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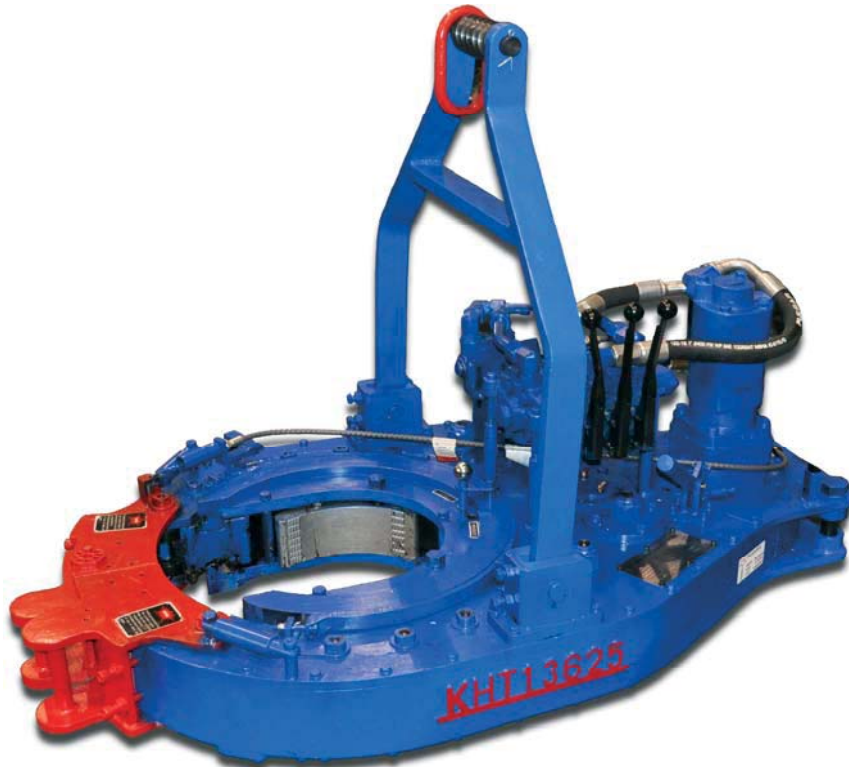
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MODEL: KHT13625

CASING TONGS

MAINTENANCE AND OPERATION MANUAL



## **SAFETY CAUTION**

1. Operators should read and understand this manual before operation.
2. Operators should wear protective clothing, hard hat and safety boots.
3. Tie the back guy according to the instructions.
4. Make sure to operate at the side of the tong opening.
5. Close the safety door in make-up/break-out operation.
6. Keep hands away from rotating parts.
7. Keep sundries out of the operation range.
8. Cut off the hydraulic source and move the tong off the wellhead during maintenance, changing dies or other parts.
9. Never use the casing tong under over-pressure or over-torque conditions, otherwise the tubing will be damaged and so the planetary gear of the tong will be damaged.
10. Don't dismantle or add parts to the tong.
11. Please adopt the original fitting parts made by TEDA.

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## 1. INTRODUCTION

KHT13625 Casing Power Tong is used to make up and break out for casing operation in oil fields. It has greatly reduced the labor of worker, enhanced connection quality of thread and diminished accidents in inappropriate casing operation. The power tong has the following features as well:

- ☐ Opening type, convenient and prompt to enter and slide off the working position, with an integral tong head of great strength and rigidity.
- ☐ Double swing head jaws, convenient to assemble and disassemble.
- ☐ Brake belt assembly, easy to operate and convenient to maintain and replace.
- ☐ Open gear supporting structure, improving the strength and rigidity.
- ☐ Wholly hydraulic mode and mechanical gear shift.
- ☐ High strength steel plate used on the shell, increasing the strength. The jaws are cast with precise technology, artistic and strong.
- ☐ With hydraulic torque indicator and also installation interface, convenient to realize the computer management.
- ☐ Use safety door hydraulic safety device, of great safety performance.
- ☐ Large torque range, can meet the requirement of larger torque use.

## 2. SPECIFICATIONS

### 2.1. Jaws available for casing sizes 4" -13 5/8"

Four kinds of common jaws that we supply: 5 1/2" 、 7" 、 9 5/8" 、 13 3/8" ; Others: 4" 、 4 1/2" 、 7 5/8" 、 8 5/8" 、 10 3/4" 、 11 3/4" 、 12 3/4" 、 13 5/8" jaws can be equipped according to customer's needs

2.2. Opening size 355.4 mm

### 2.3. Tong head rotation speed

High gear: 30 rpm

Low gear: 5 rpm

2.4. Rated torque High gear: 8.4 kN.m

Low gear: 42 kN.m

2.5. Rated pressure 16 MPa

2.6. Work flow 150 L / min

2.7. Hydraulic power unit Flow 160 L / min

Pressure 20 MPa

Motor power 37 kW

2.8. Overall dimension(L×W×H) 1508×857×1194 mm

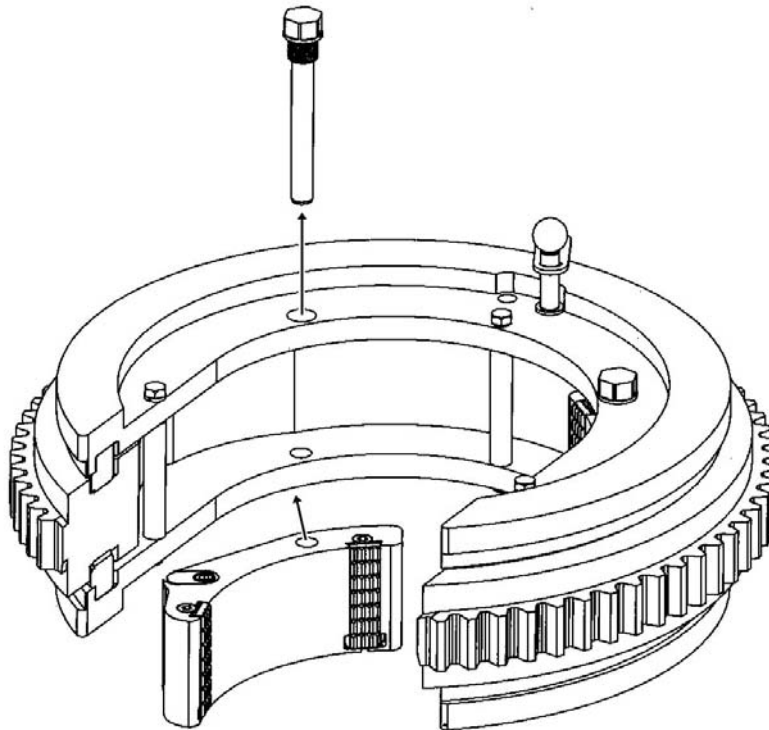
## 2.9. Weight

619 kg (including Spring lifter assembly)

## 3. OPERATION

To insure reliable operation of the tong, it is essential that it is suspended properly. Hydraulic hoses must be hooked up correctly, and the following instructions concerning tong start up must be followed:

### 3.1. Jaw installation (see illustration below):



To install the jaws, remove the two jaw pivot bolts from the cage plate. Place one jaw at a time between the upper and lower cage plates with the jaw roller pin facing upward. Align the hole in the jaw with the matching hole in the cage plates, and insert the jaw pivot bolt.

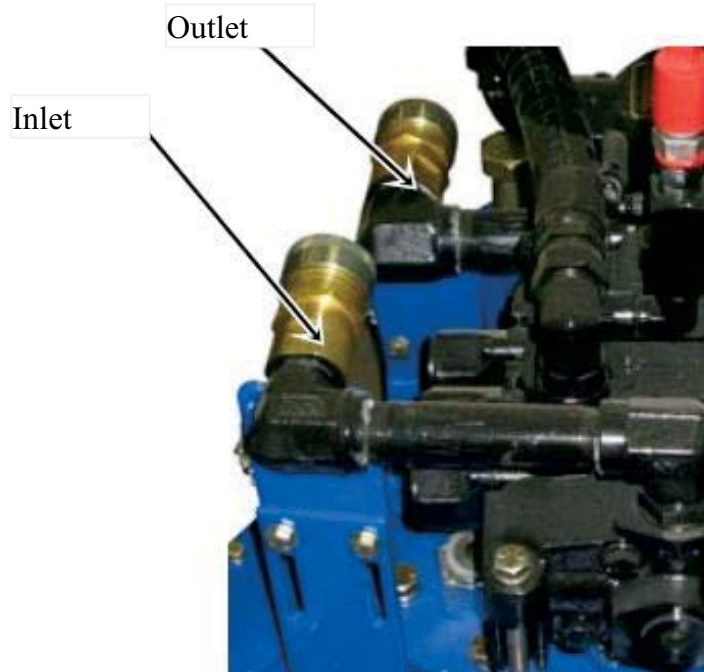
### 3.2. Tong rig-up

#### 3.2.1. Hang line

The tong should be suspended by 5/8" diameter wire rope, and from a location in the derrick high enough to assure easy handling and maneuvering of the tong. One end of the rope should be placed through the pulley. The other end should be tied off in the derrick to form a dead line through a reaction of about 13kN-18kN to keep balance of the tong. If it can't be tied off in the derrick, it is necessary to use a TEDA double spring hanger assembly. This spring hanger allows the tong to compensate for the downward movement of the casing as the thread made-up.

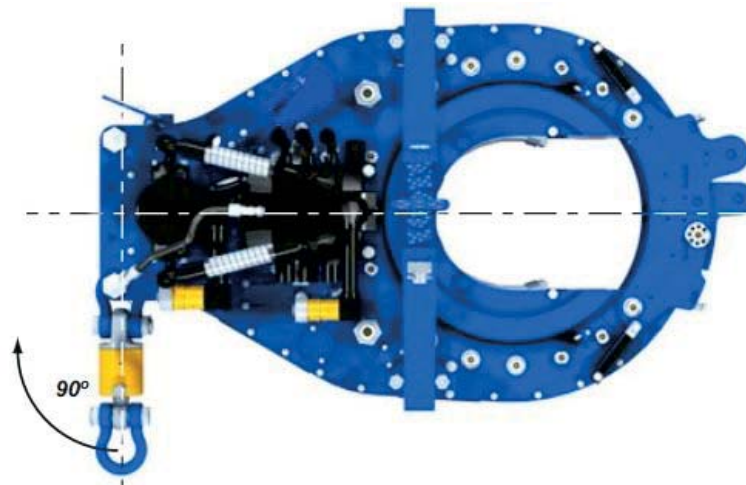
### 3.2.2. Hydraulic hoses

When the power unit is not running, or the hydraulic pump is disengaged, the hydraulic hoses may be installed to the tong. The possibility of error in interchanging the high pressure supply hose and the return hose has been eliminated by using a 1" high pressure hose and a 1-1/4" return hose. These hose couplings are the self-seal type, and care should be taken to insure complete engagement to prevent partial closure of the check valve in the coupling.



### 3.2.3. Back-up line

The use of a 5/8" or larger wire rope is recommended for the tong back-up line. It should be securely connected to the load cell at the rear of the tong and tied off to a suitable anchor. To assure accurate operation of the load cell and torque gauge, the back-up line should be connected at a 90 degree angle with the tong, and in the same horizontal plane. (square and level) (see illustration below):



### 3.3 Tong operation

#### 3.3.1 Start up procedure

**Note: be sure the doors are closed and securely latched before power unit is started to insure safety for operation personnel.**

Use start up procedures as recommended by the power unit engine operator's manual. Prior to starting engine, an inspection should be made to assure proper lube oil level in the engine and hydraulic oil level in the hydraulic reservoir. Open the by-pass valve on the hydraulic system. Check all pressure and return line hose connections to make sure they are securely installed.

**Note: Failure to have these hose connections tight will stop or restrict oil flow and the following failures could occur:**

- a. If the pressure supply hose restricts or stops flow, it will result in high pressure on the power unit hydraulic system which will activate the hydraulic governor and speed the engine up to maximum RPM.
- b. If the return line flow is stopped or restricted, it will result in high pressure on the power unit hydraulic system, causing the engine to speed up to maximum RPM and possible failure of the motor seal.

After the hoses are checked, start the engine and allow it to idle until warm. After the power unit engine has been started and hydraulic oil has circulated for approximately 10 minutes, slowly close the by-pass valve which will allow oil to circulate through the hoses and to the tong. (circulating pressure should not exceed 200 PSI.) Place the tong gear shifter in low gear and rotate the tong slowly forward and then reverse with the throttle valve control lever. Once this has been done and the proper size jaws have been installed, the tong is then ready to run pipe.

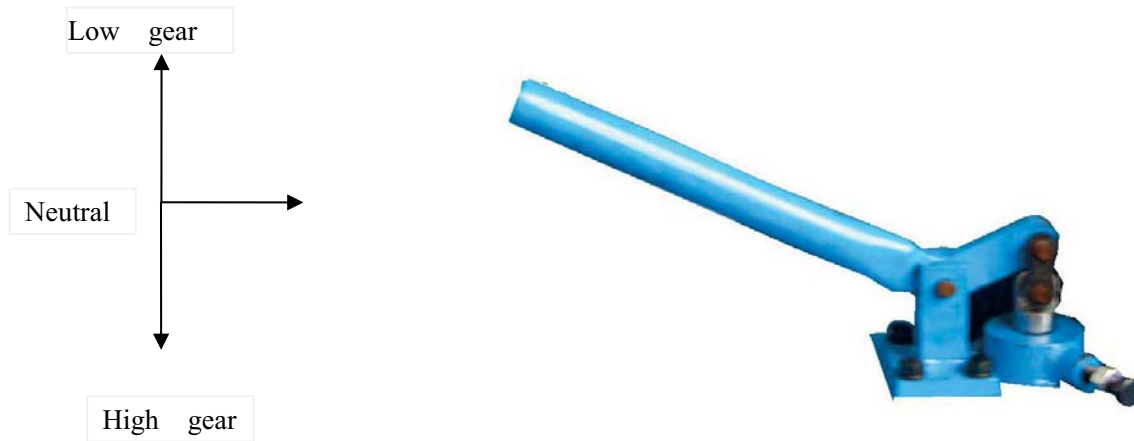
#### 3.3.2. Direction and speed control

The 4-way valve assembly controls direction, speed of rotation, and torque output. For clockwise rotation, push the valve handle forward, and for reverse rotation, pull the valve handle in the opposite direction. Speed in either direction is proportional to the distance that the valve handle is moved from the center or neutral position (see illustration):



### 3.3.3. High and low gear

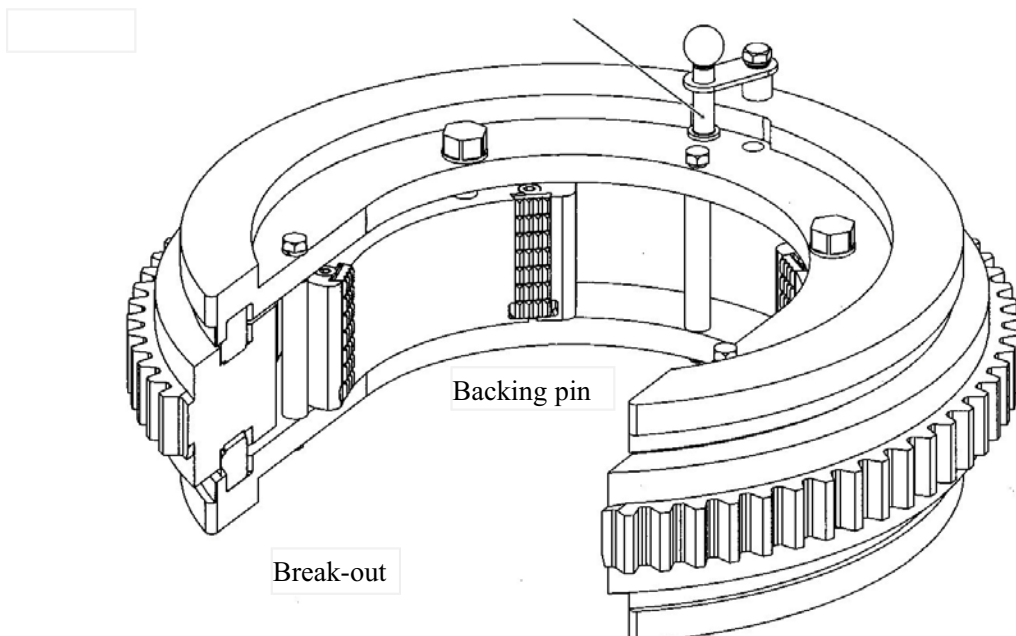
The primary gear box provides for high and low gear operation. For low gear the shifting handle is simply moved upward from neutral position, and for high gear, the shifting handle is moved down from neutral position. (see illustration)



### 3.3.4. Make up of casing

For proper make-up of a casing joint, the following procedure may be used:

- a. Place tong around casing.
- b. Close and latch door completely.
- C. Place the backing pin in the hole for make-up.



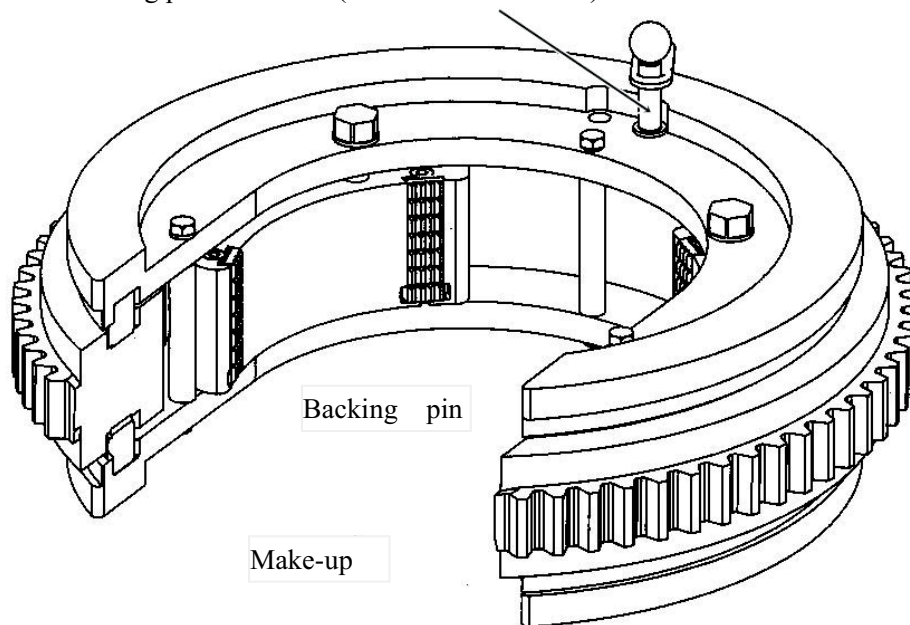


- a. Shift transmission into high gear.
- b. Push the throttle valve handle forward slightly until casing threads begin to make-up.
- c. When casing threads begin to make-up, push the valve handle to full forward until the tong begins to stall.
- d. Release the throttle.
- e. Shift gear box into low gear.
- f. Engage throttle and make-up casing to desired torque.
- g. Reverse tong to disengage jaws and rotate until the table gear aligns with the door opening.
- h. Unlatch the door and remove the tong from pipe.

### 3.3.5. Break-out of Casing

For proper break-out of a casing joint, the following procedure may be used:

- a. Place tong around casing.
- b. Close and latch door completely.
- c. Place the backing pin in the hole (see illustration below) for break-out



- d. Shift the transmission into low gear.
- e. Pull the throttle valve into full reverse position.
- f. Under most "Break-out" conditions, it is recommended to leave the tong in low gear until the joint is completely unscrewed.
- g. Reverse direction of tong until the table gear aligns with the door opening.
- h. Unlatch the door and remove the tong from pipe.

### **3.3.6. General comments**

a. It is recommended that torque not exceed 8000 ft.lbs. Unless both idler gears are in drive position. This will enhance the life expectancy and dependability of the tong. When operating the tong at high gear, it is recommended to frequently check the tightness of the door and make periodic adjustments to assure a secure door fit.

For safety of rig personnel, make sure the door is securely closed and latched at all times.

b. When make-up integral (shouldered) joints, it is essential to make up the last turn of the threads in low gear. This reduces the tendency of an instant stop or a sudden increase in torque, which induces high stresses to the gear train.

c. When pulling a string, do not employ the “snap break” method of breaking out joints. By definition, the “snap break” method is a procedure used by some operations to break-out connections.

This is accomplished by leaving slack in the “jaw-pipe” engagement, and then quickly pulling the throttle valve control lever allowing the tong to snap into its loaded or high torque conditions. This method, although very affective in breaking out joints, highly stresses the gear train and very frequently causes gear breakage.

This method is also dangerous to operating personnel.

### **3. 4.Extreme cold weather operation procedures**

**3.4.1.** The power unit engine operator’s manual should be consulted for possible cold weather operation precautions.

**3.4.2.** A gear and bearing lubricant should be selected which is compatible with expected operating climate.

**3.4.3.** A hydraulic oil should be selected which is compatible with expected operating climate.

**3.4.4.** After the power unit has been started, in cold weather climates, the hydraulic oil should be allowed to circulate up to approximately 20 minutes prior to activating the bypass valve allowing fluid to circulate to the tong.

**3.4.5.** When cleaning tong parts in extreme cold climates, allowance for proper drying of moisture is important prior to lubricating.

## **4. CARE MAINTENANCE**

It is suggested that a regular maintenance program be established, to assure dependable operation of the TEDA Hydraulic power tong. The following recommendations concerning cleaning, lubrication, and adjustments will enhance the life expectancy of the tong and assure safety to operating personnel.

### **4.1. CLEANING**

The tong should be thoroughly cleaned with a good petroleum base cleaning agent, after each job, prior to storage. One month later after usage of the new tong, replace the hydraulic oil to clear the sediment on motor and valve, later, make the change every six months.

## 4.2. LUBRICATION

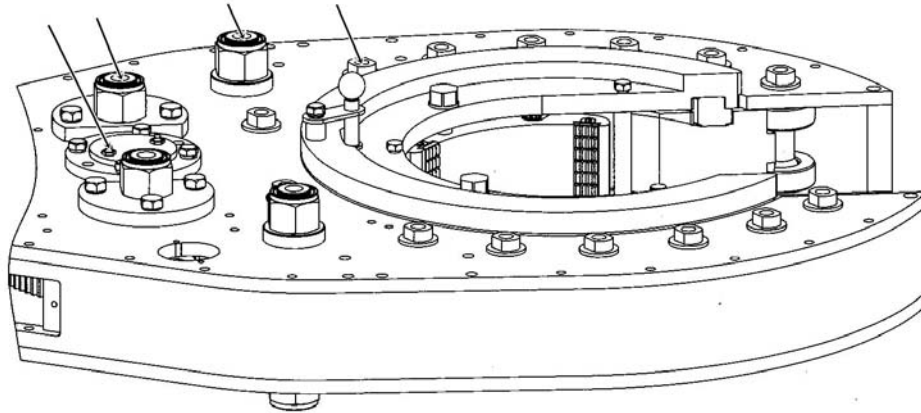
A good grade of multipurpose bearing lubricant which is compatible with expected ambient temperatures is recommended along with the following lubrication procedures, at the completion of each job prior to storage

### 4.2.1 POWER INPUT SHAFT ASSEMBLY BEARINGS

Unscrew the plug screws on the bearing cover, grease should be applied to these bearings through the grease fittings in the bearing cap located at the bottom face of the tong.

### 4.2.2 BIG IDLER GEAR ASSEMBLY, SMALL IDLER GEAR ASSEMBLY, PINION ASSEMBLY

Grease should be applied to these bearings through the grease fittings in the end of the shaft located at the top face of the tong. (see illustration below):



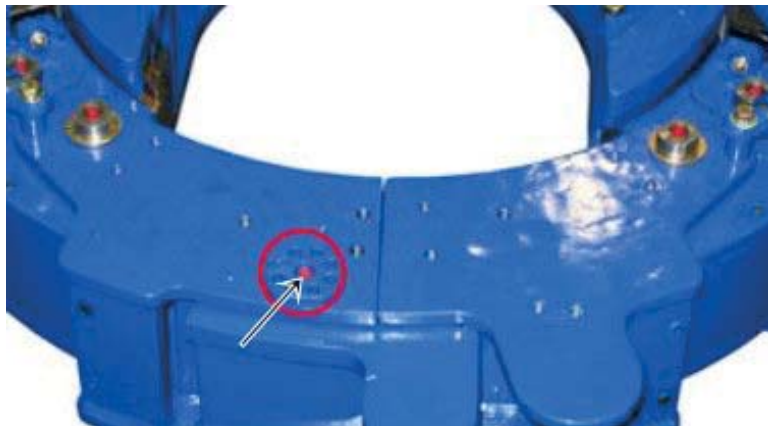
4.2.3 Grease should be applied to these centralizing roller bearings through the grease fittings at the end of the shafts located at the top and bottom face of the tong. (see illustration above):

4.2.4 Apply grease to the reversing shaft through the shaft seat mouth.

## 4.3. ADJUSTMENTS

### 4.3.1 DOOR LATCH ADJUSTMENT

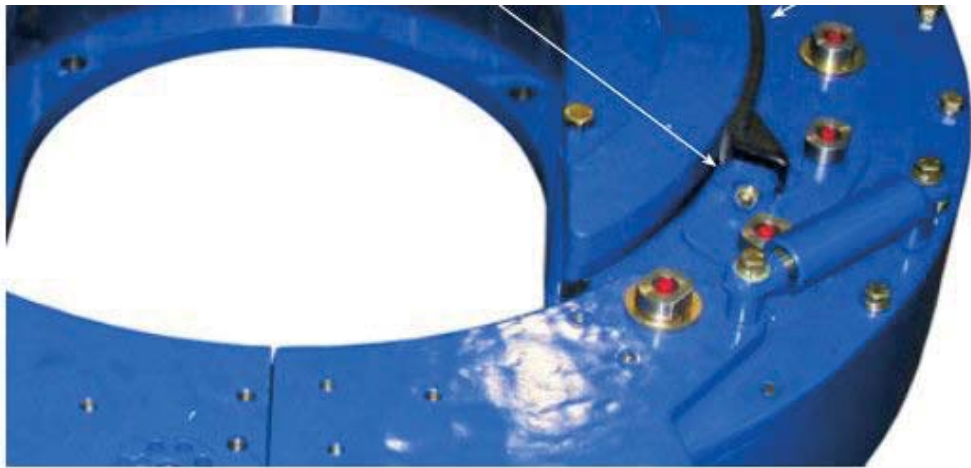
During normal operation of the tong, the left door latch may experience wear which will cause the door to develop a loose fit at the latch. When this occurs, an adjustment can easily be made to assure a secure door fit. This is accomplished as follows (see illustration below):



Located at the top face of the left door is a latch cam plate which has eight positioning holes located on a 360 degree bolt circle. To make any adjustment in door alignment, the 3/8" hex head bolt located at the top and bottom latch shaft sleeve should be removed first, then use a wrench to rotate the latch shaft and shaft sleeve, when desired alignment is achieved, the 3/8" hex head bolt should be tightened.

**Note: It is important to keep a secure fit at the doors as this helps maintain proper gear alignment, reduces possibility of impact torsional stress occurs in the gear case and assure safety to operation personnel.**

#### **4.3.2 BRAKE BAND ADJUSTMENT (see illustration):**



As the tong is used, it becomes necessary at times to adjust the brake bands to provide a smoother and more efficient jaw cam action. If the cage plate turns with the rotary gear, the jaws will not cam properly and therefore, will not bite on the tubing or casing. By tightening the brake band against the cage plates, enough frictional resistance occurs to allow jaws to cam properly and grip the casing. To adjust the brake band, simply turn the adjustment bolt clockwise to tighten and counterclockwise to loosen.

## 4.4. PERIODIC CHECK LIST

### 4.4.1 DOOR STOP SPRING

To enable the door latch mechanism to snap closed properly, the spring inside the five-way valve must be of sufficient strength. Door stop spring fatigue will result in a sluggish latch operation. When this occurs, the latch springs inside the five-way valve should be replaced.



### 4.4.2 SHIFTING SHAFT

The shifting Yoke is secured to the shifting shaft by one hex jam nut  $\frac{3}{8}'' \times 1 \frac{3}{4}''$  and one nut on the bottom of the yoke. These nuts should be checked after each job. This can be accomplished by removing the clutch inspection plate and insuring a snug fit prior to lubrication.

### 4.4.3. TORQUE GAUGE ASSEMBBLY

Periodic calibration of the torque gauge is recommended to assure accurate torque readings. When having the torque gauge serviced and calibrated, it is important to note that the arm length on the TEDA 20" tong is 52" inches.

## 4.5. OVERHAUL PROCEDURES

Should the need arise to overhaul any portion of the tong, certain disassembly procedures must be followed. Access to the gear train is possible by removal of the top plate of the tong.

**NOTE: All maintenance and overhaul should be accomplished from the top. Therefore, the bottom plate of the tong should never be removed from the gear case housing.**

**4.5.1** The first step in disassembly of the top plate for overhaul is to remove the motor-valve assembly. This is accomplished by removing the four  $1/2'' \times 3 1/4''$  socket head cap screws, which secure the motor to the motor mount, and removing the four  $1/2'' \times 3 1/4''$  hex head screws, which secures the valve to the valve mount. The motor-valve assembly may then be lifted off.

**4.5.2.** Disconnect & remove the linkage between the shifting handle and the shifting shaft.

**4.5.3.** Back-off the shifting detent bolt ( $7/16'' \times 1 1/4''$ ). This relieves compression on the spring and allows the ball to disengage from the groove in the shifting shaft. Remove the shifting detent bolt and, using pencil magnets, extract the ball and spring before the shifting shaft is removed; this prevents loss of the ball inside the tong.

**4.5.4.** Remove the doors. This is accomplished as follows:

**4.5.4.1** Remove the two door stop assemblies by removing the screw 1 per assembly.

**4.5.4.2** Remove the top lock nuts from the door roller shaft.

**4.5.4.3** Remove the grease fittings from the end of the door roller shafts and drive the shafts out. The shafts should be very carefully driven out with a soft alloy material (e.g., brass rod, etc.) to eliminate the possibility of damage to the shafts or door. This then allows the doors to be removed.

**Note: When removing the doors make careful note of the bearing shims which align the doors. At reassemble of the doors after overhaul, it will still be necessary to reassemble door bearing shims in the same sequence to assure desired door alignment.**

**4.5.5.** The next step is to loosen the top and bottom brake band. This is accomplished by backing off the brake band adjustment bolts until the nut is flush with the end of the bolt.

**4.5.6.** With the brake bands loosened, the next step is to remove the top and bottom cage plate. This is accomplished by removing the three cage plate support bolts. With these three bolts removed, the top cage plate can be lifted off.

**Note: Care should be taken in removing the cage plate bolts as they are the only means of support for the bottom cage plate, after the brake band is loosened. To prevent damage to the bottom cage plate or personal injury to the mechanic, it is recommended that the bottom cage plate be braced while the mechanic removes the three cage plate bolts.**

**4.5.7.** Remove the lock nut and washer from the big idler gear assembly, small idler gear assembly, centralizing roller assembly on the face plate. Remove the  $3/8'' \times 1-1/2''$  long hex head bolts from the case body assembly.

**4.5.8.** With all the above steps taken, the top tong plate can be lifted off providing access to the inside of the gear case.

## 5. PROBLEM DIAGNOSIS

Trouble	Causes	Remedy
The head doesn't Turn	<ol style="list-style-type: none"> <li>1. No pressure from hydraulic station.</li> <li>2. Damage of the hydraulic reversing valve.</li> <li>3. Gear changing system fails.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the station. Add pressure.</li> <li>2. Replace the valve.</li> <li>3. Repair</li> </ol>
Speed is not enough	<ol style="list-style-type: none"> <li>1. Low pressure or low flow from the power station.</li> <li>2. Bad leakage loss from oil motor or hand-reversing valve.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the station pressure.</li> <li>2. Replace the motor or hand-reversing valve.</li> </ol>
Head slide	<ol style="list-style-type: none"> <li>1. Disagreement of the sizes of the jaws and casing.</li> <li>2. Tongs not be leveled.</li> <li>3. Dies worn out.</li> <li>4. Die notch filled with oil dirt.</li> <li>5. Brake band too loose or worn out.</li> <li>6. Jaw roller failure to turn.</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the jaws.</li> <li>2. Level the tongs.</li> <li>3. Change the dies.</li> <li>4. Get rid of it with a wire brush.</li> <li>5. Adjust or change the band.</li> <li>6. Check the roller or oil and repair the pin shaft.</li> </ol>
Torque valve less than rated	<ol style="list-style-type: none"> <li>1. Low pressure from the hydraulic power station or its insufficient oil discharge.</li> <li>2. Function failure of the hydraulic motor or of the reversing valve.</li> <li>3. Insufficient oil in the torque cylinder or the sealing ring worn out.</li> <li>4. Torque gauge failure.</li> </ol>	<ol style="list-style-type: none"> <li>1. Deal with it according to the instruction of hydraulic power station.</li> <li>2. Repair or change it.</li> <li>3. Fill in oil or change the ring.</li> <li>4. Repair or change the torque gauge.</li> </ol>
Motor is running but the tong head keeps still or moves slowly, or will stop even loaded light	<ol style="list-style-type: none"> <li>1. Gear changing device fails</li> <li>2. Much leakage loss from the hydraulic motor or the hand-reversing valve.</li> <li>3. Gear of gearbox damaged or seriously worn out.</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair or change.</li> <li>2. Repair or change the motor and the valve.</li> <li>3. Check or repair the gearbox .</li> </ol>

## 6. STORAGE RECOMMENDATIONS

**6.1.** When storing the tong, an effort should be made to locate the unit in a clean, dry, ventilated area.

**6.2.** The tong, while in storage, should be well lubricated.

**6.3.** Spare moving parts (gears, shafts, etc.), if required to remain in storage for a long period of time, tong should be coated with a good corrosion inhibitor, and should be stored in a good dry environment.

**6.4.** All O' rings, seals, packings, gaskets, etc., should be stored in a good moisture proof, air tight container.

**6.5.** All bearings (cam followers, roller bearing, etc.) should be well lubricated and stored in a dust free box or container, protected from moisture.



## 7. FIGURES AND DETAILED PART TABLES

### 7.1. KHT13625 assembly (Fig 1, Fig 2, Tabel 1)

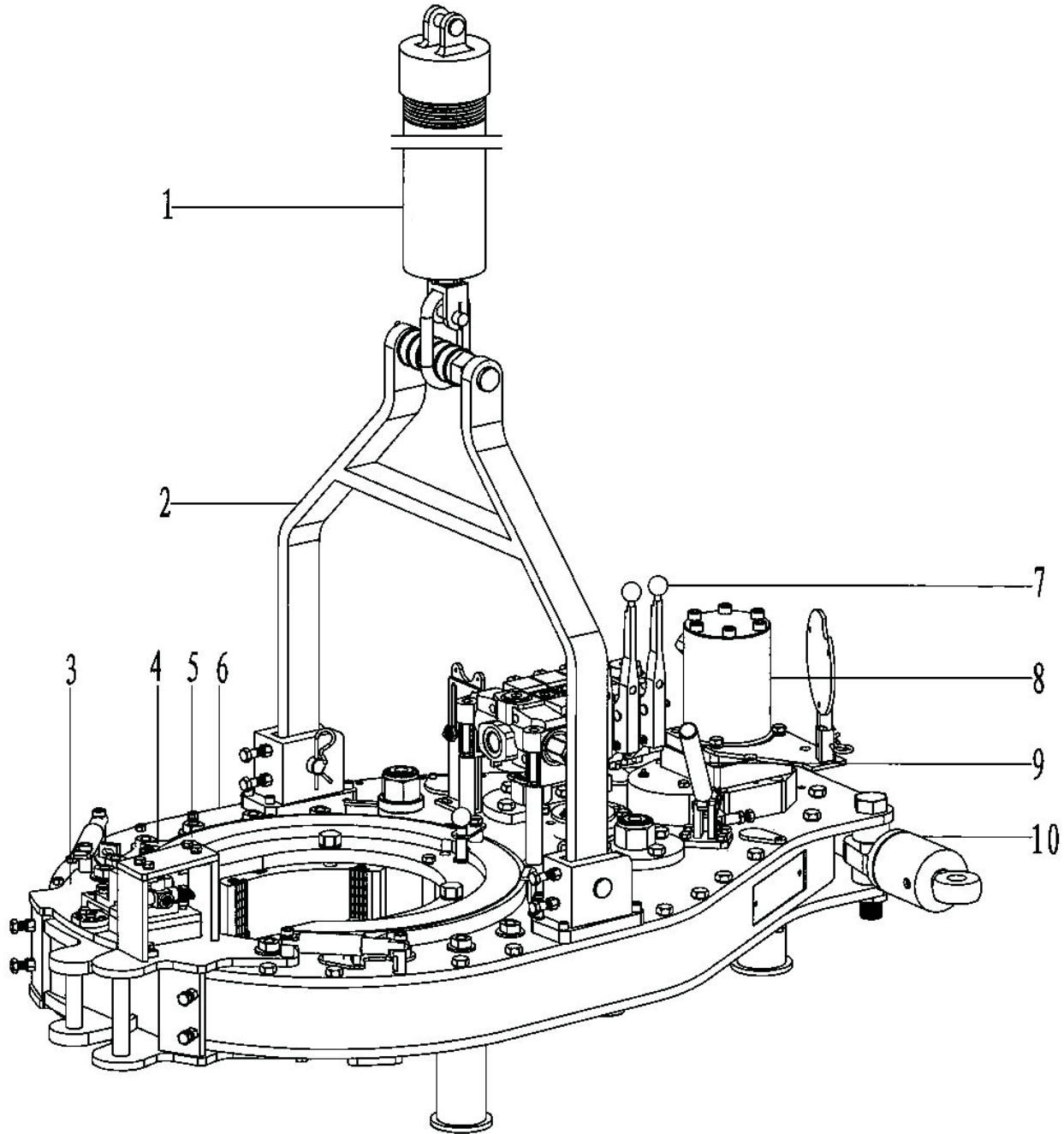


Fig 1



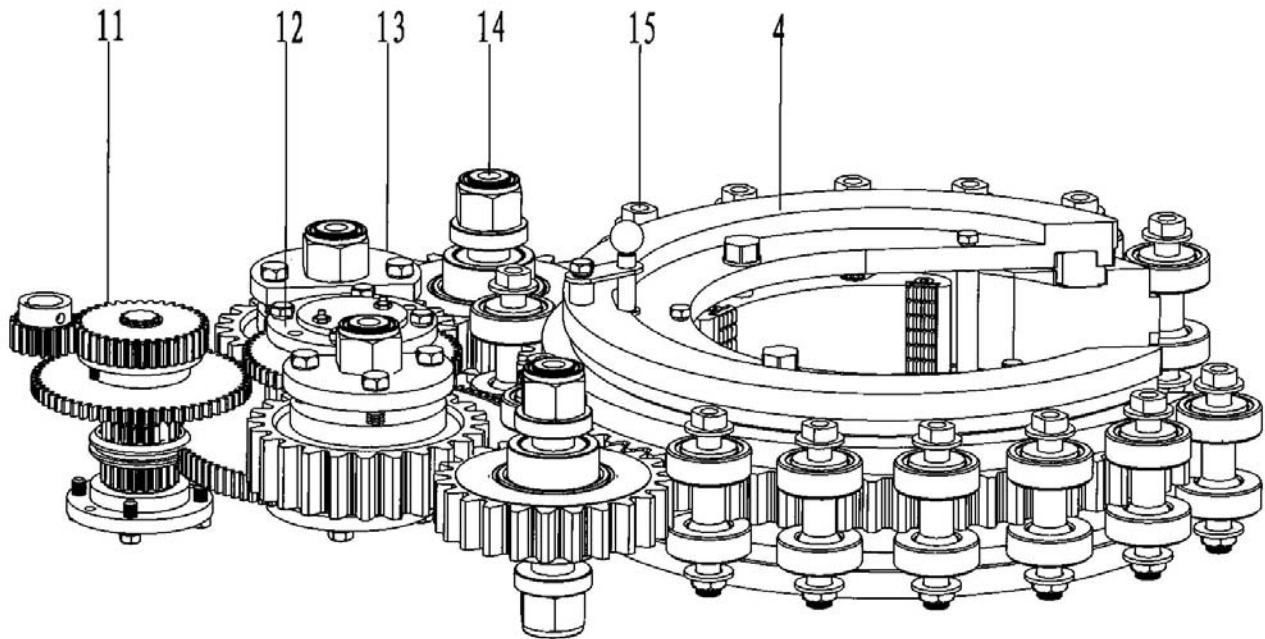


Fig 2

Table 1. KHT13625 General assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-01	TQ340/35Y.1.13(2)	Spring lifter assembly	1
2	KHT13625-02	KHT13625.1.13	Suspension rod assembly	1
3	KHT13625-03	KHT13625.1.10	Safety door assembly	1
4	KHT13625-04	KHT13625.1.12	Brake band assembly	2
5	KHT13625-05	KHT13625.1.1	Tong head assembly	1
6	KHT13625-06	KHT13625.1.2	Shell	1
7	KHT13625-07	KHT13625.1.8	Hydraulic valve and line	1
8	KHT13625-08	KHT13625.1.7	Tong body assembly	1
9	KHT13625-09	KHT13625.1.11	Shifter assembly	1
10	KHT13625-10	KHT13625.1.14	Torque test assembly	1
11	KHT13625-11	KHT13625.1.6	Power input shaft assembly	1
12	KHT13625-12	KHT13625.1.5	Pinion assembly	1
13	KHT13625-13	KHT13625.1.4	Big idler gear assembly	2
14	KHT13625-14	KHT13625.1.3	Small idler gear assembly	2
15	KHT13625-15	KHT13625.1.15	Centralizing assembly	1

## 7.2 Tong head assembly (Fig 3, Table 2)

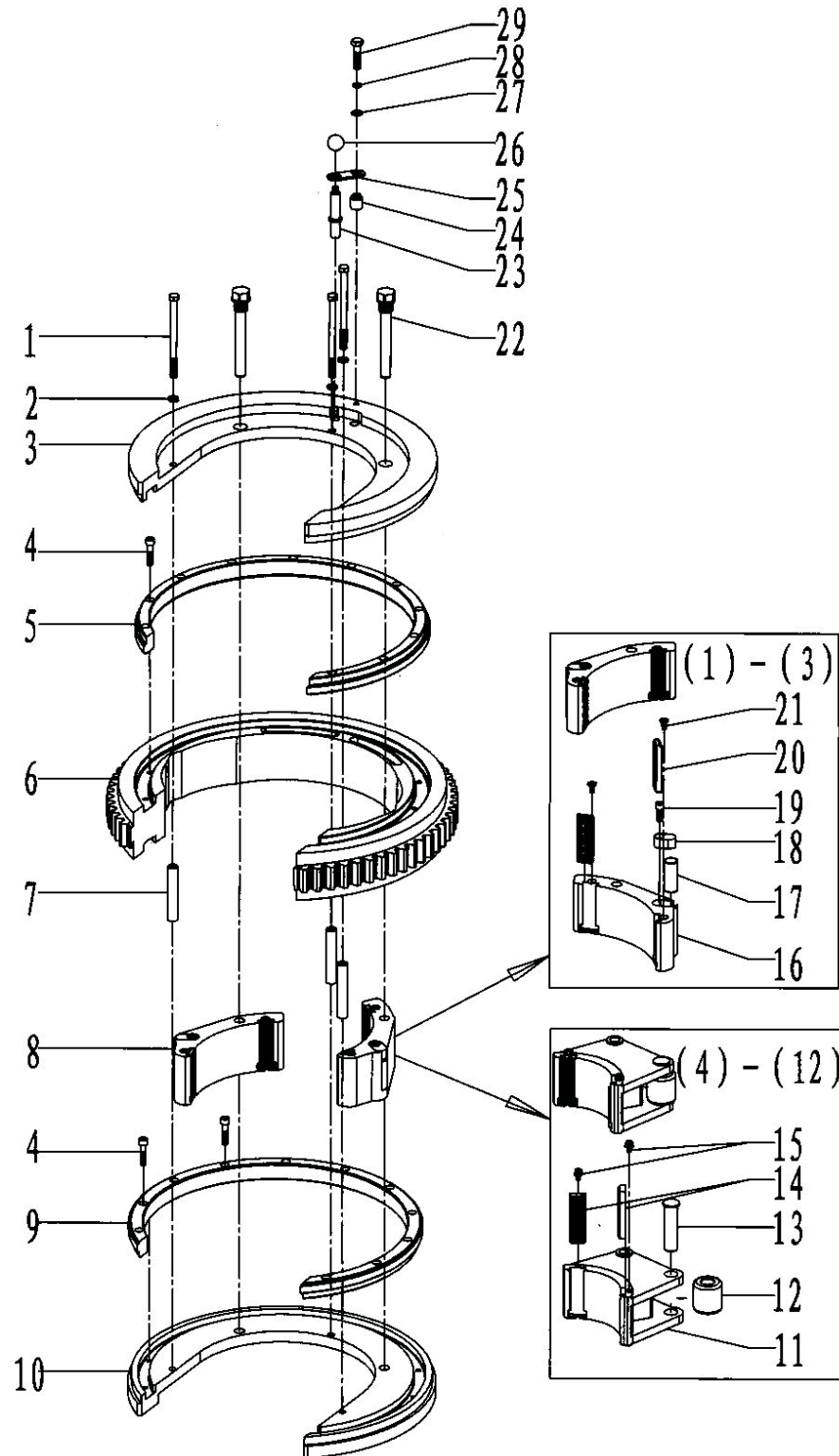


Fig 3

Table 2 . Detailed table for tong head assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-101	KHT13625.1.1-3	Screw rod 1/2"	3
2	KHT13625-102		Spring washer 1/2"	3
3	KHT13625-103	KHT13625.1.1-1	Upper jaw set bracket	1
4	KHT13625-104		Hex SHCS 3/8"NC×1 3/4"	22
5	KHT13625-105	KHT13625.1.1-10	Upper centralizer plate	1
6	KHT13625-106	KHT13625.1.1-2	Open gear	1
7	KHT13625-107	KHT13625.1.1-6	Shaft sleeve (1)	3
8	KHT13625-108	KHT13625.1.1.1 (1) - (12)	Jaw set assembly	
9	KHT13625-109	KHT13625.1.1-11	Lower centralizer plate	1
10	KHT13625-110	KHT13625.1.1-4	Lower jaw set bracket	1
11	KHT13625-111	KHT13625.1.1.1-1 (4)	Jaw set 4 (11 3/4)	2
	KHT13625-112	KHT13625.1.1.1-1 (5)	Jaw set 5 (10 3/4)	2
	KHT13625-113	KHT13625.1.1.1-1 (6)	Jaw set 6 (9 5/8)	2
	KHT13625-114	KHT13625.1.1.1-1 (7)	Jaw set 7 (8 5/8)	2
	KHT13625-115	KHT13625.1.1.1-1 (8)	Jaw set 8 (7 5/8)	2
	KHT13625-116	KHT13625.1.1.1-1 (9)	Jaw set 9 (7)	2
	KHT13625-117	KHT13625.1.1.1-1 (10)	Jaw set 10 (5 1/2)	2
	KHT13625-118	KHT13625.1.1.1-1 (11)	Jaw set 11 (4 1/2)	2
	KHT13625-119	KHT13625.1.1.1-1 (12)	Jaw set 12 (4)	2
12	KHT13625-120	KHT13625.1.1.1-2 (2)	Roller (2)	18
13	KHT13625-121	KHT13625.1.1.1-4	Roller shaft	18
14	KHT13625-122	KHT9625.1.1.1-2 (2)	Die2 (1/2)	36
15	KHT13625-123		Hex flange screw 3/8"UNC×1/2"	36
16	KHT13625-124	KHT13625.1.1.1-1 (1)	Jaw set 1 (13 5/8)	2
	KHT13625-125	KHT13625.1.1.1-1 (2)	Jaw set 2 (13 3/8)	2
	KHT13625-126	KHT13625.1.1.1-1 (3)	Jaw set 3 (12 3/4)	2
17	KHT13625-127	KHT13625.1.1.1-2 (1)	Roller (1)	6
18	KHT13625-128	KHT13625.1.1.1-1	Press block	6
19	KHT13625-129		Hex SHCS 3/8"UNC×3/4"	6
20	KHT13625-130	KHT13625.1.1.1-3	Die	12
21	KHT13625-131		Hex SHCS 5/16"UNC×1/2"	12
22	KHT13625-132	KHT13625.1.1-5	Jaw set bolt	2
23	KHT13625-133	KHT13625.1.1-8	Reverse shaft	1
24	KHT13625-134	KHT13625.1.1-9	Shaft sleeve (2)	1
25	KHT13625-135	KHT13625.1.1-7	Connection board	1
26	KHT13625-136	KJD9625.1.1-1	Handle ball	1
27	KHT13625-137		Flat washer 10	1
28	KHT13625-138		Spring washer 3/8"	1
29	KHT13625-139		Hex bolt 3/8"×1 3/4"	1

### 7.3 Case body assembly (Fig 4, Table 3)

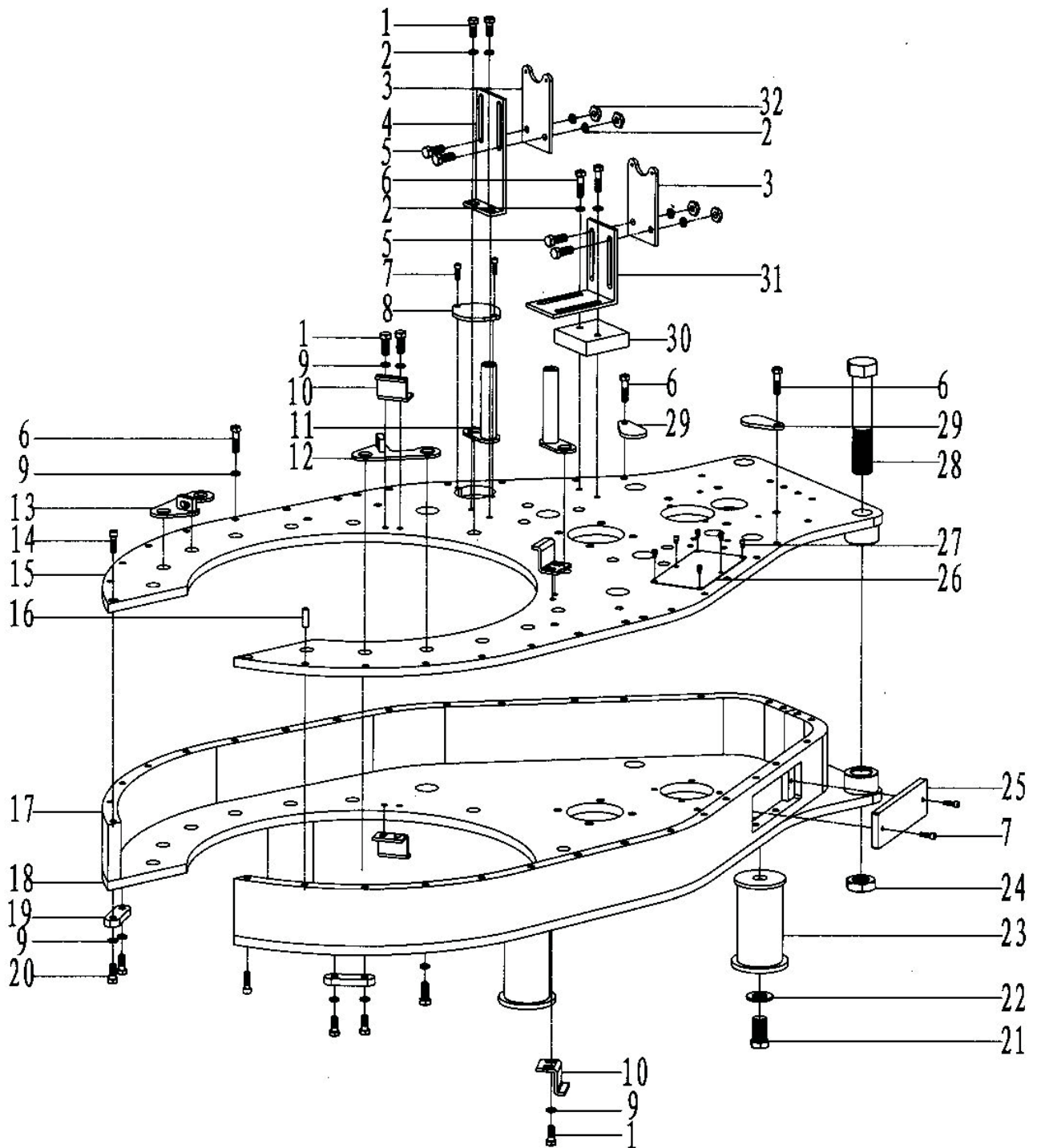


Fig 4

Table 3 . Detailed table for Case body assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-160		Hex head bolt 3/8"UNC×1"	10
2	KHT13625-161		Spring washer 3/8"	10
3	KHT13625-162	TQ508/70Y.8-8	Inlet oil pipe support plate	2
4	KHT13625-163	KHT13625.1.2-13	Adjusting plate 1	1
5	KHT13625-164		Hex head bolt 3/8"UNC×1 1/4"	4
6	KHT13625-165		Hex head bolt 3/8"UNC×1 1/2"	44
7	KHT13625-166		Hex SHCS 1/4UNC"×3/4"	2
8	KHT13625-167	KHT13625.1.2-14	Cover plate (1)	1
9	KHT13625-138		Spring washer 3/8"	64
10	KHT13625-169	KHT13625.1.2-20	Restrict block	4
11	KHT13625-170	KHT13625.1.2-4	Valve support seat	2
12	KHT13625-171	KHT13625.1.2-22	Fixed seat (left)	2
13	KHT13625-172	KHT13625.1.2-12	Fixed seat(right)	2
14	KHT13625-173		Hex SHCS 3/8"×1 1/4"	4
15	KHT13625-174	KHT13625.1.2-1	Face plate	1
16	KHT13625-175		Cylinder pin 3/8"×1 1/4"	8
17	KHT13625-176	KHT13625.1.2-2	Side plate	2
18	KHT13625-177	KHT13625.1.2-3	Base plate	1
19	KHT13625-178	KHT13625.1.2-11	Locating seat	2
20	KHT13625-139		Hex head bolt 3/8"UNC×1 3/4"	4
21	KHT13625-180		Hex head bolt 7/8"UNC×1"	1
22	KHT13625-181		Spring washer 7/8"	1
23	KHT13625-182	KHT13625.1.2-8	Supporting leg	3
24	KHT13625-183		Lock nut 1 1/4"UNC	2
25	KHT13625-184	KHT13625.1.2-10	Baffle	1
26	KHT13625-185	KHT13625.1.2-19	Nameplate	1
27	KHT13625-186		Hex SHCS 1/4"×5/16"	6
28	KHT13625-187	KHT13625.1.2-6	Tail guy bolt	2
29	KHT13625-188	KHT13625.1.2-17	Cover plate (2)	4
30	KHT13625-189	KHT13625.1.2-15	Adjusting seat	1
31	KHT13625-190	KHT13625.1.2-16	Adjusting plate 2	1
32	KHT13625-191		Lock nut 3/8"	4

7.4 Small idler gear assembly (Fig 5, Fig,6, Table 4)

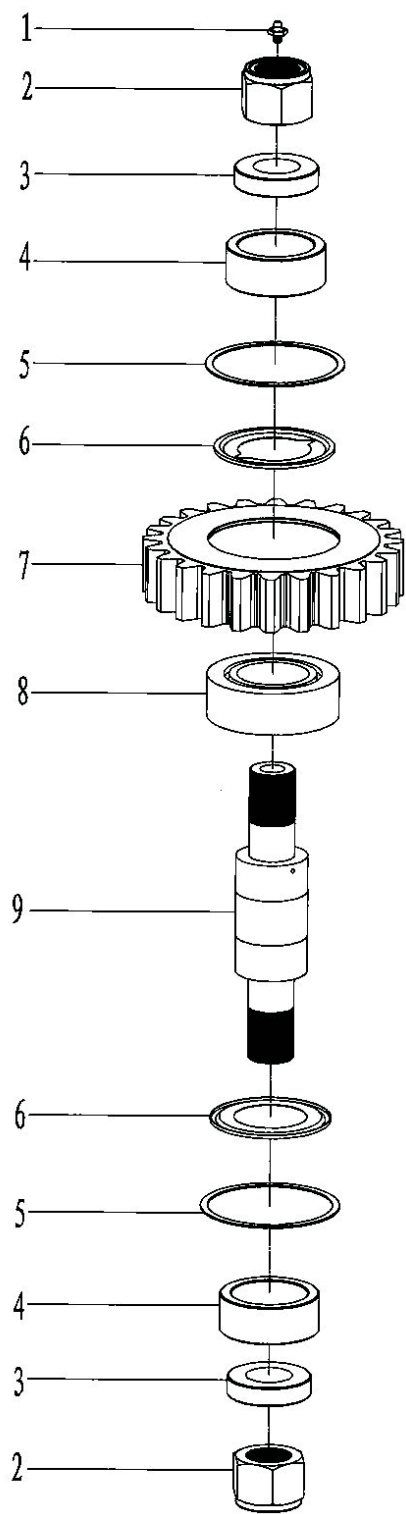


Fig 5

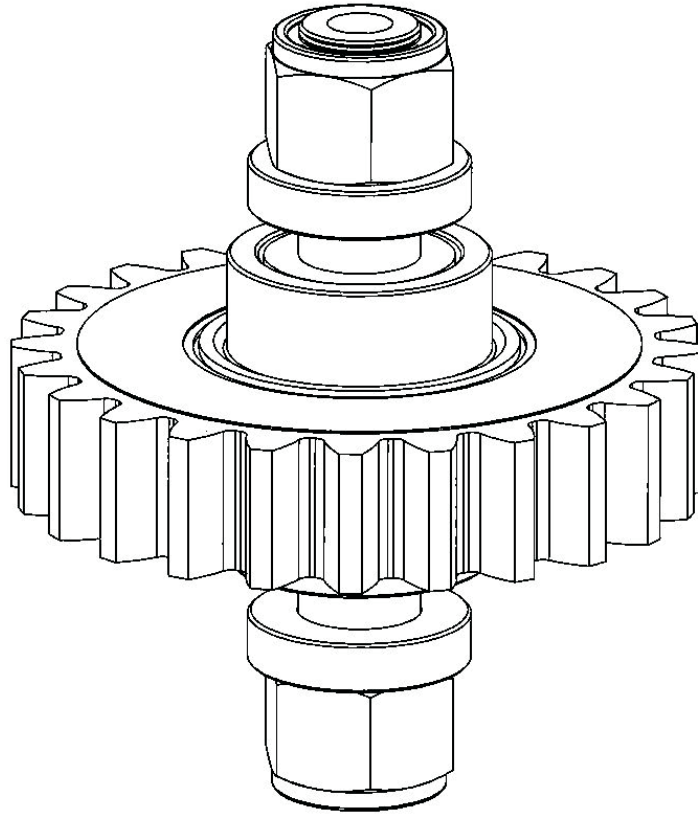


Fig 6

Table 4 . Detailed table for Small idler gear assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-210		Oil cup NPT1/8	2
2	KHT13625-211	TQ508/70Y.3.1	Lock nut 1 1/2-12UNF	2
3	KHT13625-212	KHT13625.1.3-1	Washer	4
4	KHT13625-213	KHT13625.1.3-3	Lining ring	4
5	KHT13625-214	TQ508/70Y.3-5	Retainer ring	4
6	KHT13625-215	TQ508/70Y.3-4	Water-proof guard (1)	4
7	KHT13625-216	KHT13625.1.3-4	Small idler gear	2
8	KHT13625-217		Cylindrical roller bearing MU5212TM	2
9	KHT13625-218	KHT13625.1.3-2	Small idler gear shaft	2

7.5 Big idler gear assembly (Fig 7, Fig 8, Table 5)

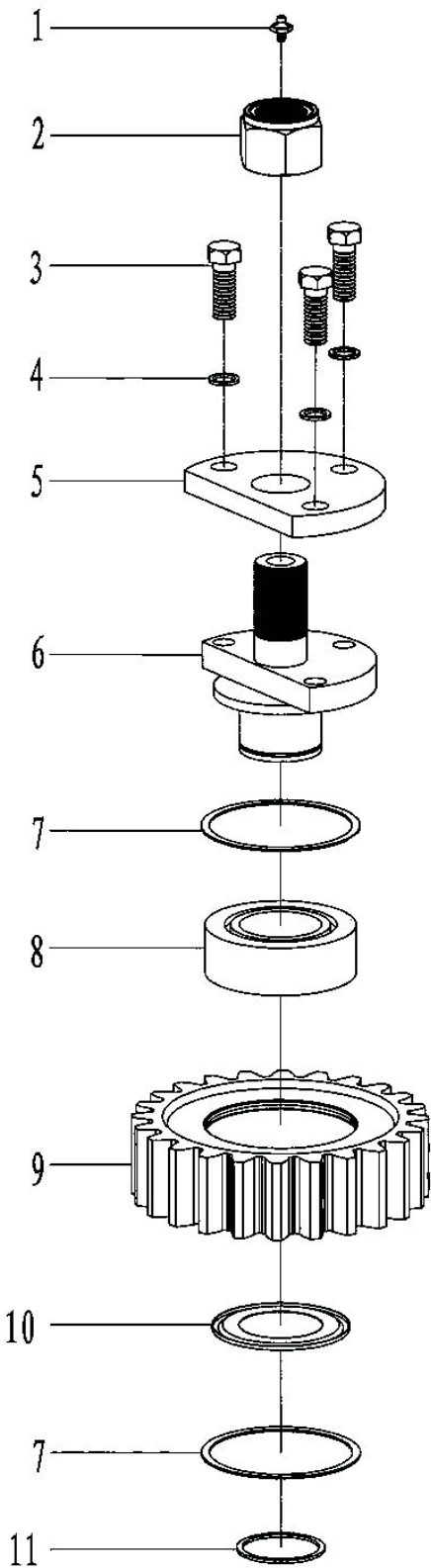


Fig 7



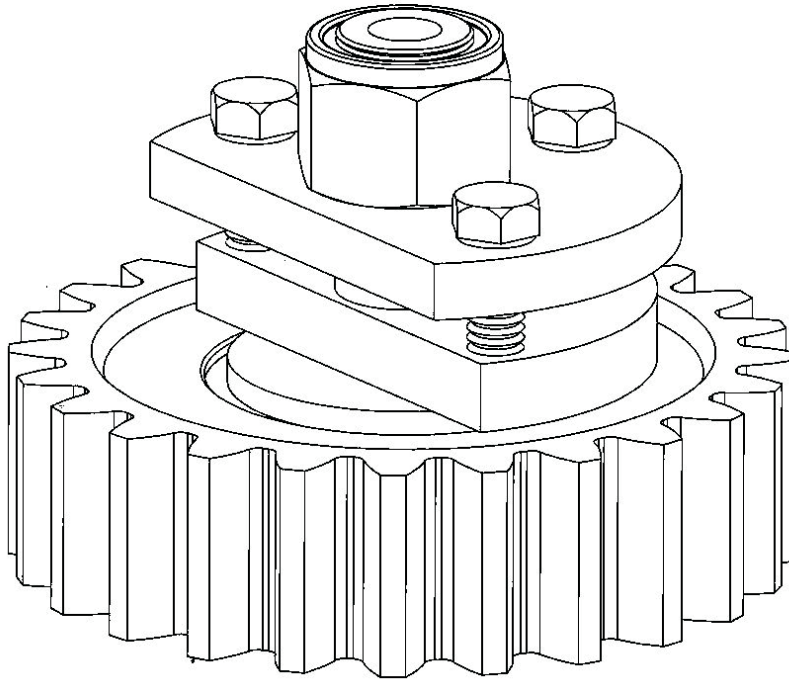


Fig 8

Table 5. Detailed table for Big idler gear assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-210		Oil cup NPT1/8	2
2	KHT13625-211	TQ508/70Y.3.1	Lock nut1 1/2	2
3	KHT13625-230		Hex head bolt 5/8"×1 3/4"	6
4	KHT13625-231		Spring washer 5/8"	6
5	KHT13625-232	KHT13625.1.4-1	Idler gear cover	2
6	KHT13625-233	KHT13625.1.4-2	Big idler gear shaft	2
7	KHT13625-214	TQ508/70Y.3-5	Retainer ring	4
8	KHT13625-217		Cylindrical roller bearing MU5212TM	2
9	KHT13625-234	KHT13625.1.4-3	Big idler gear	2
10	KHT13625-215	TQ508/70Y.3-4	Water-proof guard (1)	2
11	KHT13625-235	GB/T894.2	Retaining rings for shafts 60	2

## 7.6 Pinion assembly (Fig 9, Fig 10, Table 6)

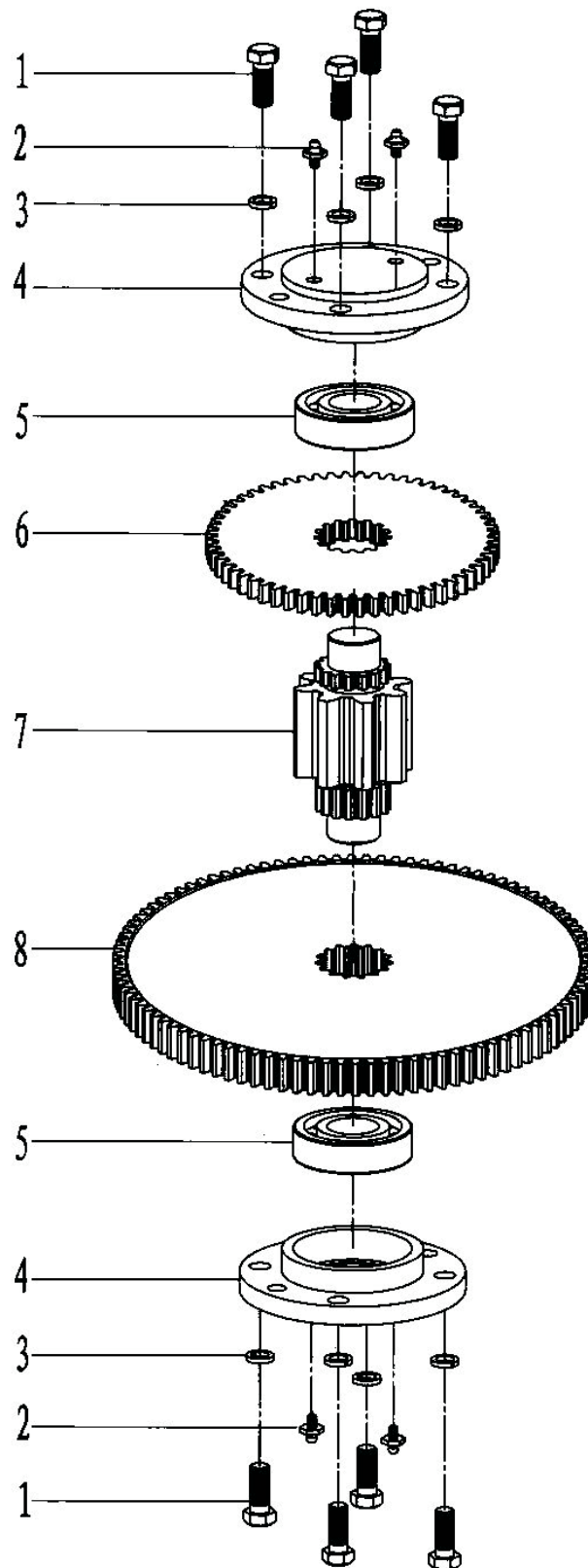


Fig 9

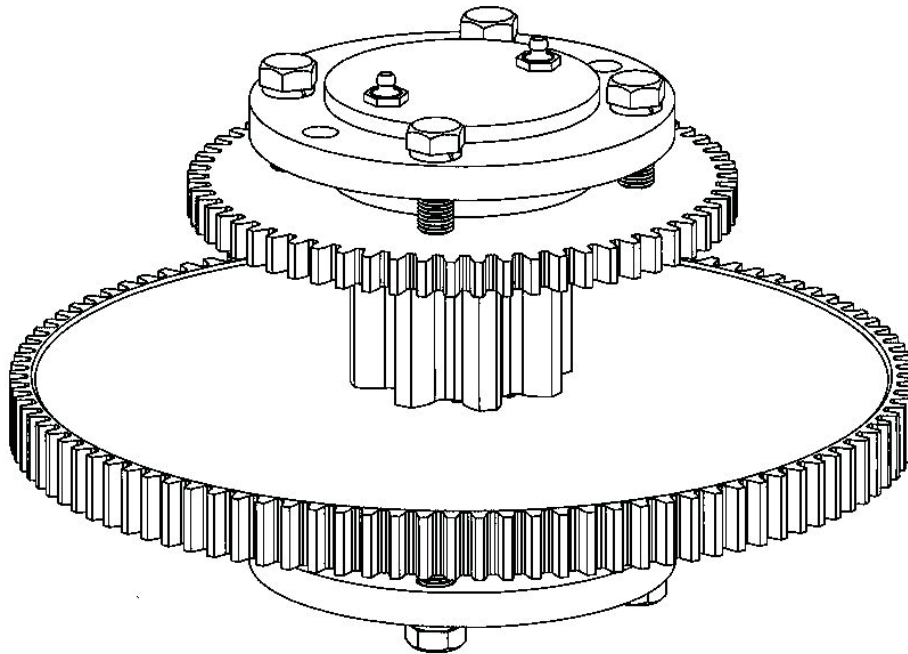


Fig 10

Table 6. Detailed table for Pinion assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-250		Hex head bolt 1/2"UNC×1 1/4"	8
2	KHT13625-210		Oil cup NPT1/8"	4
3	KHT13625-102		Spring washer 1/2"	8
4	KHT13625-251	KHT13625.1.5-1	Bearing cap	2
5	KHT13625-252	GB/T283	Pinion bearing 52307E	2
6	KHT13625-253	KHT13625.1.5-2	Pinion gear	1
7	KHT13625-254	KHT13625.1.5-3	Pinion gear shaft	1
8	KHT13625-255	KHT13625.1.5-4	Big gear	1

### 7.7 Power input shaft assembly (Fig 11, Fig 12, Table 7)

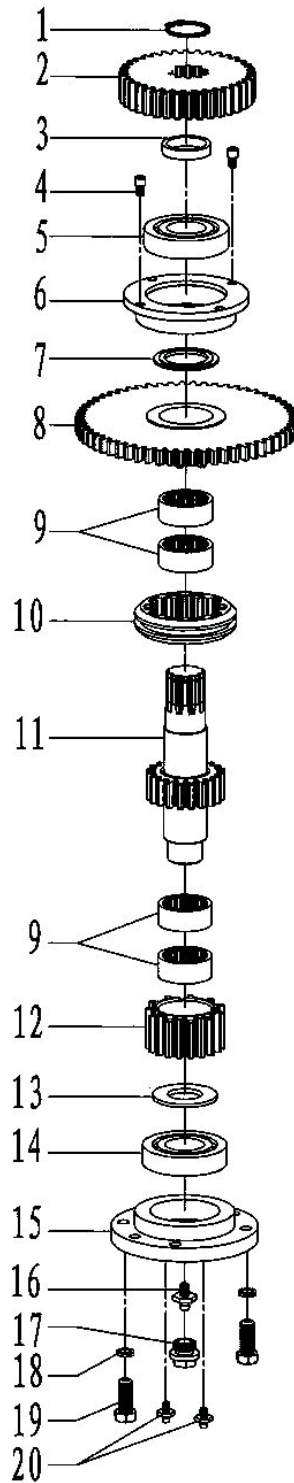


Fig 11

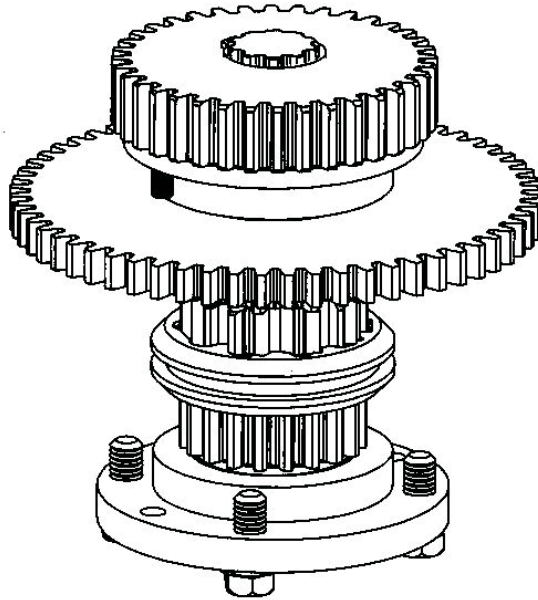


Fig 12

Table 7. Detailed table for Power input shaft assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-270	GB/T894.1	Circlip for shaft 34	1
2	KHT13625-271	KHT13625.1.6-4	Drive gear	1
3	KHT13625-272	KHT13625.1.6-3	Support ring	1
4	KHT13625-273		Hex SHCS #10×3/4"	2
5	KHT13625-274	GB283-87	Cylindrical roller bearing 207E	1
6	KHT13625-275	KHT13625.1.6-5	Bearing support	1
7	KHT13625-276	KHT13625.1.6-6	Support ring (2)	1
8	KHT13625-277	KHT13625.1.6-7	Duplex hear	1
9	KHT13625-278		Needle roller bearing B-2412	4
10	KHT13625-279	KHT13625.1.6-8	Inner gear sleeve	1
11	KHT13625-280	KHT13625.1.6-2	Main shaft	1
12	KHT13625-281	KHT13625.1.6-9	Clutch small gear	1
13	KHT13625-282	KHT13625.1.6-10	Support ring (3)	1
14	KHT13625-283	GB283-87	Cylindrical roller bearing 32206E	1
15	KHT13625-284	KHT13625.1.6-11	Lower bearing support	1
16	KHT13625-210		Oil cup NPT1/8	1
17	KHT13625-286	KHT13625.1.6-12	Plug screw	1
18	KHT13625-138		Spring washer 3/8"	4
19	KHT13625-164		Hex bolt 3/8"UNC×1 1/4"	4
20	KHT13625-289		Oil cup NPT1/8×90°	2

### 7.8 Case body assembly (Fig 13, Table 8)

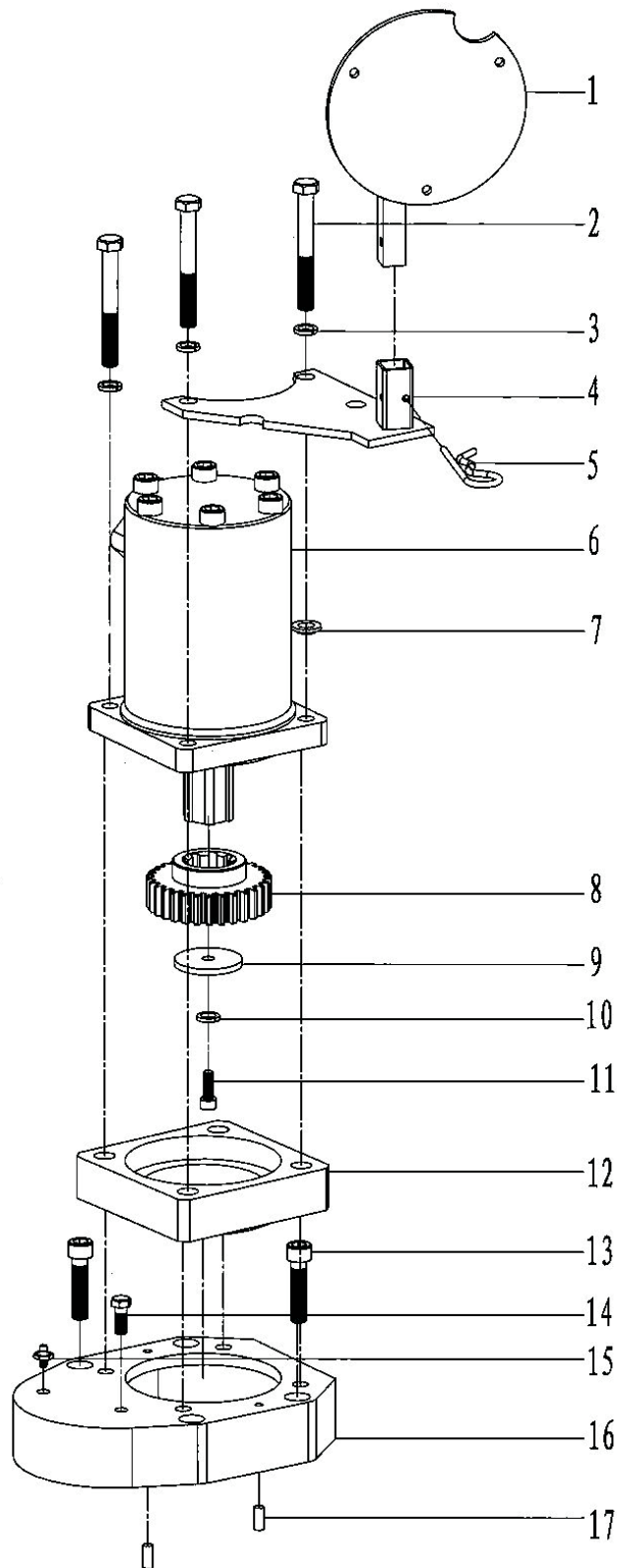


Fig 13

Table 8. Detailed table for Case body assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-300	KHT13625.1.7-2	Torque gauge frame	1
2	KHT13625-301		Hex bolt 1/2UNC"×3 1/4"	4
3	KHT13625-102		Spring washer 1/2"	4
4	KHT13625-302	KHT13625.1.7-3	Torque gauge seat	1
5	KHT13625-303	TQ245-2	Circlip	1
6	KHT13625-304A		Cycloid hydraulic motor 6K-625 (plate type)	1
	KHT13625-304B		Cycloid hydraulic motor 6K-625 (tube type)	1
7	KHT13625-305	KHT13625.1.6-13	Washer	4
8	KHT13625-306	KHT13625.1.6-1B	Motor gear	1
9	KHT13625-307	KHT13625.1.6-15	Lock rings at the end of shaft	1
10	KHT13625-308	GB/T93	Spring washer8	1
11	KHT13625-309	GB/T70	Hex SHCS M8×25	1
12	KHT13625-310	KHT13625.1.6-14	Motor connection seat	1
13	KHT13625-311		Hex SHCS 1/2"UNC×1 3/4"	4
14	KHT13625-312		Hex bolt 3/8"UNC×1/2"	1
15	KHT13625-313		Oil cupNPT1/8"×45°	1
16	KHT13625-314	KHT13625.1.7-1	Small case body	1
17	KHT13625-315		Cylindrical pin Φ5/16"×3/4"	2

## 7.9 Hydraulic valve bank (four connection valve) (Fig 14, Table 9)

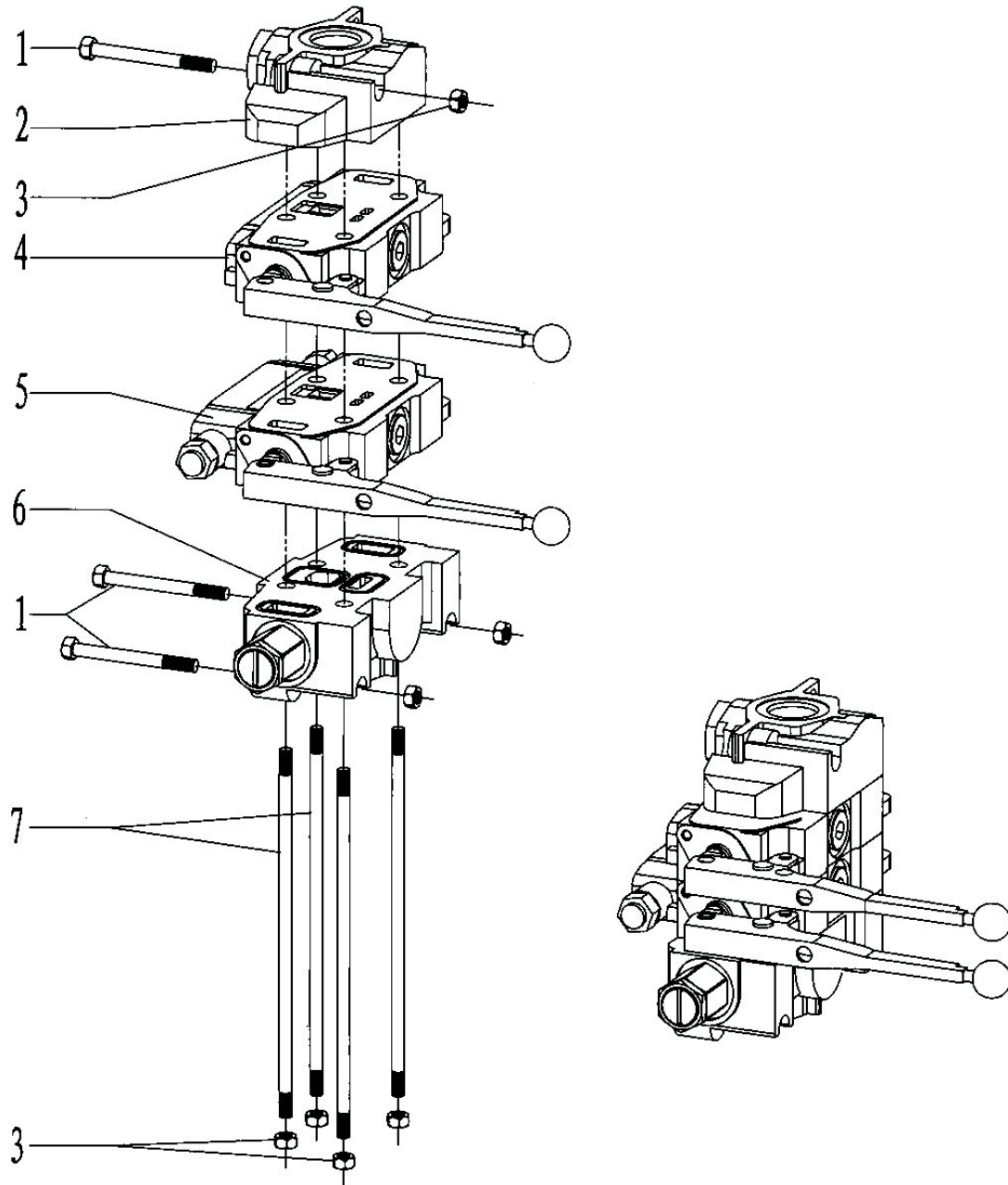


Fig 14

Table 9. Detailed table for Hydraulic combination valve assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-330		Hex bolt 4 1/2"×1/2"UNC	4
2	KHT13625-331		Connection board assembly	1
3	KHT13625-332		Hex nut 1/2"	8
4	KHT13625-333		Hand control valve assembly (H)	1
5	KHT13625-334		Hand control valve assembly (O)	1
6	KHT13625-335		Overflow valve assembly	1
7	KHT13625-336		Bolt 1/2"UNC	4

#### 7.10 Safety door assembly (Fig 15, Table 10)



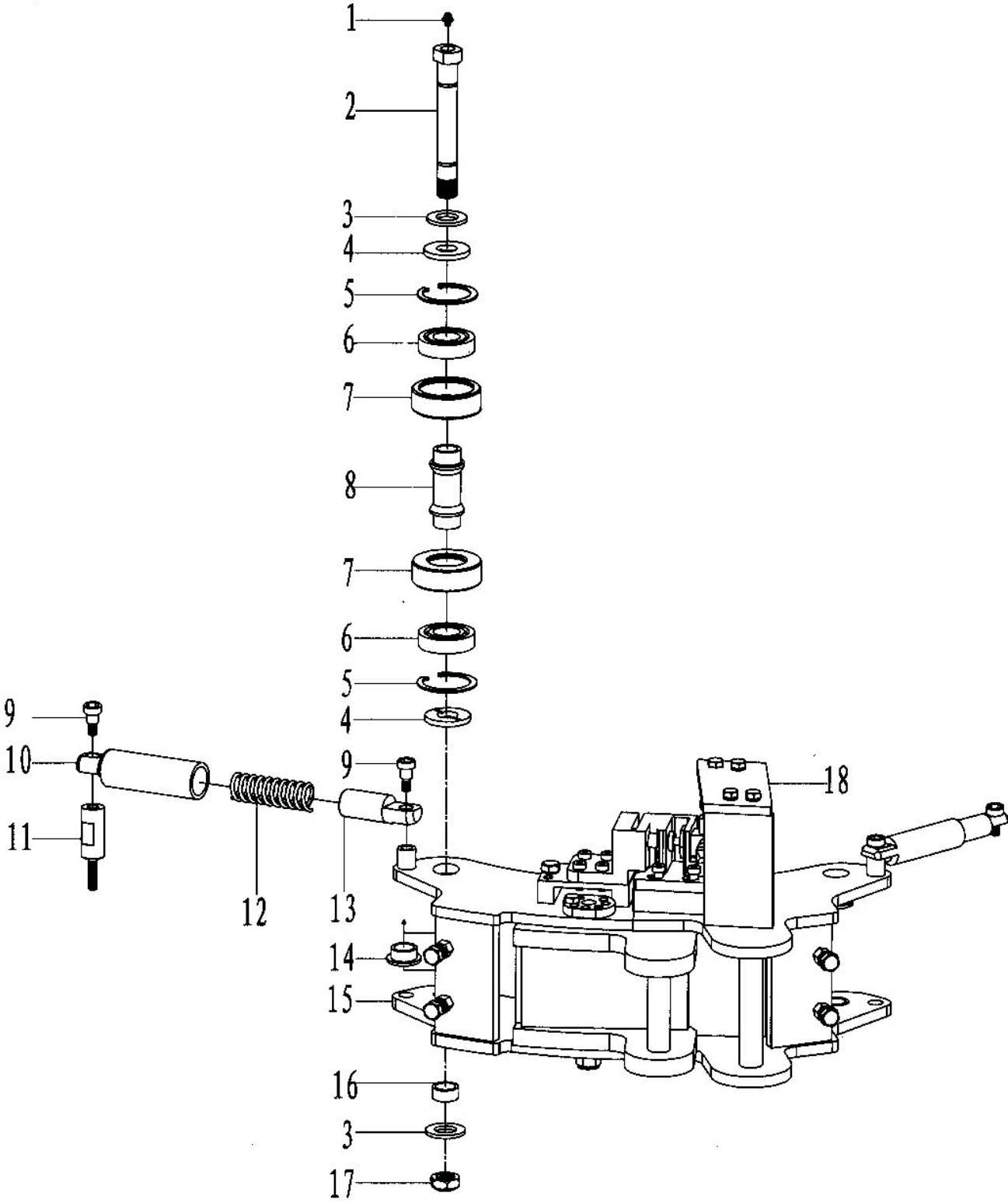


Fig 15

Table 10. Detailed table for Safety door assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-450		Oil cup1/4"-28UNF	2
2	KHT13625-451	KHT13625.1.10-7	Rotation shaft	2
3	KHT13625-452	KHT13625.1.9-2	Flat washer7/8"	4
4	KHT13625-453	KHT13625.1.9-3	Washer	4
5	KHT13625-454	GB/T893.1	Circlip for holeΦ62	4
6	KHT13625-283	GB283-87	Roller bearing32206E	4
7	KHT13625-455	KHT13625.1.9-4	Centralizing roller	4
8	KHT13625-456	KHT13625.1.9-5	Shaft bushing	2
9	KHT13625-457	KHT13625.1.10-1	Screw1	4
10	KHT13625-458	KHT13625.1.10-3	Door cylinder	2
11	KHT13625-459	KHT13625.1.10-2	Door cylinder post	2
12	KHT13625-460	KHT13625.1.10-4	Spring	2
13	KHT13625-461	KHT13625.1.10-5	Sleeve rod	2
14	KHT13625-462	KHT13625.1.10-6	Sleeve 1	2
15	KHT13625-463	KHT13625.1.10.2	Safety door (left)	1
16	KHT13625-464	KHT13625.1.10-8	Sleeve 2	2
17	KHT13625-465		Lock nut3/4"-16UNF	2
18	KHT13625-466	KHT13625.1.10.1	Safety door (right)	1

#### 7.11 LH safety door assembly (Fig 16, Table 11)

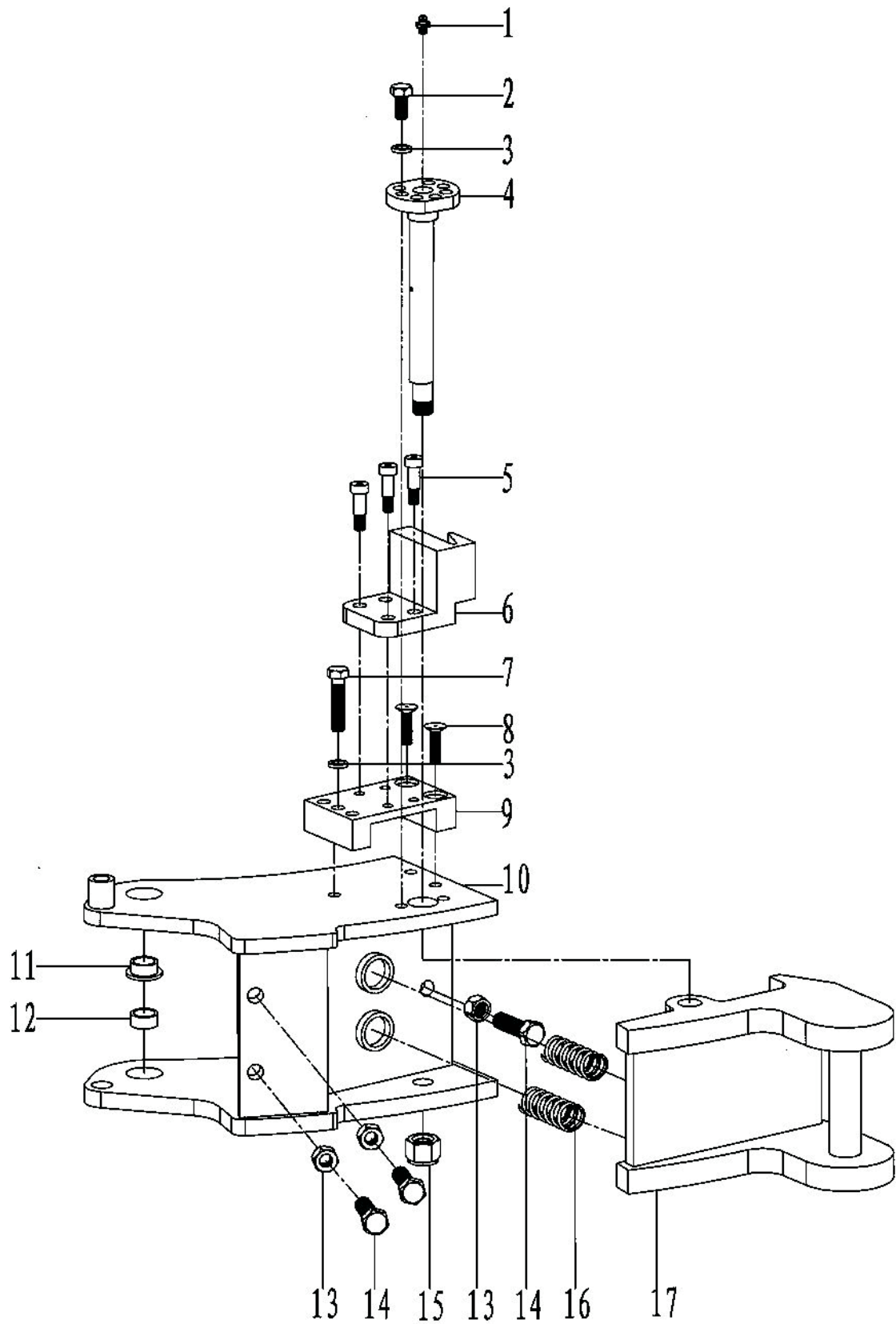


Fig 16

Table 11. Detailed table for LH safety door assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-450		Oil cup 1/4"-28UNF	2
2	KHT13625-160		Hex bolt 3/8"-16×1"	1
3	KHT13625-138		Spring washer 3/8"	2
4	KHT13625-470	KHT13625.1.10.2-4	Eccentric shaft	1
5	KHT13625-471	KHT13625.1.10.2-2	Screw 2	4
6	KHT13625-472	KHT13625.1.10.2-3	RH safety door latch block	1
7	KHT13625-165		Hex bolt 3/8"-16UNC×1 1/2"	2
8	KHT13625-473		Hex FHCS 3/8"×1 1/2"	2
9	KHT13625-474	KHT13625.1.10.2-1	RH safety door latch plate	1
10	KHT13625-475	KHT13625.1.10.2.1	LH door weldment	1
11	KHT13625-462	KHT13625.1.10-6	Sleeve 1	2
12	KHT13625-464	KHT13625.1.10-8	Sleeve 2	2
13	KHT13625-332		Hex nut 1/2"-13UNC	3
14	KHT13625-476		Hex bolt 1/2"-13UNC×2"	3
15	KHT13625-477		Lock nut 5/8"-18UNF	1
16	KHT13625-478	KHT13625.1.10.2-5	Spring	2
17	KHT13625-479	KHT13625.1.10.2.2	Latch weldment	1

## 7.12 RH safety door assembly (Fig 17, Table 12)

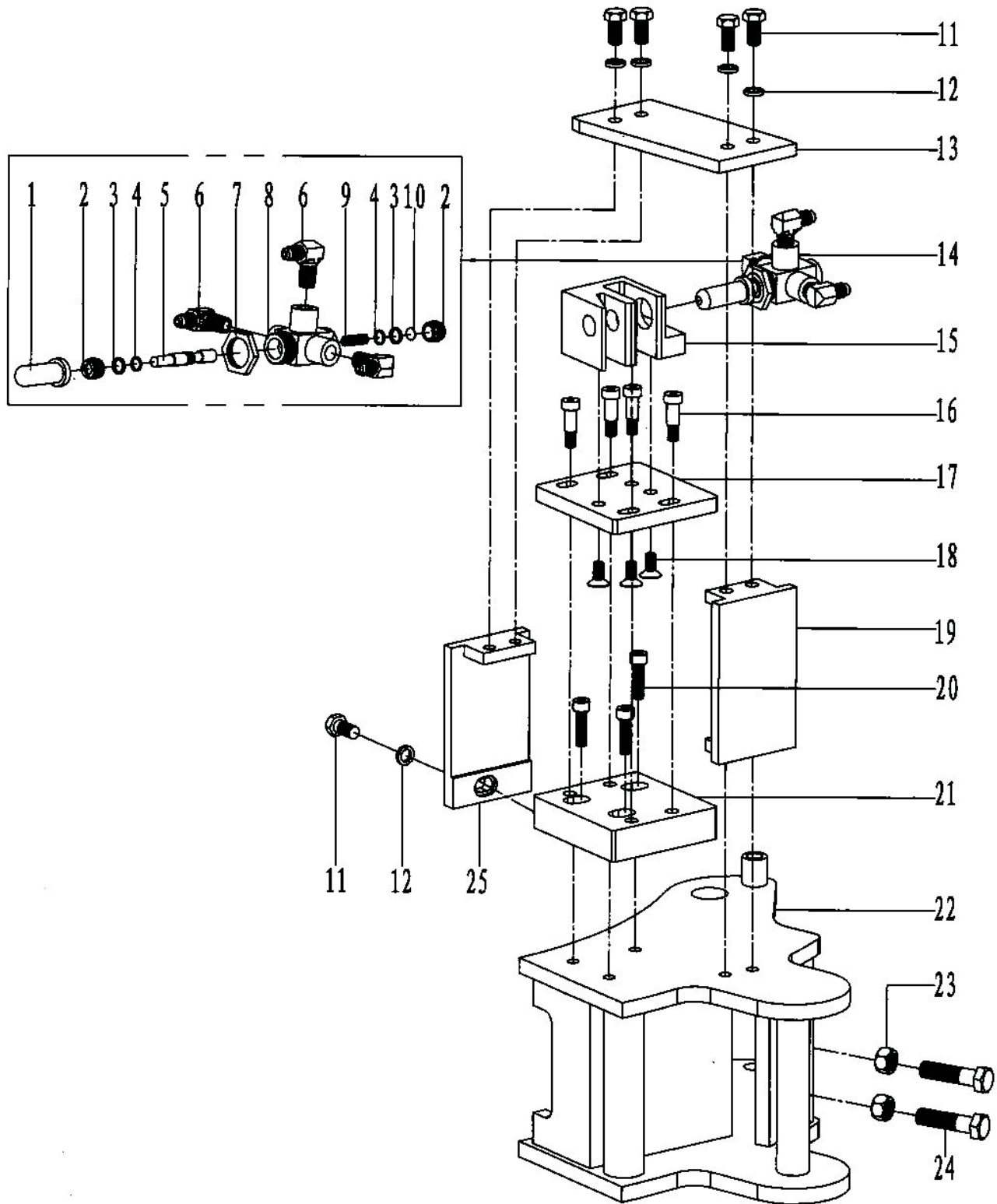


Fig 17

Table 12. Detailed table for RH safety door assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-490	TQ508/70Y.9.2.3-1	Load plunger	1
2	KHT13625-491	TQ508/70Y.9.2.3-3	Screw plug	2
3	KHT13625-492	TQ508/70Y.9.2.3-8	Retainer ring $\Phi 12.7 \times \Phi 9.5 \times 1.2$	2
4	KHT13625-493	GB3452.1-92	O-ring 9.5 $\times$ 1.8	2
5	KHT13625-494	TQ508/70Y.9.2.3-2	Piston rod	1
6	KHT13625-495	TQ508/70Y.9.2.3-5	Street elbow 90d fitting NPT1/4	3
7	KHT13625-496	TQ508/70Y.9.2.3-4	valve lock nut	1
8	KHT13625-497	TQ508/70Y.9.2.3-6	Five way valve	1
9	KHT13625-498	TQ508/70Y.9.2.3-7	Spring	1
10	KHT13625-499	TQ508/70Y.9.2.3-9	Retainer disc	1
11	KHT13625-160		Hex bolt 3/8"UNC $\times$ 1"	7
12	KHT13625-138		Spring washer3/8"	11
13	KHT13625-500	KHT13625.1.10.1-1	Upper cover plate	1
14	KHT13625-501	TQ508/70Y.9.2.3	Five way valve assembly	1
15	KHT13625-502	KHT13625.1.10.1-3	Valve seat	1
16	KHT13625-503	KHT13625.1.10.1-6	Screw 3	4
17	KHT13625-504	KHT13625.1.10.1-4	Connection board(1)	1
18	KHT13625-505		Hex FHCS 3/8"UNC $\times$ 3/4"	3
19	KHT13625-506	KHT13625.1.10.1-7	Lateral plate	1
20	KHT13625-507		Hex SHCS 3/8"UNC $\times$ 1"	3
21	KHT13625-508	KHT13625.1.10.1-5	Connection board (2)	1
22	KHT13625-509	KHT13625.1.10.1.1	RH door weldment	1
23	KHT13625-332		Hex nut 1/2"-13UNC	2
24	KHT13625-476		Hex bolt 1/2"-13UNC $\times$ 2"	2
25	KHT13625-510	KHT13625.1.10.1-2	Medial plate	1

### 7.13 Shifter assembly (Fig 18, Table 13)

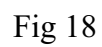


Table 13. Detailed table for Shifter assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-520	KHT13625.1.11-1	Shifting shaft	1
2	KHT13625-521	GB/T91	Cotter pin3.2×16	2
3	KHT13625-522	GB/T882	Pin shaft 8×25	1
4	KHT13625-523	KHT13625.1.11-2	Shift fork shaft	1
5	KHT13625-165		Hex bolt 3/8"UNC×1 1/2"	4
6	KHT13625-138		Spring washer3/8"	8
7	KHT13625-524	KHT13625.1.2-18	Shifting lug weldment	1
8	KHT13625-525	GB/T882	Pin shaft 8×40	1
9	KHT13625-526	KHT13625.1.2-5	Shaft seat	1
10	KHT13625-527	KHT13625.1.11-3	Locating shaft sleeve	1
11	KHT13625-528		Steel ball 3/8"	1
12	KHT13625-529	KHT13625.1.11-4	Detent spring	1
13	KHT13625-530		Hex nut 7/16"UNF	1
14	KHT13625-531		Hex bolt 7/16"UNF×1 1/4"	1
15	KHT13625-532	KHT13625.1.11-5	Shifting fork	1
16	KHT13625-533		Hex thin nut 5/8"-18UNF	1
17	KHT13625-477		Lock nut 5/8"-18UNF	1
18	KHT13625-535	KHT13625.1.2-9	Lower shaft seat	1
19	KHT13625-160		Hex bolt 3/8"UNC×1 "	4
20	KHT13625-537		Hex flat end set screw 5/8"UNC×5/8"	3

#### 7.14 Brake band assembly (Fig 19, Table 14)



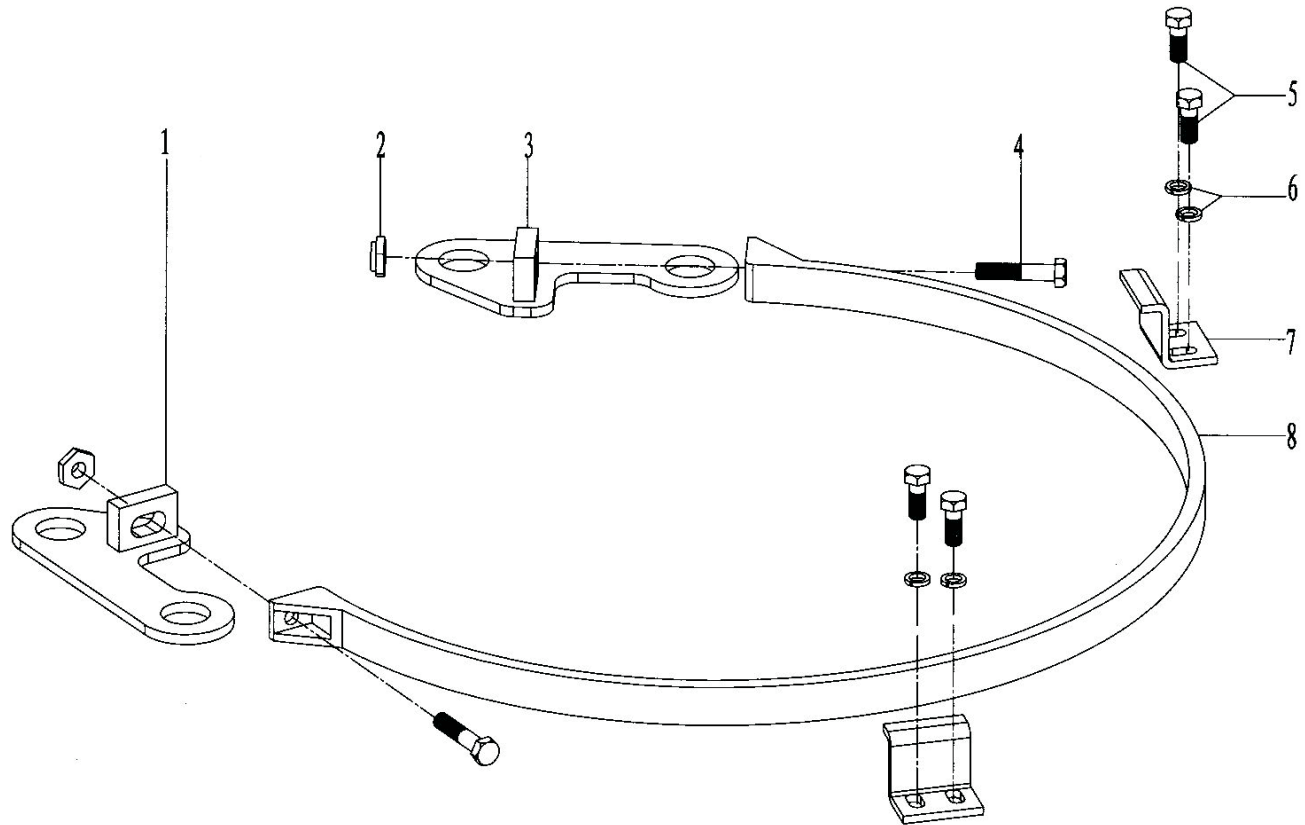


Fig 19

Table 14. Detailed table for Brake band assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-172	KHT13625.1.2-12	Fixed seat(right)	2
2	KHT13625-191		Lock nut 3/8"	2
3	KHT13625-171	KHT13625.1.2-22	Fixed seat(left)	2
4	KHT13625-139		Hex bolt 3/8"UNC×1 3/4"	2
5	KHT13625-160		Hex bolt 3/8UNC"×1"	4
6	KHT13625-138		Spring washer3/8"	4
7	KHT13625-169	KHT13625.1.2-20	Restrict block	2
8	KHT13625-550	KHT13625.1.12.1	Brake band	1

### 7.15 Spring lifter assembly (Fig 20, Table 15)

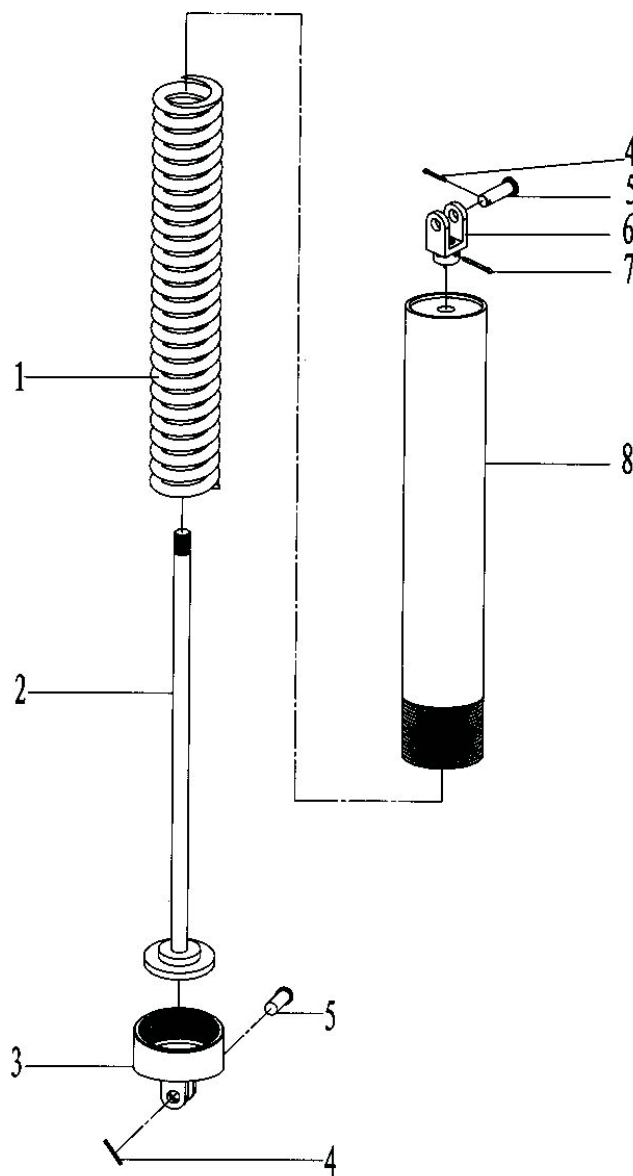


Fig 20

Table 15. Detailed table for Spring lifter assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-560	TQ340/35Y.1.13-0.1	Spring	1
2	KHT13625-561	TQ340/35Y.1.13.1	Suspend rod	1
3	KHT13625-562	TQ245/20Y.1.14(2)-1	End cover	1
4	KHT13625-563	GB/T91	Cotter pin 4×40	2
5	KHT13625-564	GB/T882	Pin shaft 20×60	2
6	KHT13625-565	XYQ12.YD-01.1	Suspend head	1
7	KHT13625-566	GB/T91	Cotter pin 4×50	1
8	KHT13625-567	TQ340/35Y.1.13(2).1	Spring lifter	1

#### 7.16 Suspending rod assembly (Fig 21, Table 16)

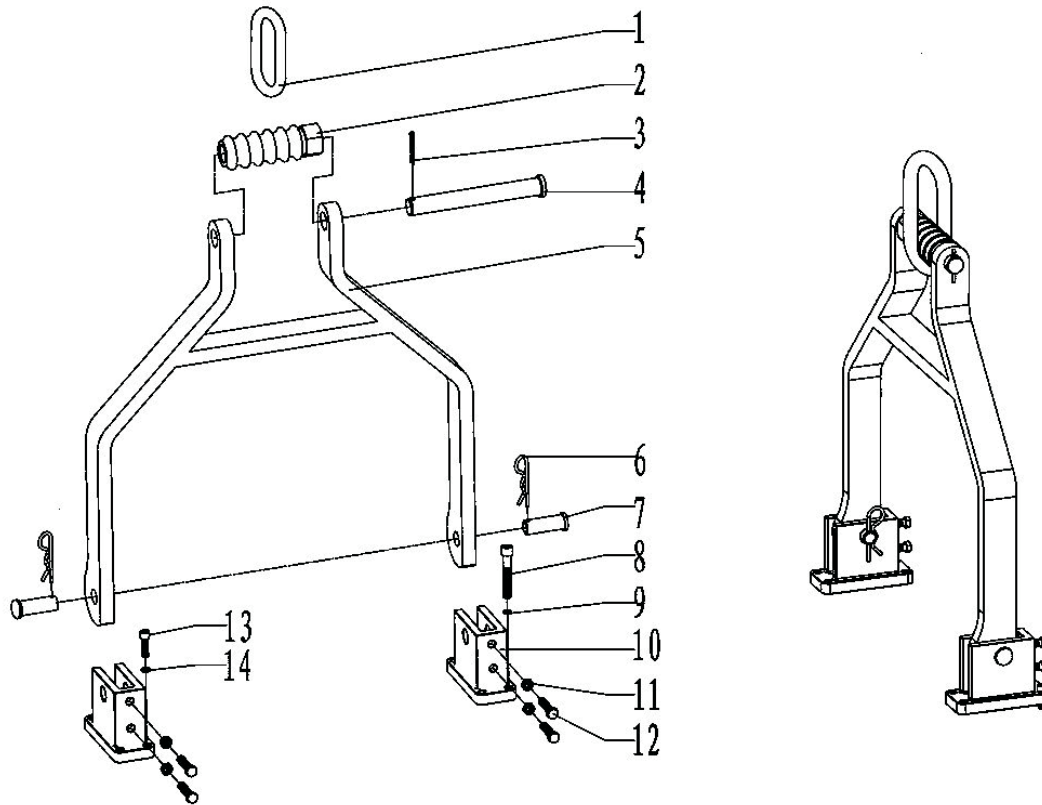


Fig 21

Table 16. Detailed table for Suspending rod assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-590		Flying ring(5T)	1
2	KHT13625-591	TQ245.15(2)-1	Screw bar	1
3	KHT13625-592	GB/T91	Cotter pin 6×45	1
4	KHT13625-593	TQ245.15(2)-2	Pin shaft	1
5	KHT13625-594	KHT13625.1.13.1	Suspending rod	1
6	KHT13625-303	TQ245-2	Circlip	2
7	KHT13625-595	GB/T882	Pin shaft B25×90	2
8	KHT13625-596		Hex SHCS 3/8"×2 1/4"	4
9	KHT13625-138		Spring washer 3/8"	4
10	KHT13625-597	KHT13625.1.13-1	Suspend seat	2
11	KHT13625-332		Hex nut 1/2"	2
12	KHT13625-476		Hex bolt 1/2"×2"	2
13	KHT13625-599		Hex SHCS 1/2"×1 1/2"	4
14	KHT13625-102		Spring washer 1/2"	4

### 7.17 Sensor hydraulic cylinder (Fig 22, Table 17)

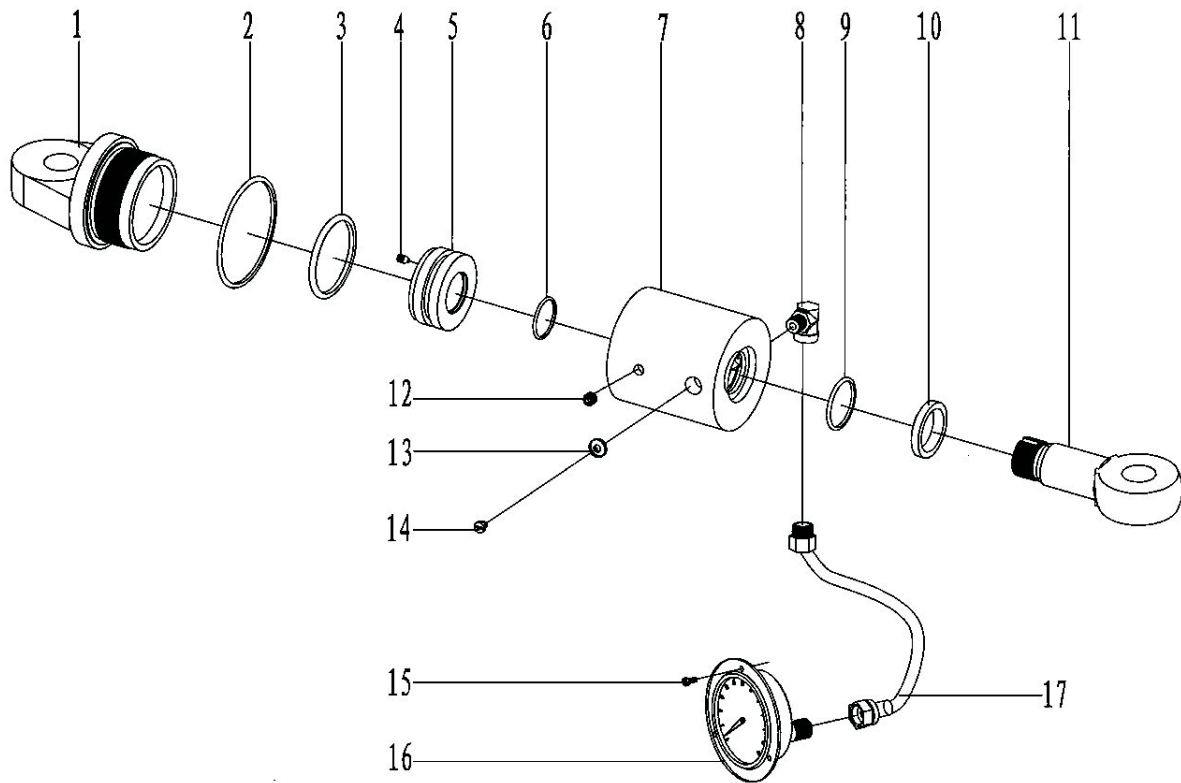


Fig 22

Table 17. Detailed table for Sensor hydraulic cylinder

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-570	TQ508/70Y.14.1-1	Cylinder end joint	1
2	KHT13625-571	TQ20.17-2	Adjusting ring	1
3	KHT13625-572	GB1235-76	O-Ring 70×5.7	1
4	KHT13625-573		Hex flat end set screw 1/4"×3/8"	1
5	KHT13625-574	TQ20.17-4	Piston	1
6	KHT13625-575	GB3452.1	O-Ring 35.5×2.65	1
7	KHT13625-576	TQ20.17-3	Cylinder body	1
8	KHT13625-577	TQ20.17-5	Bending joint	1
9	KHT13625-578	GB1235-76	O-Ring 44×3.5	1
10	KHT13625-579	FD00641A0	Dustproof ring DK1 38 50 7 10	1
11	KHT13625-580	TQ20.17-6	Piston Rod	1
12	KHT13625-581		Hex flat end set screw 3/8"×1/2"	2
13	KHT13625-582		PTFE WasherΦ16×Φ6.5×3	1
14	KHT13625-583		Slotted round head screw 1/4"×3/8"	1
15	KHT13625-584		Cross recessed countersunk head screws	3
16	KHT13625-585	KHT13625.14-1	Torque gauge	1
17	KHT13625-586		Hose8 II -700 (M20×1.5-NPT 1/4)	1

### 7.18 Centralizing roller assembly (Fig 23, Fig 24, Table 18)

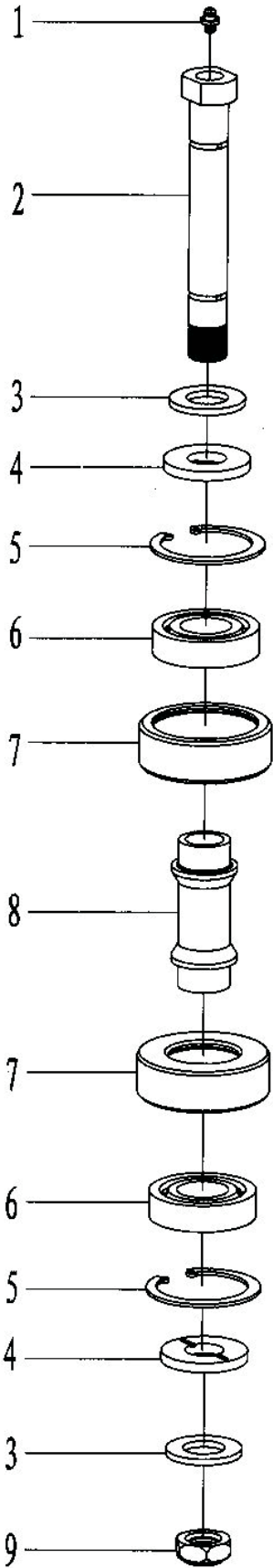


Fig 23

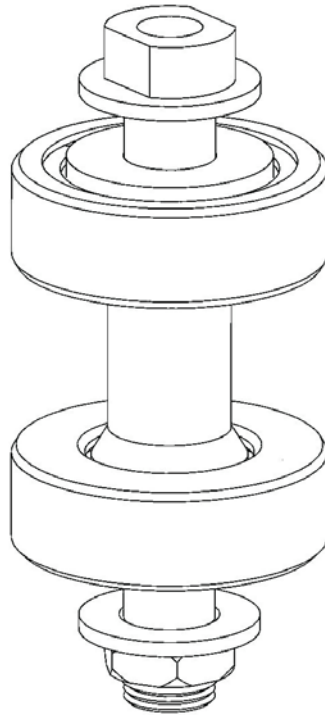


Fig 24

Table 18. Detailed table for Centralizing roller assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-450		Oil cup 1/4"-28UNF	12
2	KHT13625-610	KHT13625.1.9-1	Centralizing roller shaft	12
3	KHT13625-452	KHT13625.1.9-2	Flat washer 7/8"	24
4	KHT13625-453	KHT13625.1.9-3	Washer	24
5	KHT13625-454	GB/T893.1	Circlip for hole $\Phi 62$	24
6	KHT13625-283	GB283-87	Roller bearing 32206E	24
7	KHT13625-455	KHT13625.1.9-4	Centralizing roller	24
8	KHT13625-456	KHT13625.1.9-5	Shaft bushing	12
9	KHT13625-611		Lock nut 7/8"-14UNF	12

**7.19 Hydraulic valve bank assembly (plate type motor) (Fig 25, Table 19)**

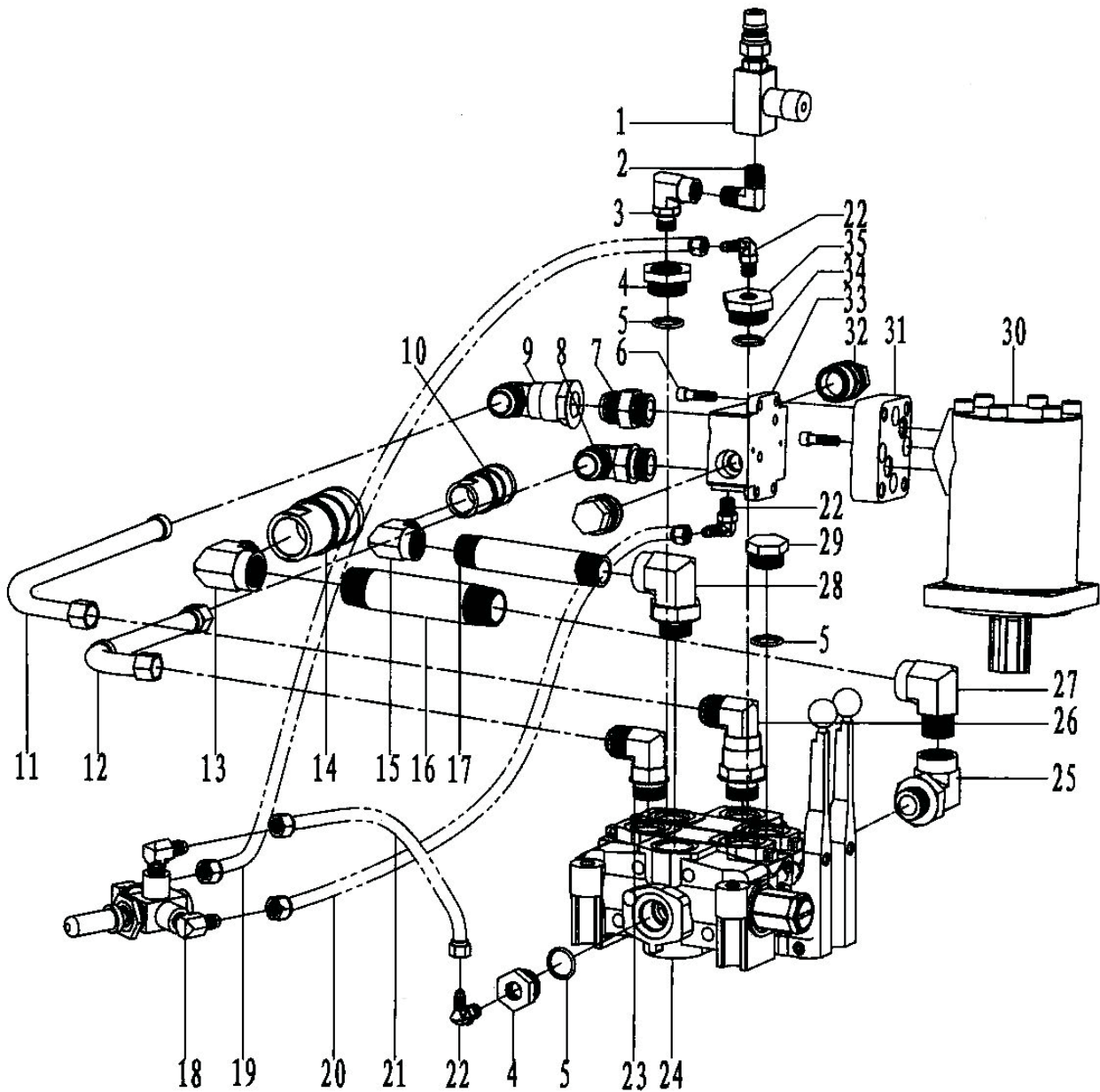


Fig 25

Table 19. Detailed table for Hydraulic valve bank assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-621	TQ508/70Y.10.5	Flow control valve	1
2	KHT13625-622	TQ508/70Y.10-3	Street elbow 90d fitting NPT1/2	1
3	KHT13625-623	TQ508/70Y.10.9	Street ell 90d fitting NPT1/2	1
4	KHT13625-624	TQ508/70Y.10-10	Transpositional adaptor 1 5/16"	3
5	KHT13625-625	GB3452.1	O-ring 31.5×2.55	2
6	KHT13625-646	GB/T70	Hex SHCS M12×30	8
7	KHT13625-644	TQ508/70Y.10.8-2	1 5/16"-12UN adaptor	2
8	KHT13625-655	TQ508/70Y.10.8.3	1 5/16"-12UN Street elbow 90d fitting	1
9	KHT13625-656	TQ508/70Y.10.8.4	1 5/16"-12UN Street ell 90d fitting	1
10	KHT13625-626	KJD9625.18.4	Quick-coupling fitting (1 7/8"-12UN)	1
11	KHT13625-657	KHT13625.1.8-1	High-pressure hose25 II -580 (1 5/16-12UNC)	1
12	KHT13625-658	KHT13625.1.8-2	High-pressure hose25 II -320×90 (1 5/16-12UNC)	1
13	KHT13625-630	KJD9625.18-7	Crooked fitting(NPT1 1/4inside and outside)	1
14	KHT13625-629	KJD9625.18.3	Quick-coupling fitting (2 1/8"-12UN)	1
15	KHT13625-627	TQ508/70Y.10-5	Street ell 90d fitting NPT1	1
16	KHT13625-631		Return oil pipe NPT1 1/4	1
17	KHT13625-628		pipe nipple NPT1	1
18	KHT13625-501	TQ508/70Y.9.2.3	Safety door valve assembly	1
19	KHT13625-641		Hose 8 II -2150 (7/16"-20UNF)	1
20	KHT13625-642		Hose 8 II -1950 (7/16"-20 UNF)	1
21	KHT13625-640		Hose 8 II -1750 (7/16"-20UNF)	1
22	KHT13625-633	TQ508/70Y.10.10	7/16"-20UNF Street elbow 90d fitting	3
23	KHT13625-650	KJD9625.18.2	1 5/16"-12UN adaptor	1
24	KHT13625-637	DL (1) .0B	Hydraulic valve bank (four connection valve)	1
25	KHT13625-638	TQ508/70Y.10.2	NPT1 1/4"Street ell 90d fitting	1
26	KHT13625-636	TQ508/70Y.10.6	1 5/16"-12UN Street elbow long 90d fitting	2
27	KHT13625-639	KJD9625.18-7	Crooked fitting(NPT1 1/4inside and outside)	1
28	KHT13625-632	TQ508/70Y.10.7	NPT1 Street ell 90d fitting NPT1	1
29	KHT13625-635	TQ508/70Y.10-13	Plug 1 5/16"	1
30	KHT13625-304A		6K-625 Cycloid hydraulic motor (plate type)	1
31	KHT13625-649	JCYF-1	Transitional connection plate	1
32	KHT13625-645	TQ508/70Y.10.8.2	Check valve	2
33	KHT13625-647	XYQ6B.Z.7-2(2)	Connection plate	1
34	KHT13625-653	GB3452.1	O-ring 38.7×3.55	1
35	KHT13625-652	TQ508/70Y.10-7	Adapter connector 1 5/8"	1



7. 20 Hydraulic valve bank assembly (tube type motor) (Fig 26, Table 20)

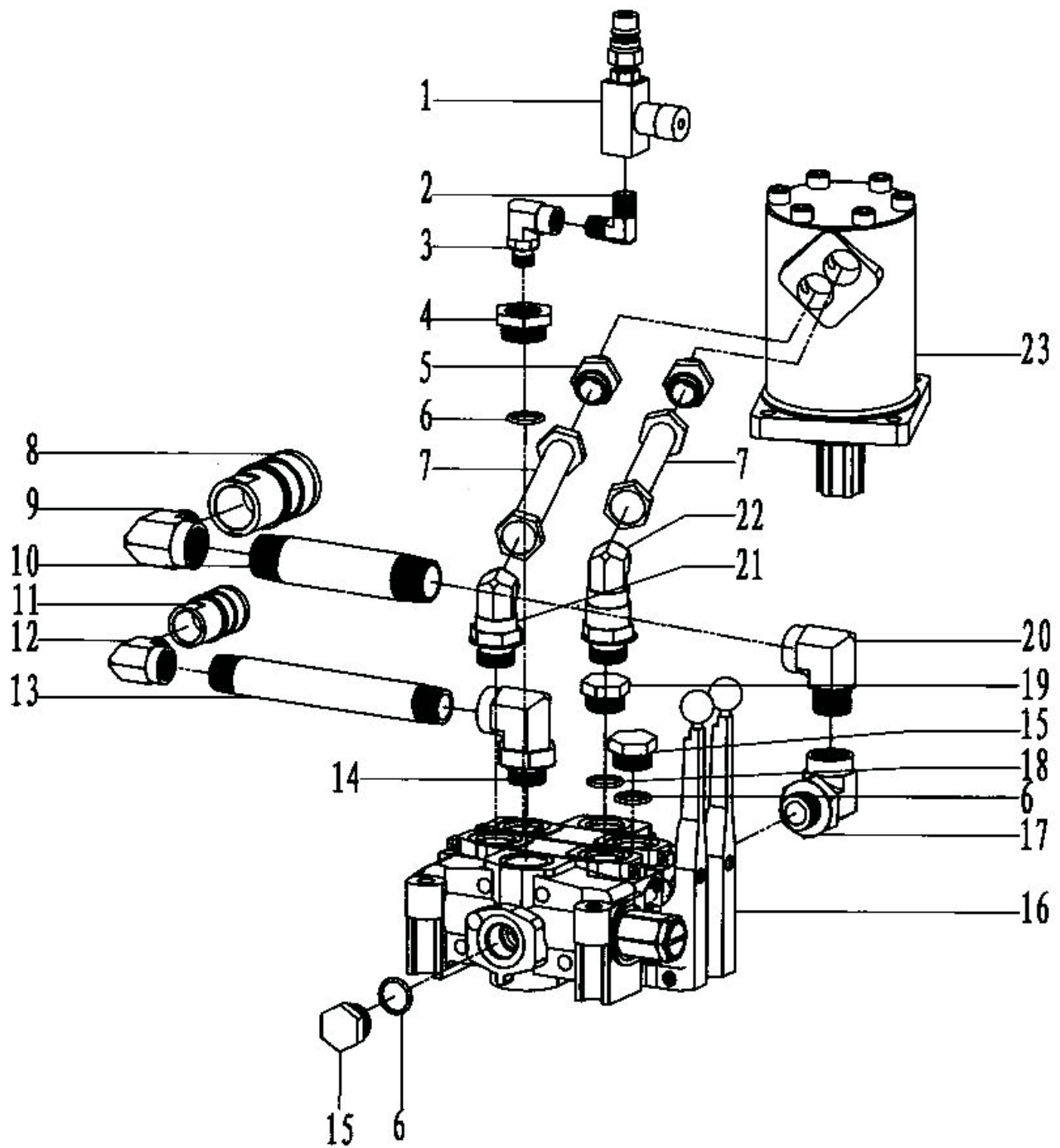


Fig 26

Table 20. Detailed table for Hydraulic valve bank assembly (2)

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-621	TQ508/70Y.10.5	Flow control valve	1
2	KHT13625-622	TQ508/70Y.10-3	NPT1/2 Street elbow 90d fitting	1
3	KHT13625-623	TQ508/70Y.10.9	NPT1/2 Street ell 90d fitting	1
4	KHT13625-624	TQ508/70Y.10-10	Adapter connector 1 5/16"	3
5	KHT13625-644	TQ508/70Y.10.8-2	1 5/16"-12UN adaptor	2
6	KHT13625-625	GB3452.1	O-ring 31.5×2.55	2
7	KHT13625-634		Bend pipe 1 5/16"	2
8	KHT13625-629	KJD9625.18.3	Quick-coupling fitting (2 1/8"-12UN)	1
9	KHT13625-630	KJD9625.18-7	Crooked fitting(NPT1 1/4inside and outside)	1
10	KHT13625-631		NPT1 1/4 return oil pipe	1
11	KHT13625-626	KJD9625.18.4	Quick-coupling fitting (1 7/8"-12UN)	1
12	KHT13625-627	TQ508/70Y.10-5	NPT1 double NPT1 Street ell 90d fitting	1
13	KHT13625-628		pipe nipple NPT1	1
14	KHT13625-632	TQ508/70Y.10.7	NPT1 Street ell 90d fitting	1
15	KHT13625-635	TQ508/70Y.10-13	Plug 1 5/16"	2
16	KHT13625-637	DL (1) .0B	Hydraulic valve bank (four connection valve)	1
17	KHT13625-638	TQ508/70Y.10.2	NPT1 1/4"Street ell 90d fitting	1
18	KHT13625-653	GB3452.1	O-ring 38.7×3.55	1
19	KHT13625-654	TQ508/70Y.10-4	Plug 1 5/8	1
20	KHT13625-639	KJD9625.18-7	Crooked fitting(NPT1 1/4inside and outside)	1
21	KHT13625-650	KJD9625.18.2	1 5/16"-12UN adaptor	1
22	KHT13625-636	TQ508/70Y.10.6	1 5/16"-12UN Street elbow long 90d fitting	2
23	KHT13625-304B		6K-625 Cycloid hydraulic motor (tube type)	1

## 7. 21 Check valve assembly (Fig 27, Table 21)

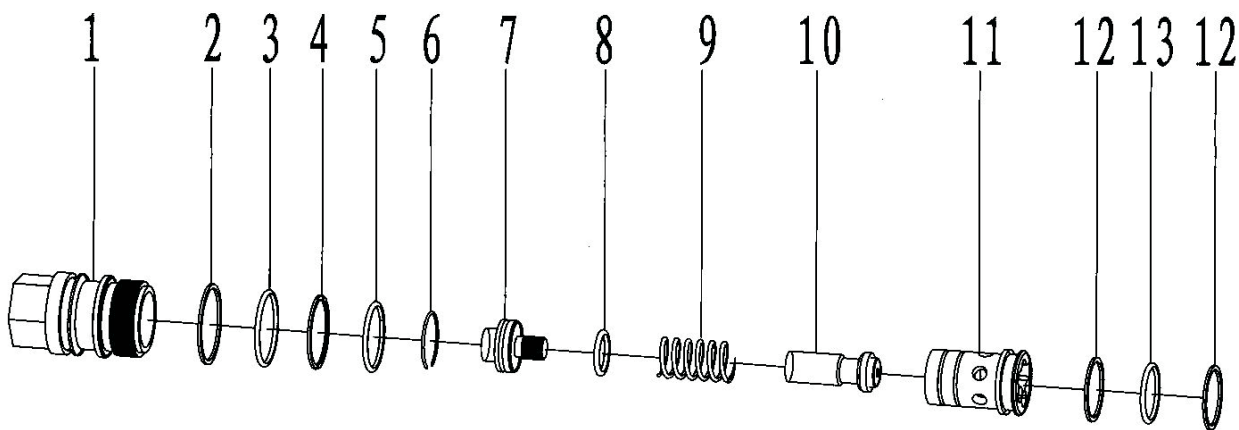


Fig 27

Table 21. Detailed table for Check valve assembly

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-661	TQ508/70Y.10.8.2-1	Valve core seat	1
2	KHT13625-662		$\Phi 35.2 \times 1.3$ retainer ring	1
3	KHT13625-663	GB3452.1-92	O-ring $35.5 \times 2.65$	1
4	KHT13625-664		$\Phi 32 \times 1.3$ retainer ring	1
5	KHT13625-665	GB3452.1-92	O-ring $31.5 \times 2.65$	1
6	KHT13625-666		steel wire $\Phi 0.6$	1
7	KHT13625-667	TQ508/70Y.10.8.2-2	Valve core piston	1
8	KHT13625-668	GB3452.1-92	O-ring $20 \times 2.65$	1
9	KHT13625-669	TQ508/70Y.10.8.2-3	Valve core spring	1
10	KHT13625-670	TQ508/70Y.10.8.2-4	Valve core	1
11	KHT13625-671	TQ508/70Y.10.8.2-5	piston	1
12	KHT13625-672		Retainer ring $\Phi 27.3 \times 1.3$	2
13	KHT13625-673	GB3452.1-92	O-ring $26.5 \times 2.65$	1

## 7. 22 Flow control valve (Fig 28, Table 22)

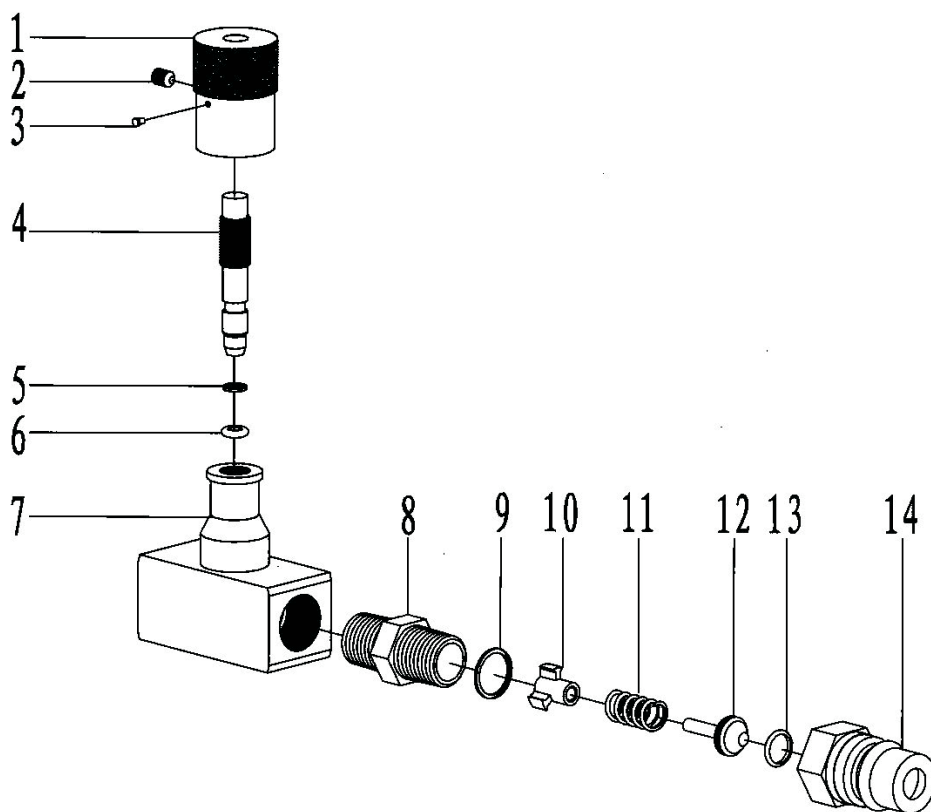


Fig 28

Table 22. Detailed table for Flow control valve

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-680		set screw 3/16	1
2	KHT13625-681		RivetΦ2×4	1
3	KHT13625-682	TQ508/70Y.10.5-1	Knob	1
4	KHT13625-683	TQ508/70Y.10.5-3	Knob shaft	1
5	KHT13625-684	TQ508/70Y.10.5-10	Retainer ringΦ8.5×Φ7.2×1	1
6	KHT13625-685	GB3452.1-92	O-ring 7.1×2.65	1
7	KHT13625-686	TQ508/70Y.10.5-2	Three way adaptor	1
8	KHT13625-687	TQ508/70Y.10.5-9	Two way adaptor NPT1/2	1
9	KHT13625-688	TQ508/70Y.10.5-5	Retainer ring	1
10	KHT13625-689	TQ508/70Y.10.5-6	Pressing block	1
11	KHT13625-690	TQ508/70Y.10.5-7	Spring	1
12	KHT13625-691	TQ508/70Y.10.5-8	Thimble	1
13	KHT13625-692	GB3452.1-92	O-ring 11.8×1.8	1
14	KHT13625-693	TQ508/70Y.10.5-4	Quick-coupling fitting	1

### 7.23 Quick exchange adaptor (2 1/8-12UN) (Fig 29, Table 23)

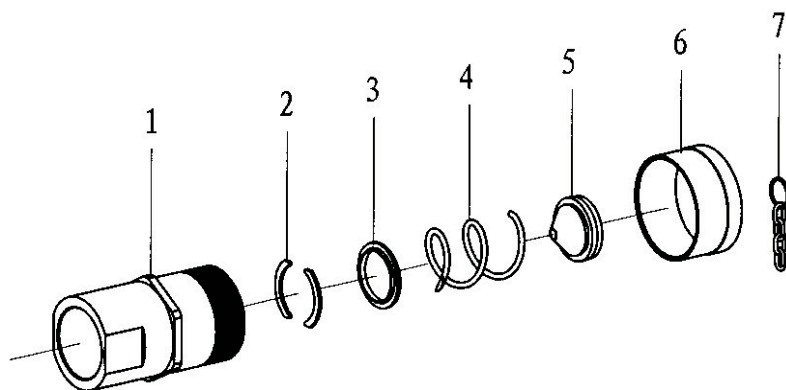


Fig 29

Table 23. Detailed table for Quick exchange adaptor (2 1/8-12UN)

Item	P/ N	Drawing No.	Description	Qty
1	KHT13625-700	KJD9625.18.3-2	Adaptor body	1
2	KHT13625-701	KJD9625.18.3-5	Clip	2
3	KHT13625-702	KJD9625.18.3-4	Washer	1
4	KHT13625-703	KJD9625.18.3-3	Spring	1
5	KHT13625-704	KJD9625.18.3.1	Core	1
6	KHT13625-705	KJD9625.18.3-1	End cover	1
7	KHT13625-706	KJD9625.18.3.2	Combination chain	1

### 7.24 Quick exchange adaptor (1 7/8-12UN) (Fig 30, Table 24)

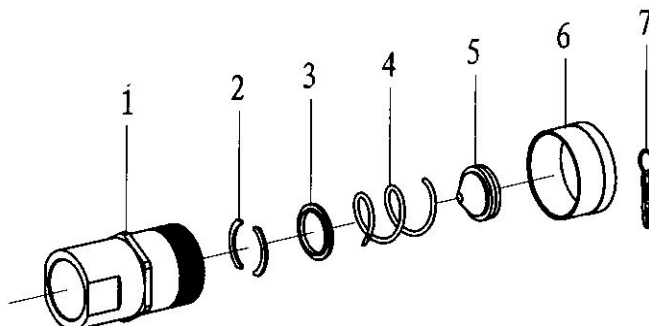


Fig 30

Table 24. Detailed table for Quick exchange adaptor (1 7/8-12UN)

Item	P/ N	Drawing No.	Description	Qty
1	KHT13625-700	KJD9625.18.3-2	Adaptor body	1
2	KHT13625-701	KJD9625.18.3-5	Clip	2
3	KHT13625-710	KJD9625.18.3-4	Washer	1
4	KHT13625-703	KJD9625.18.3-3	Spring	1
5	KHT13625-711	KJD9625.18.3.1	Core	1
6	KHT13625-712	KJD9625.18.3-1	End cover	1
7	KHT13625-706	KJD9625.18.3.2	Combination chain	1

## 7. 25 Street elbow 90d fitting 7/16-20UNF (Fig 31, Table 25)

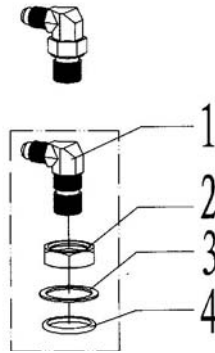


Fig 31

Table 25. Detailed table for Street elbow 90d fitting 7/16-20UNF

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-720	TQ508/70Y.10.10-1	Street elbow 90d fitting 7/16"-20UNF	1
2	KHT13625-721		Nut 3/4-16UNF	1
3	KHT13625-722		WasherΦ21.6×Φ17×1	1
4	KHT13625-723	GB3452.1-92	O-ring 17×2.65	1

## 7. 26 Street ell 90d fitting NPT1 1/4 (Fig 32, Table 26)

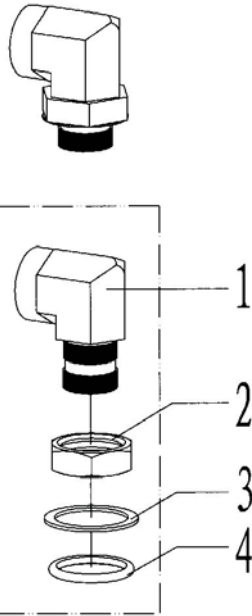


Fig 32

Table 26. Detailed table for Street ell 90d fitting NPT1 1/4

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-730	TQ508/70Y.10.2-1	Street ell 90d fitting NPT1 1/4"	1
2	KHT13625-731		Nut 1 5/16"-12UN	1
3	KHT13625-732		WasherΦ44.3×Φ30×1	1
4	KHT13625-733	GB3452.1-92	O-ring 31.5×2.65	1

## 7. 27 Street elbow long 90d fitting 1 5/16-12UN (Fig 33, Table 27)

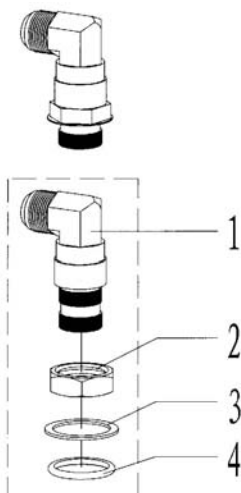


Fig 33

Table 27. Detailed table for Street elbow long 90d fitting 1 5/16-12UN

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-736	TQ508/70Y.10.6-1	Street elbow long 90d fitting 1 5/16"-12UN	1
2	KHT13625-731		Nut 1 5/16"-12UN	1
3	KHT13625-732		Washer $\Phi 44.3 \times \Phi 30 \times 1$	1
4	KHT13625-733	GB3452.1-92	O-ring 31.5 $\times$ 2.65	1

## 7. 28 Street ell 90d fitting NPT1 (Fig 34, Table 28)

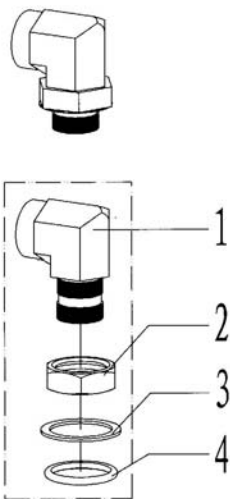


Fig 34

Table 28. Detailed table for Street ell 90d fitting NPT1

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-740	TQ508/70Y.10.7-1	Street ell 90d fitting NPT1	1
2	KHT13625-731		Nut 1 5/16" -12UN	1
3	KHT13625-732		Washer $\Phi 44.3 \times \Phi 30 \times 1$	1
4	KHT13625-733	GB3452.1-92	O-ring 31.5 $\times$ 2.65	1

## 7. 29 Street ell 90d fitting NPT1/2 (Fig 35, Table 29)

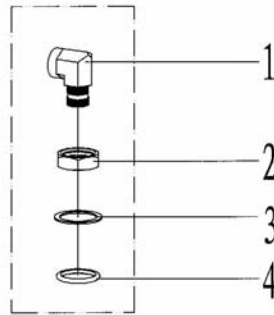


Fig 35

Table 29. Detailed table for Street ell 90d fitting NPT1/2

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-750	TQ508/70Y.10.9-1	Street ell 90d fitting NPT1/2	1
2	KHT13625-721		Nut 3/4-16UNF	1
3	KHT13625-722		WasherΦ21.6×Φ17×1	1
4	KHT13625-723	GB3452.1-92	O-ring 17×2.65	1



**8. Table of quick-wearing or spare parts(recommended for the one-year storage of one tong actual figures may vary according to the purchase period and the optional pieces)**

Item	P/N	Drawing No.	Description	Qty
1	KHT13625-04	KHT13625.1.1.2	Brake band assembly	2
2	KHT13625-15	KHT13625.1.1.5	Centralizing assembly	14
3	KHT13625-108	KHT13625.1.1.1 (1) - (12)	Jaw set assembly	Each two
4	KHT13625-120	KHT13625.1.1.1-2 (2)	Roller (2)	18
5	KHT13625-121	KHT13625.1.1.1-4	Roller shaft	18
6	KHT13625-122	KHT9625.1.1.1-2 (2)	Die2 (1/2)	200
7	KHT13625-127	KHT13625.1.1.1-2 (1)	Roller (1)	6
8	KHT13625-130	KHT13625.1.1.1-3	Die	100
9	KHT13625-132	KHT13625.1.1-5	Jaw set bolt	2
10	KHT13625-133	KHT13625.1.1-8	Reverse shaft	1
11	KHT13625-215	TQ508/70Y.3-4	Water-proof guard (1)	6
12	KHT13625-235	GB/T894.2	Retaining rings for shafts(external) 60	6
13	KHT13625-490	TQ508/70Y.9.2.3-1	Load plunger	1
14	KHT13625-501	TQ508/70Y.9.2.3	Five way valve assembly	1
15	KHT13625-571	TQ20.17-2	Adjusting ring	1
16	KHT13625-572	GB1235-76	O-ring 70×5.7	1
17	KHT13625-575	GB3452.1	O-ring 35.5×2.65	1
18	KHT13625-578	GB1235-76	O-ring 44×3.5	1
19	KHT13625-579	FD00641A0	Dustproof ring DK1 38 50 7 10	1
20	KHT13625-625	GB3452.1	O-ring 38.7×3.55	3