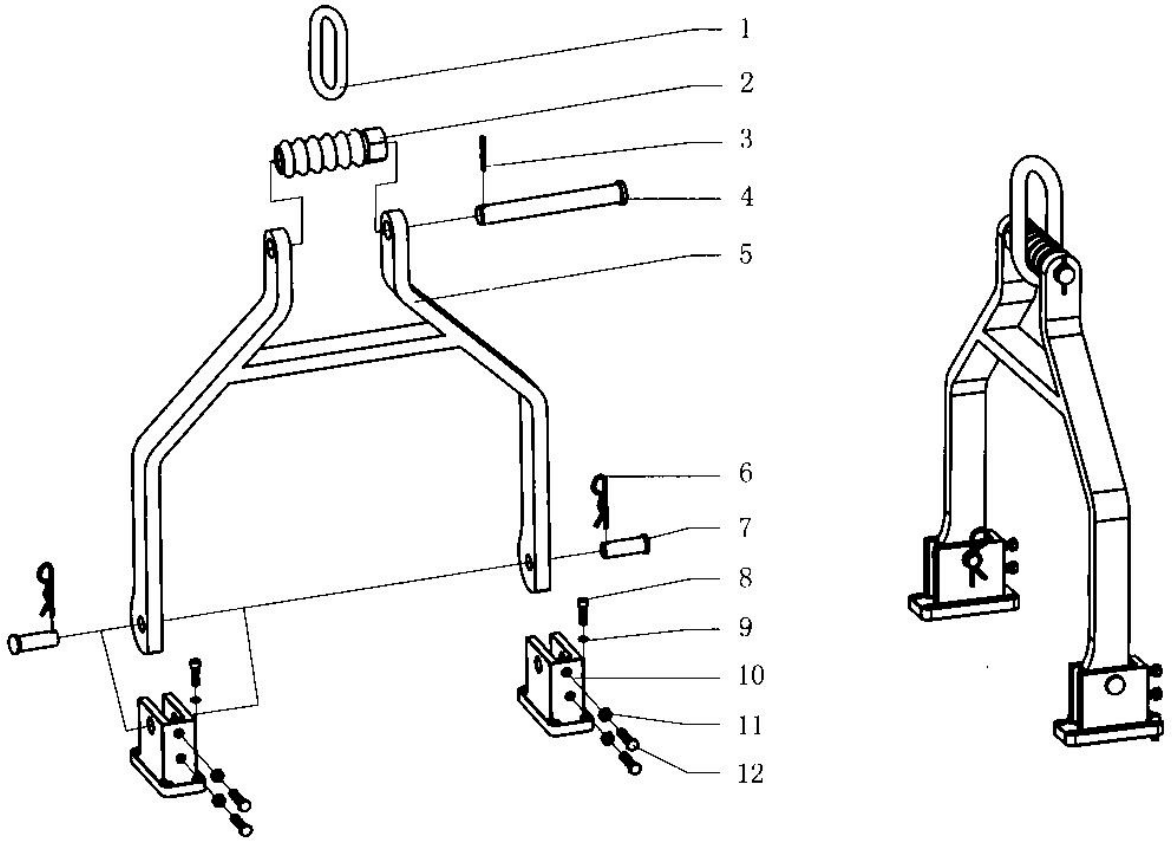



Fig. 17

Table 17 List of suspension rod assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-342 | | Wire rope (5T) | 1 |
| 2 | KHT5500/22-343 | TQ245.15(2)-1 | Screw bar | 1 |
| 3 | KHT5500/22-344 | GB/T91 | Split pin 6×45 | 1 |
| 4 | KHT5500/22-345 | TQ245.15(2)-2 | Pin shaft | 1 |
| 5 | KHT5500/22-346 | KHT5500.1.12.1 | Suspension rod | 1 |
| 6 | KHT5500/22-208 | TQ245-2 | Circlip | 2 |
| 7 | KHT5500/22-347 | GB/T882 | Pin Shaft B25×70 | 2 |
| 8 | KHT5500/22-348 | | Hexagon socket cap head screws 3/8″×1 1/2″ | 8 |
| 9 | KHT5500/22-349 | | Spring washer 3/8″ | 8 |
| 10 | KHT5500/22-350 | KHT9625.1.16-1 | Suspension support | 2 |
| 11 | KHT5500/22-351 | | Hexagon thin nut 1/2″ | 4 |
| 12 | KHT5500/22-352 | | Hexagon bolt 1/2″×2″ | 4 |

18. Assembly of back tong (Fig 7-18, Table 18)

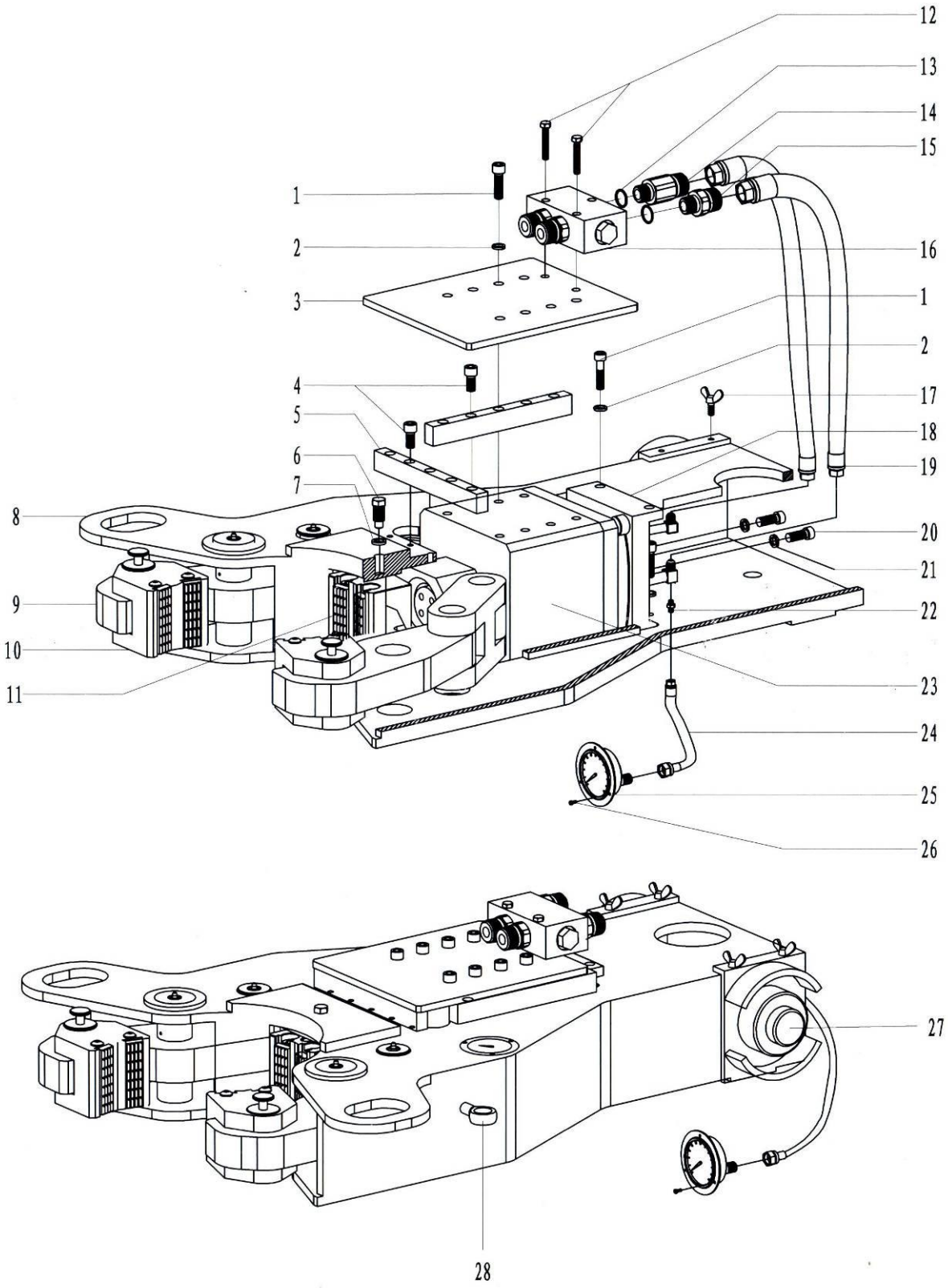



Fig.7-18

Table 18 List of back tong assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-360 | | Hexagon socket cap head screws 1/2″×1 1/4″ | 14 |
| 2 | KHT5500/22-361 | | Spring washer 1/2″ | 14 |
| 3 | KHT5500/22-362 | HYQ5500.2-7 | Fixation bolt | 1 |
| 4 | KHT5500/22-363 | | Hexagon socket cap head screws 5/16″×3/4″ | 15 |
| 5 | KHT5500/22-364 | KHT8625.2-2 | Plate 1 | 3 |
| 6 | KHT5500/22-365 | HYQ5500.2.3B | Stop bolts | 1 |
| 7 | KHT5500/22-366 | | Spring washer 5/8″ | 1 |
| 8 | KHT5500/22-367 | HYQ5500.2.4 | Back tong body | 1 |
| 9 | KHT5500/22-368C | HYQ5500.2.1C | Clamping arm | 2 |
| 10 | KHT5500/22-369 | HYQ5500.2.2 | Rear jaw plate assembly | 2 |
| 11 | KHT5500/22-370 | KHT5500.2.5 | Front jaw plate assembly | 1 |
| 12 | KHT5500/22-371 | | Hexagon socket cap head screws 3/8″×2 3/4″ | 2 |
| 13 | KHT5500/22-372 | | O-Ring 22×2.4 | 2 |
| 14 | KHT5500/22-373 | YG-45B | Adaptor（M18×1.5-3/4UNF） | 1 |
| 15 | KHT5500/22-374 | YG-45 | Adaptor（M18×1.5-3/4UNF） | 3 |
| 16 | KHT5500/22-375 | SYS-L15H | Hydraulic lock valve | 1 |
| 17 | KHT5500/22-376 | KHT5500.2.10 | Wing bolt | 4 |
| 18 | KHT5500/22-377 | HYQ5500.2-6 | Baffle | 1 |
| 19 | KHT5500/22-378 | | Hose10 Ⅱ-950(3/4-16UNF 90 °) | 2 |
| 20 | KHT5500/22-379 | | Hexagon socket cap head screws 3/4″×2″ | 2 |
| 21 | KHT5500/22-380 | | Spring washer 3/4″ | 2 |
| 22 | KHT5500/22-381 | PT-3 | PT Adaptor（M14×1.5-M16） | 1 |
| 23 | KHT5500/22-382 | KHT5500.2.6B | Clamping cylinder | 1 |
| 24 | KHT5500/22-383 | | HF H2-P1-3-P-600 Pressure gauge hose assembly | 1 |
| 25 | KHT5500/22-384 | | Pressure gauge Y-60ZT ( 0～2320PSI ) | 1 |
| 26 | KHT5500/22-385 | | Cross recessed pan head screw 1/4″×1/2″ | 3 |
| 27 | KHT5500/22-386 | KHT8625.2.4 | Torque testing assembly | 1 |
| 28 | KHT5500/22-387 | GB/T825 | Lifting bolt M12 | 2 |

19. Assembly of back tong drive (Fig 7-19, Table 19)

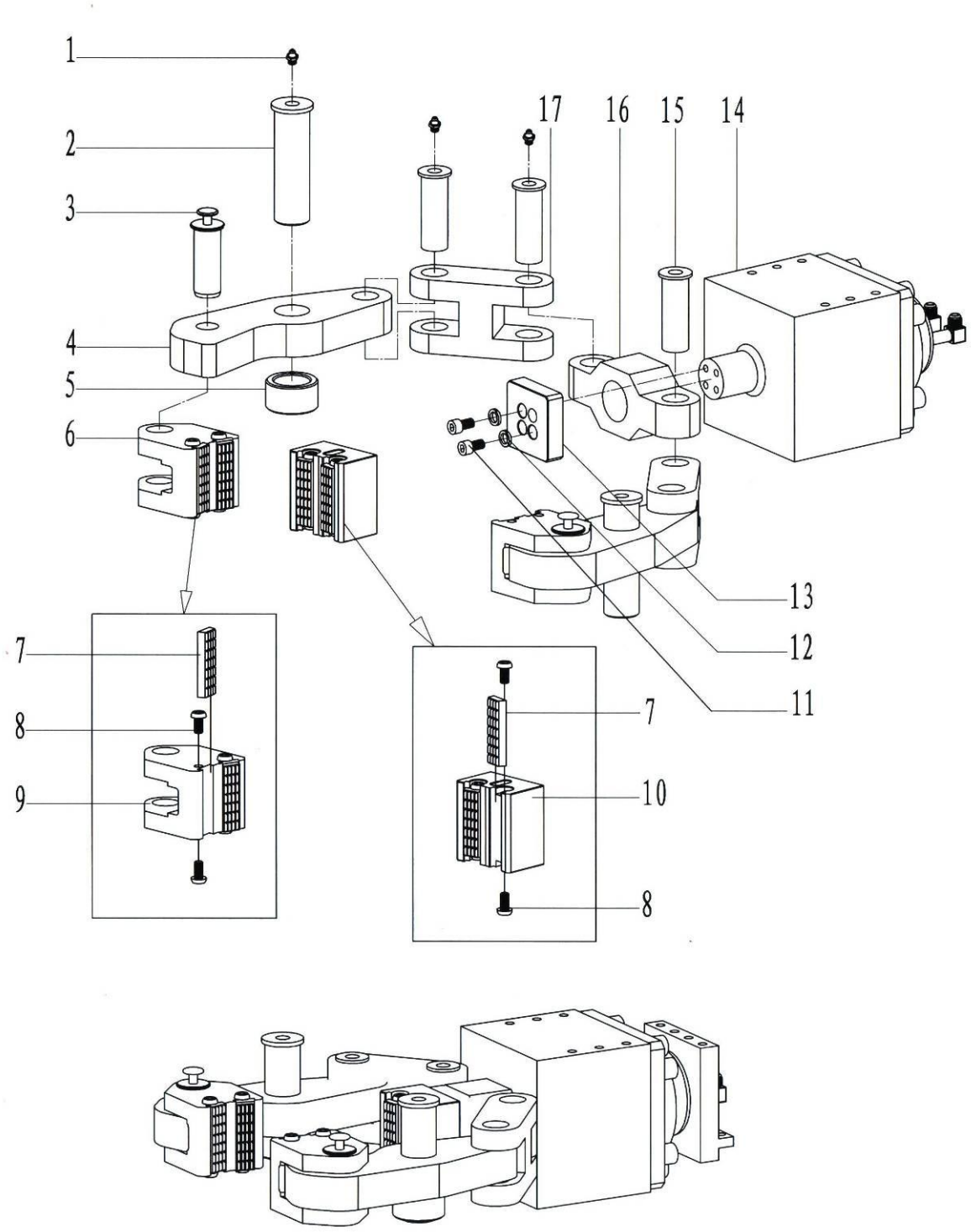



Fig.7-19

Table 19 List of back tong drive assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-56 | GB/T1152 | Oil cup M6×1 | 6 |
| 2 | KHT5500/22-388 | KHT5500.2-1 | Rotating shaft | 2 |
| 3 | KHT5500/22-389 | HYQ5500.2-1 | Fixed pin | 2 |
| 4 | KHT5500/22-368C | HYQ5500.2.1C | Clamping arm | 2 |
| 5 | | | | |
| 6 | KHT5500/22-369 | HYQ5500.2.2 | Front Jaw plate assembly | 2 |
| 7 | KHT5500/22-43 | KHT9625.1.1.1-2(2) | Die 2 | 6 |
| 8 | KHT5500/22-54 | | Hexagon socket cap head screws 1/2″×1″ | 12 |
| 9 | KHT5500/22-403 | HYQ5500.2.2 (1) | Front jaw plate (6 1/2) | 2 |
| | KHT5500/22-404 | HYQ5500.2.2 (2) | Front jaw plate (5 1/2) | 2 |
| | KHT5500/22-405 | HYQ5500.2.2 (3) | Front jaw plate (5) | 2 |
| | KHT5500/22-406 | HYQ5500.2.2 (4) | Front jaw plate (4 1/2) | 2 |
| | KHT5500/22-407 | HYQ5500.2.2 (5) | Front jaw plate (3 1/2) | 2 |
| | KHT5500/22-408 | HYQ5500.2.2 (6) | Front jaw plate (2 7/8) | 2 |
| | KHT5500/22-409 | HYQ5500.2.2 (7) | Front jaw plate (2 3/8) | 2 |
| | KHT5500/22-410 | HYQ5500.2.2（10） | Rear Jaw plate (4) | 1 |
| | KHT5500/22-411 | HYQ5500.2.2（11） | Rear Jaw plate (6.05) | 1 |
| | KHT5500/22-412 | HYQ5500.2.2（12） | Rear Jaw plate (3 3/4) | 1 |
| | KHT5500/22-413 | HYQ5500.2.2（13） | Rear Jaw plate (4 1/8) | 1 |
| 10 | KHT5500/22-391 | KHT5500.2.5 (1) | Rear jaw plate (6 1/2) | 1 |
| | KHT5500/22-392 | KHT5500.2.5 (2) | Rear jaw plate (5 1/2) | 1 |
| | KHT5500/22-393 | KHT5500.2.5 (3) | Rear jaw plate (5) | 1 |
| | KHT5500/22-394 | KHT5500.2.5 (4) | Rear jaw plate (4 1/2) | 1 |
| | KHT5500/22-395 | KHT5500.2.5 (5) | Rear jaw plate (3 1/2) | 1 |
| | KHT5500/22-396 | KHT5500.2.5 (6) | Rear jaw plate (2 7/8) | 1 |
| | KHT5500/22-397 | KHT5500.2.5 (7) | Rear jaw plate (2 3/8) | 1 |
| | KHT5500/22-398 | KHT5500.2.5（10） | Rear Jaw plate (4) | 1 |
| | KHT5500/22-399 | KHT5500.2.5（11） | Rear Jaw plate (6.05) | 1 |
| | KHT5500/22-400 | KHT5500.2.5（12） | Rear Jaw plate (3 3/4) | 1 |
| | KHT5500/22-401 | KHT5500.2.5（13） | Rear Jaw plate (4 1/8) | 1 |
| 11 | KHT5500/22-415 | | Hexagon socket cap head screws 3/8″×1″ | 4 |
| 12 | KHT5500/22-416 | | Spring washer 3/8″ | 4 |
| 13 | KHT5500/22-417 | KHT9625.2-5 | Connection seat | 1 |
| 14 | KHT5500/22-382 | KHT5500.2.6B | Clamping cylinder | 1 |
| 15 | KHT5500/22-418 | KHT9625.2-4B | Pin Shaft 2 | 2 |
| 16 | KHT5500/22-419 | HYQ5500.2-5 | Connection seat | 1 |
| 17 | KHT5500/22-420 | HYQ5500.2-4 | Connecting rod | 2 |

20. Assembly of clamping cylinder (Fig 7-20, Table 20)

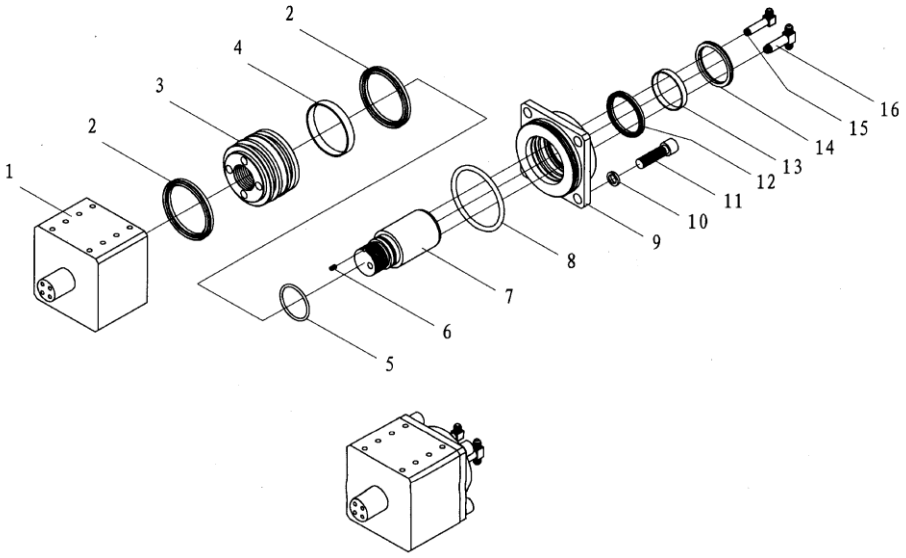



Fig.7-20

Table 20 List of clamping cylinder assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-421 | KHT5500.2.6-1 | Clamping cylinder | 1 |
| 2 | KHT5500/22-422 | GB/T10708.1 | Y-ring 180×155×16 | 2 |
| 3 | KHT5500/22-423 | KHT5500.2.6-2 | Piston | 1 |
| 4 | KHT5500/22-424 | GB/T15242.2 | Support ring SD 1800C-ⅡA | 1 |
| 5 | KHT5500/22-425 | GB/T3452.1 | O-ring 87.5×5.3 | 1 |
| 6 | KHT5500/22-426 | | Socket set screw 1/4″×5/16″ | 1 |
| 7 | KHT5500/22-427 | KHT5500.2.6-4 | Piston rod | 1 |
| 8 | KHT5500/22-428 | GB/T3452.1 | O-ring 165×7 | 1 |
| 9 | KHT5500/22-429 | KHT5500.2.6-3 | Cylinder cover | 1 |
| 10 | KHT5500/22-430 | | Spring washer 1″ | 4 |
| 11 | KHT5500/22-431 | | Hexagon socket cap head screws 1″×2 1/4″ | 4 |
| 12 | KHT5500/22-432 | GB/T10708.1 | Y-ring 125×145×16 | 1 |
| 13 | KHT5500/22-433 | GB/T15242.2 | Support ring GD 1250B-ⅡA | 1 |
| 14 | KHT5500/22-434 | GB/T10708.3 | Anti-dust sealing ring FA125×140×9.5 | 1 |
| 15 | KHT5500/22-435 | KHT9625.2.6-5 | Right-angle connector | 1 |
| 16 | KHT5500/22-436 | KHT9625.2.6-6 | Tee joint | 1 |

21. Assembly of suspension chain (Fig 7-21, Table 21)

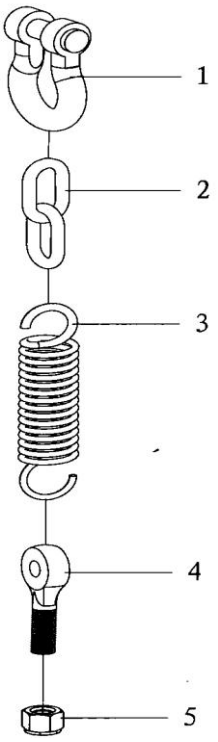



Fig. 7-21

Table 21 List of suspension chain assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-437 | JB/T8112 | Shackle M-BX5 (φ12) | 1 |
| 2 | KHT5500/22-438 | JB/T8108.2 | Chain φ8 (L=600) | 1 |
| 3 | KHT5500/22-439 | KHT5500.3-1 | Extension spring | 1 |
| 4 | KHT5500/22-440 | KHT5500.3-2 | Eyebolt | 1 |
| 5 | KHT5500/22-441 | | Hexagon check nut 1/2″ | 1 |

22. Assembly of front guide rod (Fig 22, Table 22)

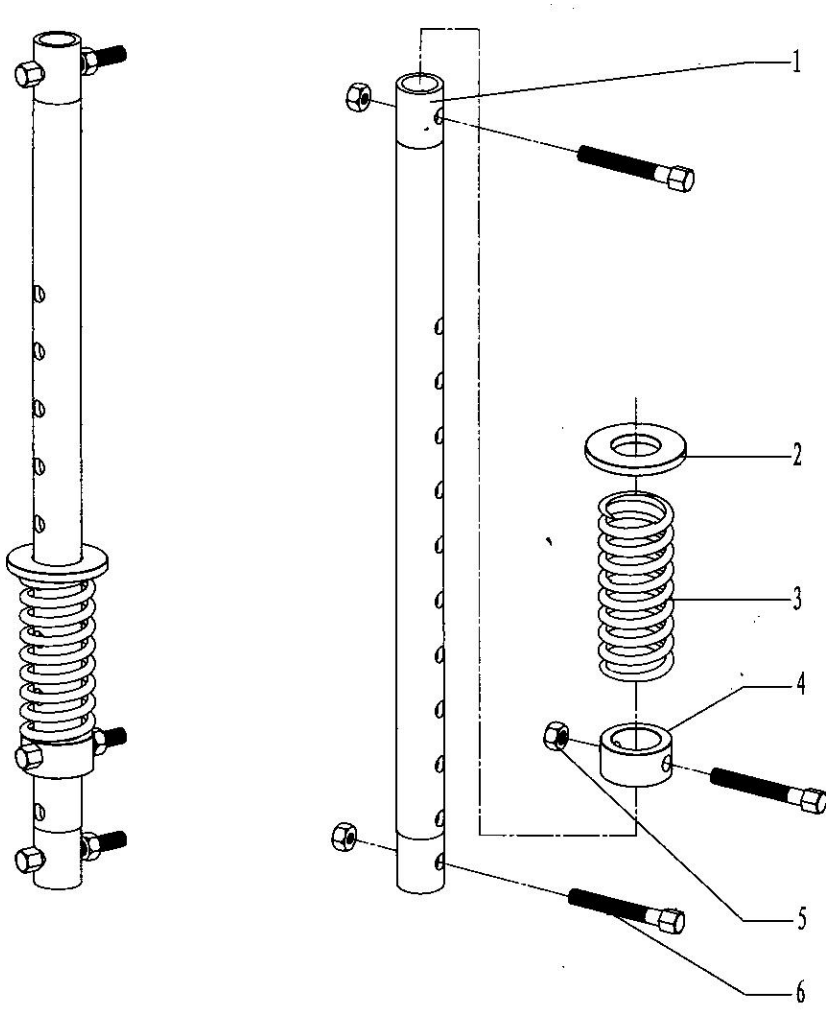



Fig. 22

Table 22 List of front guide rod assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-442 | HYQ5500.6-1 | Front guide rod | 2 |
| 2 | KHT5500/22-443 | KHT5500.5-2 | Washer | 2 |
| 3 | KHT5500/22-444 | KHT5500.5-3 | Front guide rod spring | 2 |
| 4 | KHT5500/22-445 | KHT5500.5-4 | Fixation sleeve | 2 |
| 5 | KHT5500/22-446 | | Hexagon check nut 1/2″ | 6 |
| 6 | KHT5500/22-447 | | Hexagon bolt 1/2″×3 1/2″ | 6 |

23. Hydraulic lift cylinder assembly (Fig 7-23, Table 23)

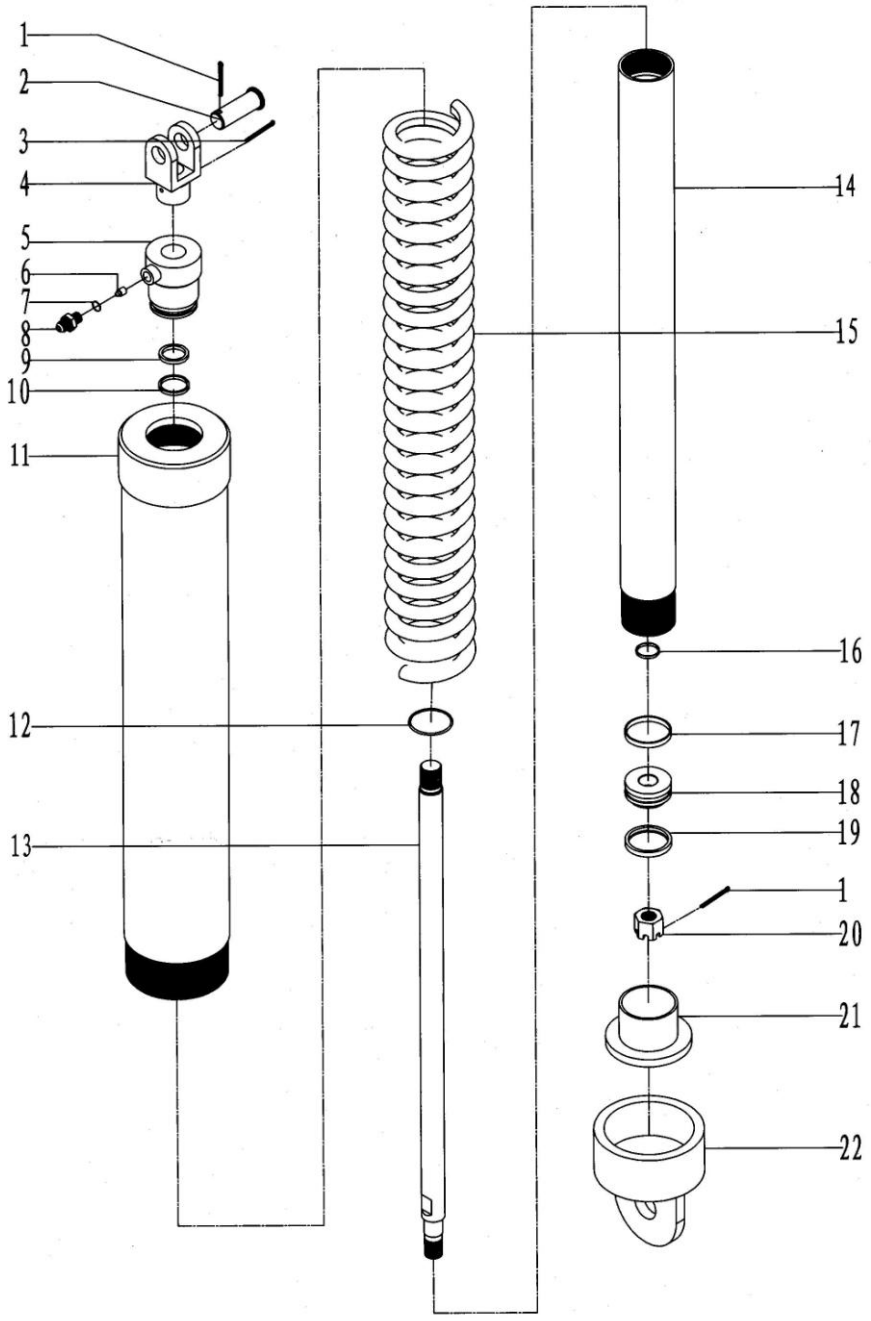



Fig. 7-23

Table 23 List of Hydraulic lift cylinder assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-448 | GB/T91 | Split pin 6.3×50 | 2 |
| 2 | KHT5500/22-449 | GB/T882 | Pin 32×90 | 1 |
| 3 | KHT5500/22-450 | GB/91 | Split pin 6.3×80 | 1 |
| 4 | KHT5500/22-451 | TQ340/35YA.1.16-1 | Hanging head | 1 |
| 5 | KHT5500/22-452 | TQ340/35YA.1.16.1 | Cylinder end joint 1 | 1 |
| 6 | KHT5500/22-453 | XYQ12.YD-01.3 | Throttle valve core | 1 |
| 7 | KHT5500/22-454 | GB/1235 | O-Ring 24×2.4 | 1 |
| 8 | KHT5500/22-455 | XYQ12.YD-01.2 | Adapter | 1 |
| 9 | KHT5500/22-456 | GB/T10708.3 | Dustproof sealing ring FA40×48×5 | 1 |
| 10 | KHT5500/22-457 | GB/T10708.1 | Y -Ring Y40×50×6.3 | 1 |
| 11 | KHT5500/22-458 | TQ340/35YA.1.16.2 | Barrel | 1 |
| 12 | KHT5500/22-459 | GB/T3452.1 | O-Ring 56×3.55 | 1 |
| 13 | KHT5500/22-460 | TQ340/35YA.1.16-4 | Piston rod | 1 |
| 14 | KHT5500/22-461 | TQ340/35YA.1.16-3 | Cylinder | 1 |
| 15 | KHT5500/22-462 | TQ340/35YA.1.16-2 | Spring | 1 |
| 16 | KHT5500/22-463 | GB/T3452.1 | O-Ring 32.5×3.55 | 1 |
| 17 | KHT5500/22-464 | GB/T10708.1 | Y -Ring Y63×53×6.3 | 1 |
| 18 | KHT5500/22-465 | TQ340/35YA.1.16-5 | Piston | 1 |
| 19 | KHT5500/22-466 | GB/T15242.2 | SD 0630C-ⅡA | 1 |
| 20 | KHT5500/22-467 | GB/T6178 | Slotted nut M30 | 1 |
| 21 | KHT5500/22-468 | TQ340/35YA.1.16-6 | Cylinder end adapter2 | 1 |
| 22 | KHT5500/22-469 | TQ340/35YA.1.16.3 | Casket end adapter | 1 |

24. Torque testing assembly（Fig7-24，Table24）

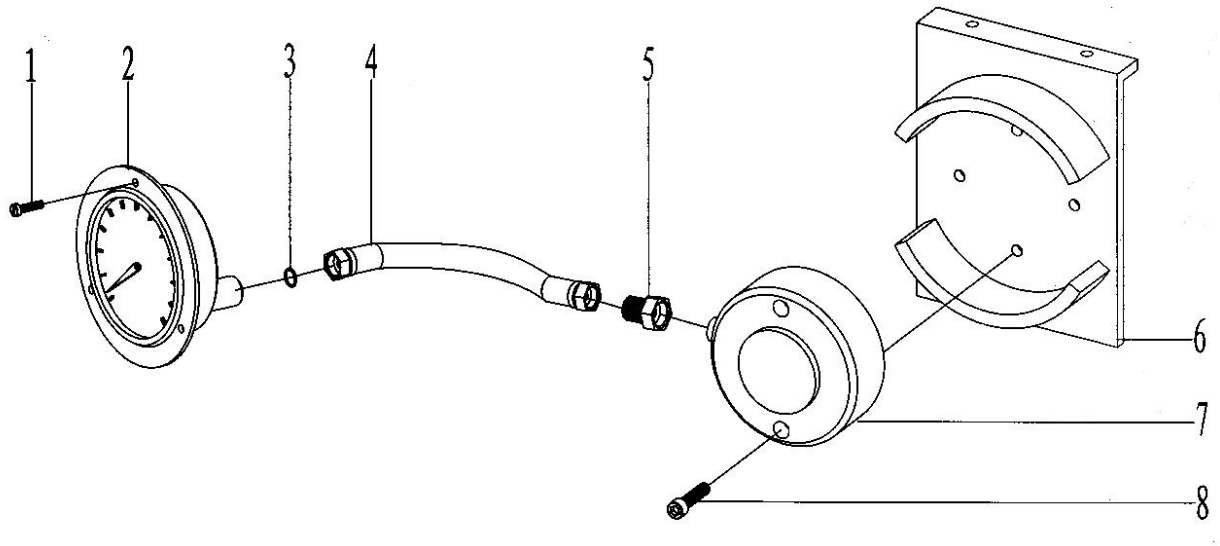



Fig .7-24

Table 24 List of Torque testing assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-472 | GB/T820 | Countersunk raised head screw M5×10 | 3 |
| 2 | KHT5500/22-473 | | Torque gaugeYN100ZT(0-25000ft.lb) | 1 |
| 3 | KHT5500/22-474 | | Teflon washer | 1 |
| 4 | KHT5500/22-475 | | Hose（M14×1.5-NPT1/4，L=1600） | 1 |
| 5 | KHT5500/22-244 | YG-52 | Adapter connector (M20-NPT1/4) | 1 |
| 6 | KHT5500/22-255 | KHT5500.2.8 | Torque cylinder connected seat | 1 |
| 7 | KHT5500/22-476 | | Pressure cylinder | 1 |
| 8 | KHT5500/22-477 | | Hexagon Socket Head Screw5/16″×2 ″ | 2 |

25.Torque testing system of master tong（Fig7-25，Table25）

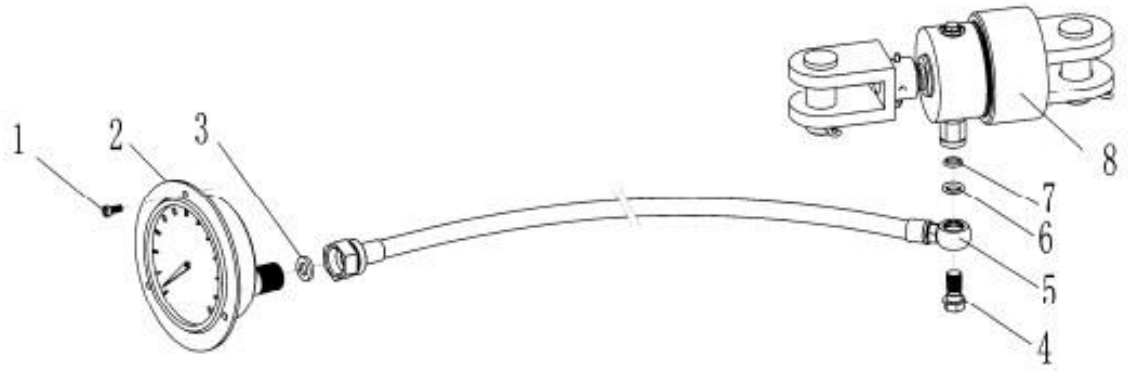



Fig .7-25

Table 25 List of Torque testing system of master tong

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-478 | GB/T65 | Countersunk raised head screw M5×10 | 3 |
| 2 | KHT5500/22-479 | | Torque gaugeYN100ZT(0-25000ft.lb) | 1 |
| 3 | KHT5500/22-480 | | Teflon washer | 1 |
| 4 | KHT5500/22-481 | XYQ12.Z-40.02 | Oil Passing Bolt | 1 |
| 5 | KHT5500/22-482 | JB/ZQ4427 | Hose adapter6Ⅰ-750 | 1 |
| 6 | KHT5500/22-483 | | Shim（Φ20×Φ14×3） | 1 |
| 7 | KHT5500/22-484 | GB1235 | O-Ring 18×2.4 | 1 |
| 8 | KHT5500/22-485 | KD13375.1.12.1 | Tension cylinder | 1 |

26. Oil filled equipment（Fig7-26，Table26）

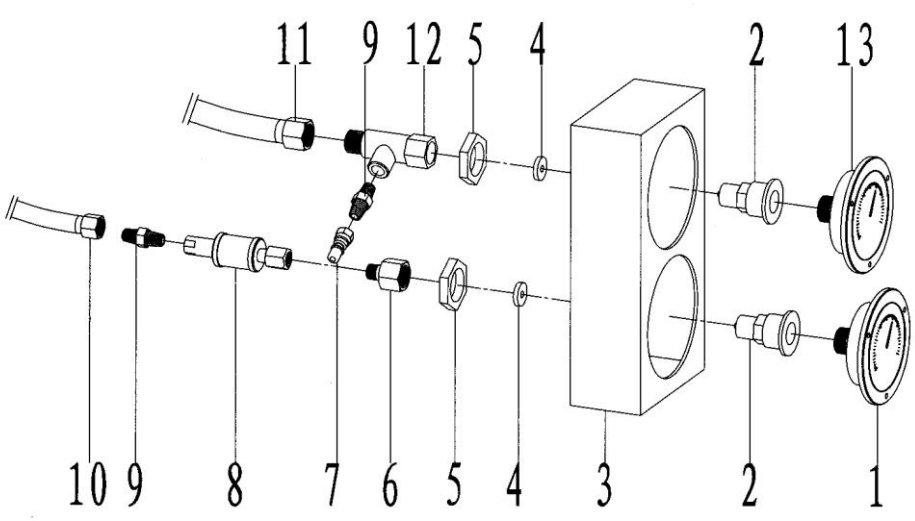



Fig.7-26

Table 26 List of Oil filled equipment

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-486 | | Torque gaugeYN100ZT(0-25000ft.lb) | 1 |
| 2 | KHT5500/22-487 | KJD9625.11（2）-1 | Attchment connector | 2 |
| 3 | KHT5500/22-488 | KJD9625.11（2） | Pressure gauge seat | 1 |
| 4 | KHT5500/22-489 | | Teflon washer | 2 |
| 5 | KHT5500/22-490 | KJD9625.11（2）-2 | And the nut | 2 |
| 6 | KHT5500/22-244 | YG-52 | Adapter connector (M20-NPT1/4) | 1 |
| 7 | KHT5500/22-491 | | Quick pin connector | 1 |
| 8 | KHT5500/22-492 | | Quick connector | 1 |
| 9 | KHT5500/22-493 | YG-68 | Adaptor NPT1/4" | 2 |
| 10 | KHT5500/22-494 | | Hose(M20×1.5-7/16UNF，L=1200) | 1 |
| 11 | KHT5500/22-495 | | Hose（M14×1.5-NPT1/4，L=1600） | 1 |
| 12 | KHT5500/22-496 | KHT5500.1.8.1-1 | Oil filled tee joint | 1 |
| 13 | KHT5500/22-497 | | Pressure gauge Y-100ZT(0-3600PSI) | 1 |

27. Spring lift bucket assembly（Fig7-27，Table27）

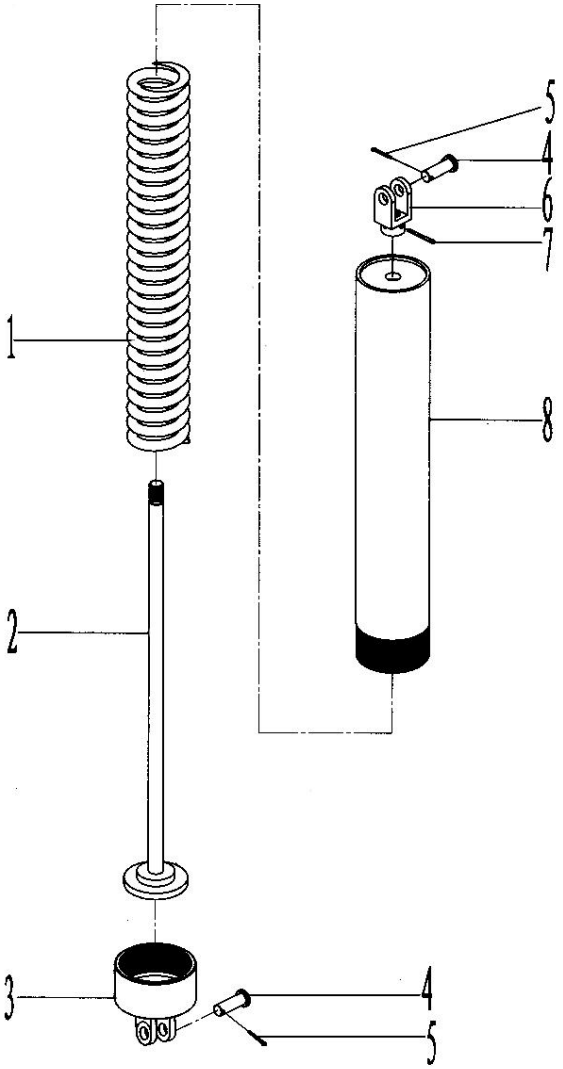



Fig.7-27

Table27 List of Spring lift bucket assembly

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Quantity |
|---|---|---|---|---|
| 1 | KHT5500/22-498 | TQ340/35Y.1.13-01 | Spring | 1 |
| 2 | KHT5500/22-499 | TQ340/35Y.1.13.1 | Lift rod | 1 |
| 3 | KHT5500/22-500 | TQ245/20Y.1.14(2)-1 | End cover | 1 |
| 4 | KHT5500/22-501 | GB882 | Cotter pin 4*40 | 2 |
| 5 | KHT5500/22-502 | GB91 | Pin shaft 20*60 | 2 |
| 6 | KHT5500/22-208 | XYQ12.YD-01.1 | Suspending head | 1 |
| 7 | KHT5500/22-503 | GB91 | Cotter pin 5*50 | 1 |
| 8 | KHT5500/22-504 | TQ340/35Y.1.13(2).1 | Lift bucket | 1 |

## Chapter VIII Wearing Parts

| No. | Purchase Code | Drawing No. | Names and specifications of parts | Recommended spare part quantity for one year |
|---|---|---|---|---|
| 1 | KHT5500/22-20 | HYQ5500.1.1-9 | Long t-bolt | 2 |
| 2 | KHT5500/22-21 | HYQ5500.1.1-10 | Short t-bolt | 2 |
| 3 | KHT5500/22-22 | HYQ5500.1.1-5 | Extension spring (Φ2×Φ12×93) | 2 |
| 4 | KHT5500/22-43 | KHT9625.1.1.1-2(2) | Die 2 | 200 |
| 5 | KHT5500/22-53 | KHT9625.1.1.1-4 | Roller | 8 |
| 6 | KHT5500/22-55 | KHT9625.1.1.1-3 | Roller shaft | 8 |
| 7 | KHT5500/22-58 | HYQ5500.1.1-7 | Pin | 1 |
| 8 | KHT5500/22-71 | KHT5500.1.11.1 | Braking staple | 4 |
| 9 | KHT5500/22-87 | TQ340/35Y.1.3-03 | Braking spring | 2 |
| 10 | KHT5500/22-339 | GB/T3452.1 | O-Ring 25×2.65 | 2 |
| 11 | KHT5500/22-422 | GB/T10708.1 | Y-Ring 180×155×16 | 2 |
| 12 | KHT5500/22-425 | GB/T3452.1 | O-Ring 87.5×5.3 | 1 |
| 13 | KHT5500/22-428 | GB/T3452.1 | O-Ring 165×7 | 1 |
| 14 | KHT5500/22-432 | GB/T10708.1 | Y-Ring 125×145×16 | 1 |
| 15 | KHT5500/22-454 | GB/1235 | O-Ring 24×2.4 | 1 |
| 16 | KHT5500/22-457 | GB/T10708.1 | Y-Ring 40×50×6.3 | 1 |
| 17 | KHT5500/22-459 | GB/T3452.1 | O-Ring 56×3.55 | 1 |
| 18 | KHT5500/22-463 | GB/T3452.1 | O-Ring 32.5×3.55 | 1 |
| 19 | KHT5500/22-464 | GB/T10708.1 | Y-Ring Y63×53×6.3 | 1 |