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MODEL: ZQ-127-25Y-5 ½ High Torque

CASING TONG

MAINTENANCE AND OPERATION MANUAL

SAFETY INSTRUCTIONS

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SAFETY INSTRUCTIONS

1. Operators should read and master the contents of this manual.
2. Operators should wear working uniforms, safety shoes, safety helmet, safety gloves, etc.
3. Operators should operate at the side of the tong body opening.
4. During the making-up or the breaking-out operations, the safety door should be closed.
5. Keep hands off the running part when the power tong are running.
6. During making-up and breaking-out operations, first operate the backup tong control valve to clamp the pipe string, then operate the hand control valve to conduct the making-up and the breaking-out operations.
7. Sundries should be kept off the operation ranges of the power tong.
8. Cut off the hydraulic source and move the power tong away from the wellhead when maintaining and replacing dies or other parts.
9. Use of the power tong under over pressure or over torque is strictly forbidden.
10. Dismounting or adding parts randomly is not allowed
11. Please purchase the original accessories from our factory.

Legend explanations in this manual:



serious warning



general warning



recommendations and suggestions



Safety first, standard operation!

Problems may occur if troubles are not rid of!

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5. Operation

Summary

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1. Summary

Model ZQ127-25Y Drill Pipe Tong is mouth-opening type power tong used for making up and breaking out $2\frac{3}{8}$ " - $3\frac{1}{2}$ " drill pipe, $-3\frac{1}{2}$ " - $4\frac{1}{2}$ " oil pipe and $-4\frac{1}{2}$ " - $5\frac{1}{2}$ " casing in the oil field well workover operation.

2. Technology Parameter

2.1 Application Range

$2\frac{3}{8}$ " - $3\frac{1}{2}$ " drill pipe, $3\frac{1}{2}$ " - $4\frac{1}{2}$ " oil pipe and $4\frac{1}{2}$ " - $5\frac{1}{2}$ " casing

2.2 Rated Oil Supply Pressure 16MPa

2.3 Rated Oil Supply Amount 120 lpm

2.4 Rated High Gear Torque 5.1 kN.m

2.5 Rated Low Gear Torque 25 kN.m

2.6 Rated Rotation Speed At High Gear 43 rpm

2.7 Rated Rotation Speed At Low Gear 8 rpm

2.8 Overall Weight 680kg

2.9 Dimension of combination tongs $1270 \times 770 \times 780$ mm

3. Installation

3.1 Lifting

Connect the lifting bucket to the lifting bar of the master tong, lift the drill pipe tong at the well servicing rig. The lifting point is supposed to be 15m above the wellhead. In the state of free suspension, the center of the tong head is 0.5m from the wellhead. The suspension height is appropriate when the backup tong clamps the drill pipe connector or the coupling of oil pipe, or casing.

3.2 Levelling

Adjust the adjusting screws on the lifting bar to keep the drill pipe level. If not, the clamping will fail to work.

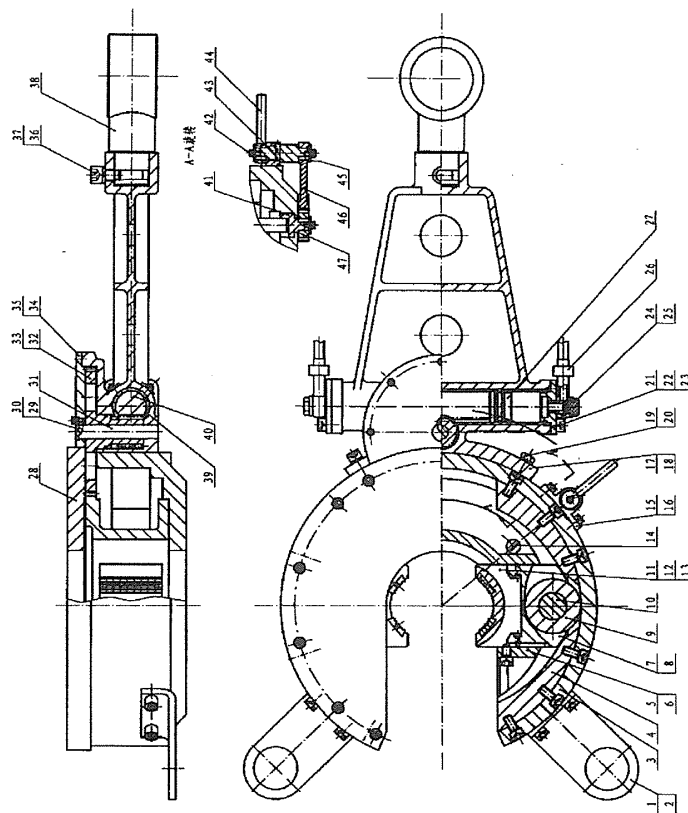
3.3 Tie The Back Guy

Tie one end of the back guy to the rig, the other end to the seat of the rear guide pole of the drill pipe tong, the back guy is supposed to be able to bear load of 50kN. When the drill pipe is in the making-up state, the back guy should be vertical to the drill pipe so that the

Attached figures and part list

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7.3 General view of backup tong and part list

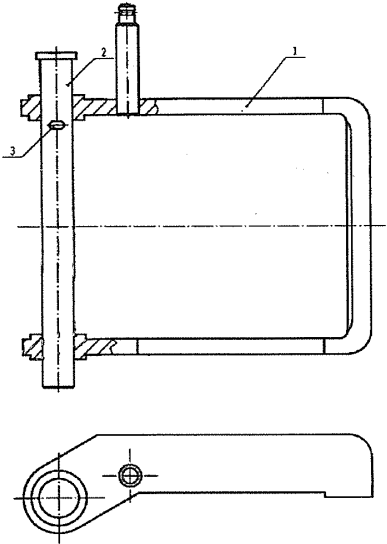


General view of backup tong

Attached figures and part list

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7.2.8 Safety door assembly view and part list



safety door assembly view

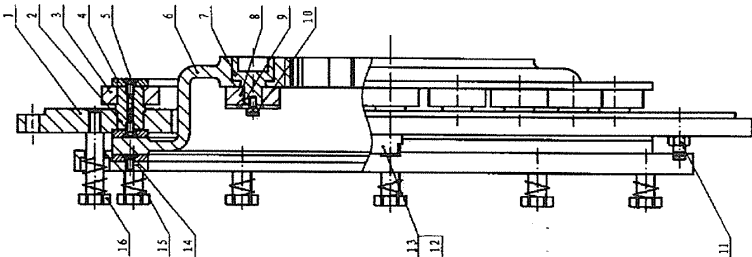
Part list table for safety door assembly

Serial No.	Part No.	Part name and specification	quantity
1	ZQ25.1.9.1	Main body of safety door	1
2	ZQ25.1.9-1	Door axle	1
3	GB91-86	Cotter pin5×35	1

Attached figures and part list

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7.2.7 Cover plate assembly view and part list



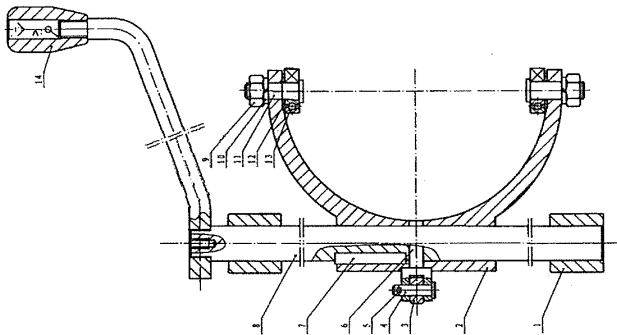
cover plate assembly view
Part list table for cover plate assembly

Serial No.	Part No.	Part name and specification	quantity
1	ZQ25.1.8-1	Tong head cover	1
2	ZQ25.1-3	Centralizing roller axle	21
3	XYQ12.Z-03	Centralizing roller	21
4	ZQ25.1.8-2	Friction disc	3
5	GB68-85	Slotted countersunk flat head screwM5 × 10	63
6	ZQ25.1.8-3	Braking disc	1
7	ZQ25.1.8-4	Knob axle	1
8	ZQ25.1.8-5	Knob	1
9	ZQ25.1.6-2	Washer	1
10	GB70-85	Hexagon socket head cap screw M6× 10	1
11	ZQ25.1.8-6	Pin axle	1
12	XYQ3C.Z.6-3 7	Rear handle	2
13	GB70-85	Hexagon socket head cap screw M10× 25	4
14	ZQ25.1.8-7	Braking plate	1
15	ZQ25.1.8-8	Braking spring	11

Attached figures and part list

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7.2.6 Gear engagement mechanism assembly view and part list



gear engagement mechanism assembly view

Part list table for gear engagement mechanism assembly

Serial No.	Part No.	Part name and specification	quantity
1	XYQ12.Z-19.01	Axle sleeve	2
2	XYQ12.Z-19.02	Fork	1
3	XYQ3C.Z.6-3	Roller	1
4	XYQ3C.Z.6-4	Roller axle	1
5	GB91-86	Cotter pin2×10	1
6	XYQ3C.Z.6-5	Roller support seat	1
7	GB1096-79	Plain key6×6×40	1
8	ZQ25.1.6-1	Fork axle	1
9	GB6170-86	Nut M10	2
10	GB93-87	Washer 10	2
11	XYQ12.Z-19.04	Bolt axle	2
12	GB848-85	Washer 10	2
13	GB276-89	Deep groove ball bearing 100	2
14	ZQ25.1.6.1	Control handle assembly	1

Attached figures and part list

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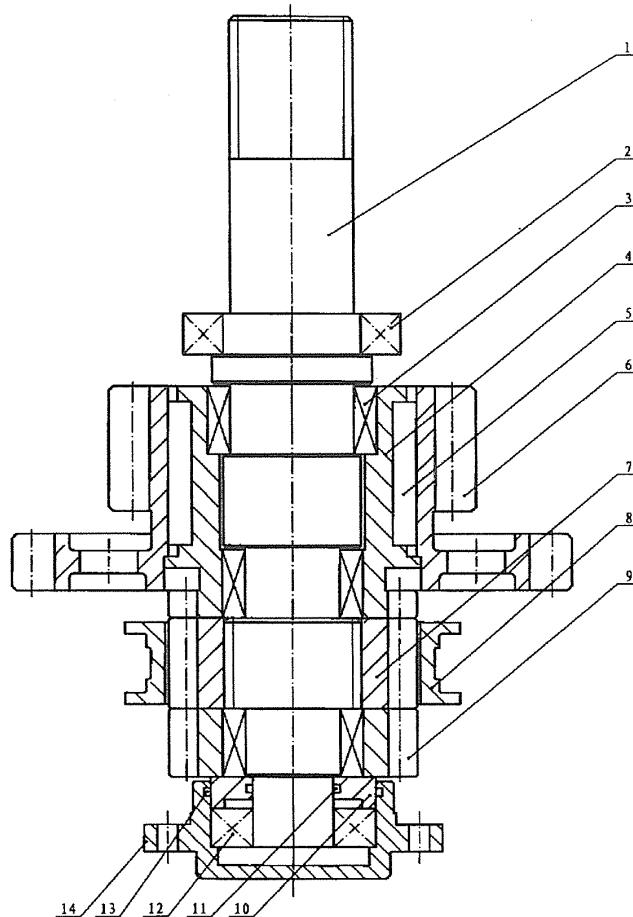
Part list table for power input axle assembly

Serial No.	Part No.	Part name and specification	quantity
1	ZQ25.1.5-1	Power input axle	1
2	GB276-89	Deep groove ball bearing112	1
3		Roller $\Phi 10 \times 30$	68
4	ZQ25.1.5-2	Clutch gear	1
5	GB1567-79	Thin plain key $28 \times 10 \times 63$	4
6	ZQ25.1.5-3	Duplex gear(2)	1
7	ZQ25.1.5-4	Inner splined gear	1
8	ZQ25.1.5-5	Inner gear sleeve	1
9	ZQ25.1.5-6	Engagement gear	1
10	ZQ25.1.5-7	Sealing ring (2)	1
11	GB1235-76	O-ring 40×3.1	1
12	GB276-89	Deep groove ball bearing207	1

Attached figures and part list

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7.2.5 Power input axle assembly view and part list



power input axle assembly view

Attached figures and part list

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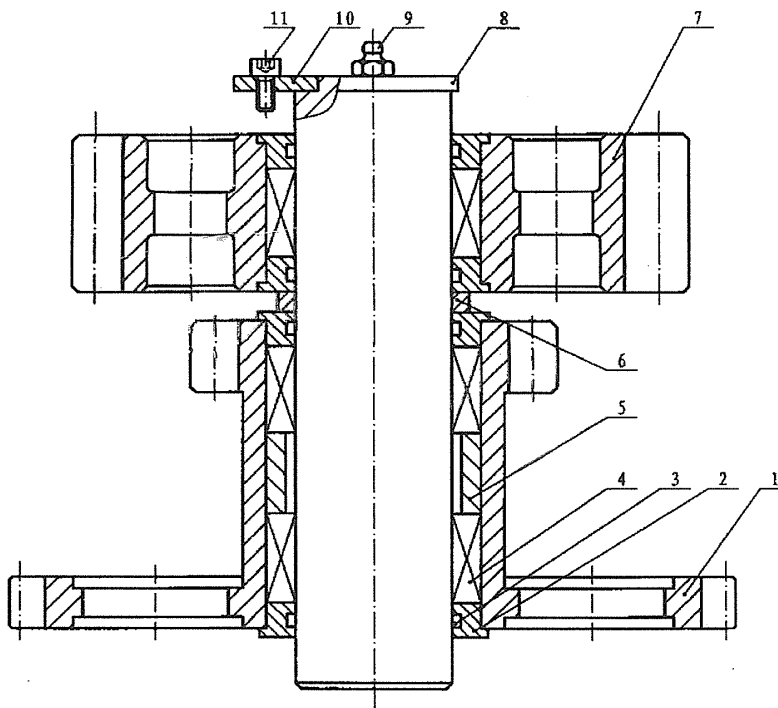
Part list table for duplex axle assembly

Serial No.	Part No.	Part name and specification	quantity
1	ZQ25.1.4-1	Duplex gear(1)	1
2	ZQ25.1.3-2	Sealing ring(1)	4
3	GB1235-76	O-ring63×5.7	4
4		RollerΦ10×30	60
5	ZQ25.1.4-2	Axle sleeve(2)	1

Attached figures and part list

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7.2.4 Duplex axle assembly view and part list

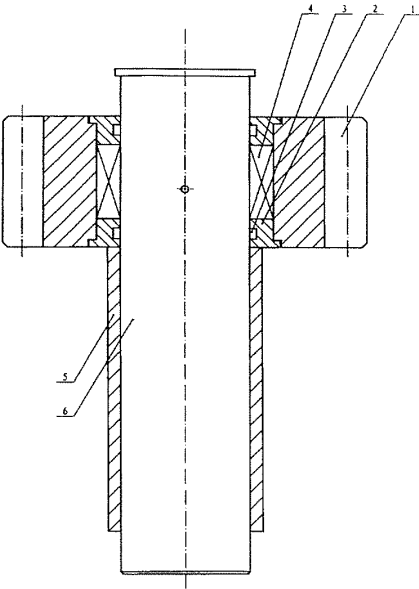


duplex axle assembly view

Attached figures and part list

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7.2.3 Idle gear axle assembly view and part list



Idle gear axle assembly

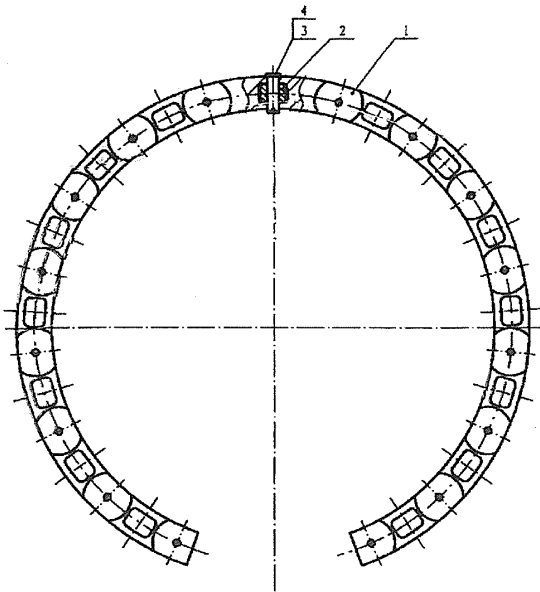
Part list table for idle gear axle assembly

Serial No.	Part No.	Part name and specification	quantity
1	ZQ25.1.3-1	Idle gear (1)	2
2	ZQ25.1.3-2	Sealing ring (1)	4
3	GB1235-76	O-ring63×5.7	4
4		RollerΦ10×30	40
5	ZQ25.1.3-3	Axle sleeve(1)	2

Common Troubles And Troubles Shooting Guide

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7.2.2 Roller support seat assembly view and part list



roller sunnort seat assembly view

Part list table for roller support seat assembly

Serial No.	Part No.	Part name and specification	quantity
1	ZQ25.1.2-1	Roller support frame	1
2	XYQ12.Z-48	Roller	16
3	XYQ12.Z-49	Pin axle	16
4	GB91-86	Cotter pin 3×20	16

Attached figures and part list

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Part list table for tong head assembly

Serial No.	Part No.	Part name and specification	quantity
1	ZQ25.1.1-1	Main body	1
2	ZQ25.1.1-2	Ramp plate	4
3	GB70-85	Hexagon socket head cap screw M12× 25	12
4	ZQ25.1.1-3	Jaw plate frame	1
5	ZQ25.1.1-4	Jaw plate	2
6	GB119-86	Cylindrical pin 6×18	4
7	ZQ25.1.1-5	Roller	2
8	ZQ25.1.1-6	Roller axle	2
9	GB71-85	Slotted cone point fastening screw M8 ×10	4
10	ZQ25.1.1-7(1-5)	Die seat(1-5)	2 each
11	XYQ12.Z-01.12 (2-3)	Die(2-3)	4 each
12	XYQ12.Z-01.11	Screw stopper pin	20
13	XYQ12.Z.1-62	Positioning screw	2
14	ZQ25.1.1-8	Opening gear	1
15	ZQ25.1.1-9	Stopper pin	1
16	GB70-85	Hexagon socket head cap screw M12× 30	30

Attached figures and part list

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Part list table for tong head assembly

Serial No.	Part No.	Part name and specification	quantity
1	ZQ25.1.1-1	Main body	1
2	ZQ25.1.1-2	Ramp plate	4
3	GB70-85	Hexagon socket head cap screw M12× 25	12
4	ZQ25.1.1-3	Jaw plate frame	1
5	ZQ25.1.1-4	Jaw plate	2
6	GB119-86	Cylindrical pin 6×18	4
7	ZQ25.1.1-5	Roller	2
8	ZQ25.1.1-6	Roller axle	2
9	GB71-85	Slotted cone point fastening screw M8 ×10	4
10	ZQ25.1.1-7(1-5)	Die seat(1-5)	2 each
11	XYQ12 Z-01.12 (2-3)	Die(2-3)	4 each
12	XYQ12 Z-01.11	Screw stopper pin	20
13	XYQ12 Z.1-62	Positioning screw	2
14	ZQ25.1.1-8	Opening gear	1
15	ZQ25.1.1-9	Stopper pin	1
16	GB70-85	Hexagon socket head cap screw M12× 30	30

Attached figures and part list

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Serial No.	Part No.	Part No and specification	quantity
42		0-25Mpa pressure meter	1
43	GB871-88	Small round nutM14×1.5	1
44	SHYF.OA	Hand control overflow combination valve	1
45	ZQ25.1-11	Transitional connection board(1)	1
46	GB1235-76	O-ring 22×2.4	2
47	GB1235-76	O-ring 30×3.1	3
48	GB1235-76	O-ring 54×3.5	1
49	GB70-85	Hexagon socket head cap screw M12×45	4
50	ZQ25.1-10	Transitional connection board(2)	1
51	GMG-630/25	Hydraulic motor	1
52	ZQ25.1-11	Oil drain joint	1
53	ZQ25.1-12	Oil passage bolt	1
54	ZQ25.1.10	Oil drain hose	1
55	GB70-85	Hexagon socket head cap screw M12×35	4
56	ZQ25.1-13	Lifting seat	2
57	GB70-85	Hexagon socket head screw M10×25	29
58	ZQ25.1.7	Lifting bar	1
59	ZQ25.1-16	Lifting pin axle	2
60	GB91-86	Cotter pin4×30	2
61	GB70-85	Hexagon socket head cap screw M12×100	2
62	ZQ25.1.8	Cover plate assembly	1
63		Tension spring(Φ17×95)	1
64	ZQ25.1.9	Safety door assembly	1

Attached figures and part list

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Serial No.	Part No.	Part No and specification	quantity
21	GB91-86	Cotter pin 5×35	1
22	ZQ25.1-5	Motor connecting seat	1
23	GB1152-89	straight-way type forced filling oil cup M10×1	1
24	GB70-85	Hexagon socket head cap screw M8×25	6
25	ZQ25.1-6	Backing Plate	1
26	ZQ25.1-7	Oil inlet joint	1
27	GB3452.1-92	O-ring 28×2.65	2
28	ZQ25.1-17	Connection board	1
29	ZQ25.1-18	Oil passage bolt	1
30	ZQ25.1-8	Oil outlet joint	1
31	GB3452.1-92	O-ring 25×2.65	3
32	GB70-85	Hexagon socket head cap screw M12×175	4
33	GB93-87	Standard elastic washer12	4
34	SSJF.OA	Hand control lifting valve	1
35	GB3452.1-92	O-ring 35.5×3.55	1
36	GB3452.1-92	O-ring 19×2.65	1
37	BQF.OA	Backup tong control valve	1
38	GB3452.1-92	O-ring 30×2.65	1
39	GB3452.1-92	O-ring 19×2.65	1
40	GB3452.1-92	O-ring17×2.65	1
41	GB3452.1-92	O-ring6.9×2.65	1

Attached figures and part list

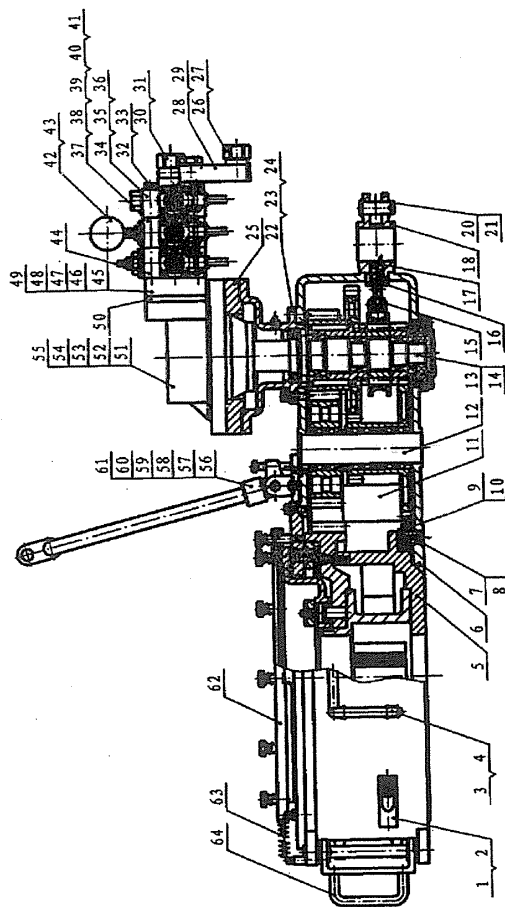
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Part list table for master tong

Serial No.	Part No.	Part No and specification	quantity
1	ZQ25.1-1	Front support seat	2
2	GB70-85	Hexagon socket head cap screw M12×25	4
3	XYQ3C.Z.3	Front handle(RH)	1
4	XYQ3C.Z.4	Front handle(LH)	1
5	ZQ25.1.1	Tong head assembly	1
6	ZQ25.1-2	Tong body	1
7	ZQ25.1-3	Centralizing roller axle	16
8	ZYQ12.Z.1. -03	Centralizing roller	16
9	ZQ25.1.2	Assembly of roller support frame	1
10	GB68-85	Slotted countersunk flat head screw M5×10	16
11	ZQ25.1.3	Idle gear assembly	2
12	ZQ25.1.4	Duplex axle assembly	1
13	ZQ25.1.5	Assembly of force input axle	1
14	GB70-85	Hexagon socket head cap screw M8×25	6
15	ZQ25.1.6	Assembly of gear engagement mechanism	1
16	XYQ12.Z.1-2 1	locating piece	1
17	XYQ3C.Z-21	spring	1
18	ZQ25.1-4	Back guide pole seat	1
19	GB1096-79	Plain key 12×40	2
20	XYQ12.Z.1-6 2	Back guy pin	1

Attached figures and part list

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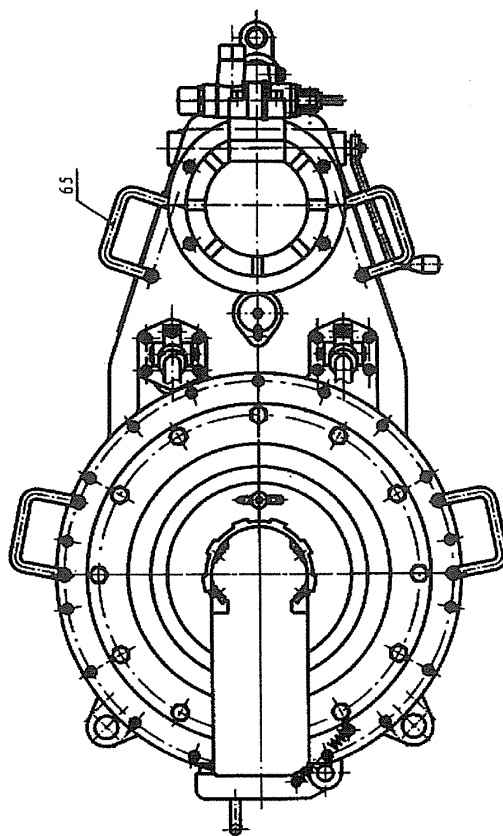


general view of master tong

Attached figures and part list

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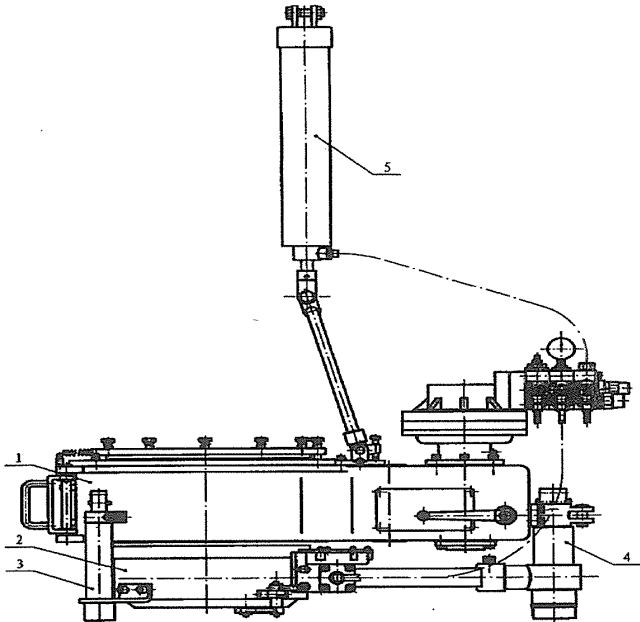
7.2 General view of master tong and part list



general view of master tong

7. Attached figures and part list

7.1 General view and part list



General View

Part list table for Model ZQ127-25Y Drill Pipe Tong

Serial No.	Part No.	Part name and specification	Quantity
1	ZQ25.1	Master tong	1
2	ZQ25.2	Backup tong	1
3	ZQ25.3	Front guide pole assembly	2
4	ZQ25.4	Back guide pole assembly	1
5	XYQ12.YD-01.0	Hydraulic bucket	1

Common troubles and trouble shooting

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6 Common troubles and trouble shooting

Common troubles	reasons	Trouble shooting
	Die groove full of hard objects	Clean up sundries in the groove

Maintenance and lubrication

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Choose dies according to the steel marks and part numbers

4.2 In making-up operation, the pin axle of the guide pole must be moved to the lowest hole.

4. Maintenance and lubrication

5.1 Before work, the fastening screws must be checked to see whether they are loose if loose, the screws must be tightened.

5.2 Before work, enough lubricating grease should be added to each transmitting part.

5.3 After each use, the tong body must be checked to clean up water or oil stain in time.

5.5 After each well operation is over, the tong must be cleaned with diesel-fuel, and lubricating grease must be added to each transmitting part after cleaning.

5.6 The temperature of the hydraulic should be kept below 65°C, overheating may lead to the failure of the hydraulic system sealing.

5.7 The hydraulic oil must be kept clean to guarantee the normal filtering of the oil filter. If the oil is dirty, it should be replaced in time.

5.8 The choice of hydraulic oil:

5.8.1 YC-N46 low freezing hydraulic oil, suitable ambient temperature: $-20^{\circ}\text{C} \sim +40^{\circ}\text{C}$;

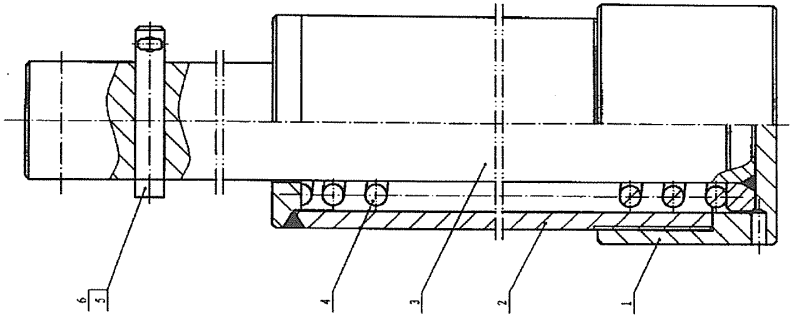
5.8.2 YB-N46 antiwear hydraulic oil, suitable ambient temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$;

5.8.3 YA-N46 ordinary hydraulic oil, suitable ambient temperature: $0^{\circ}\text{C} \sim +40^{\circ}\text{C}$;

Attached figures and part list

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7.4 General view of front guide pole and part list



general view of front guide pole

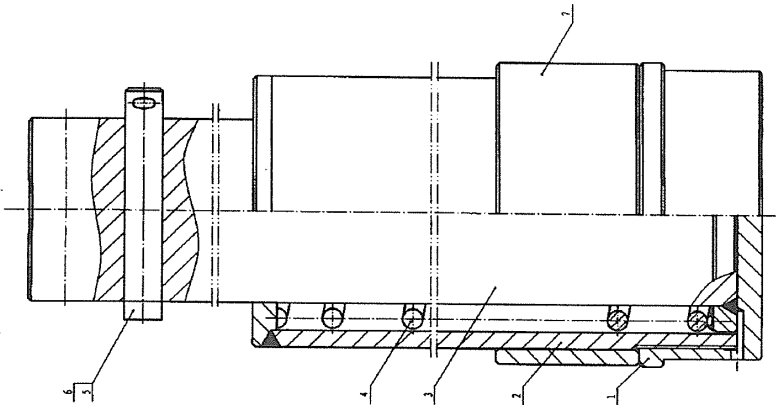
Part list table for front guide pole

Serial No.	Part No.	Part name and specification	quantity
1	XYQ12.QD-01	Front guide pole seat	2
2	ZQ25.3.1	Outer barrel of front guide pole	2
3	ZQ25.3-1	Front guide pole	2
4	XYQ12.QD-04	Front guide pole spring	2
5	XYQ12.QD-05	Pin axle	2
6	GB91-86	Cotter pin2.5×20	2

Attached figures and part list

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7.5 General view of rear guide pole and part list



general view of rear guide pole

Part list table for rear guide pole

Serial No.	Part No.	Part name and specification	quantity
1	XYQ12.HD-01	Rear guide pole seat	1
2	ZQ25.4.1	Outer barrel of rear guide pole	1
3	ZQ25.4-1	Rear guide pole	1
4	XYQ12.HD-06A	Rear guide pole spring	1
5	XYQ12.HD-05	Pin axle	1
6	GB91-86	Cotter pin3.2×20	1
7	ZQ25.4-2	Sleeve	

Attached figures and part list**特 达[®]**

Serial No.	Part No.	Part name and specification	quantity
24	GB1235-76	O-ring 22×2.4	4
25	XYQ3C.B-21(1)	Oil passage bolt (1)	2
26	JB/ZQ4427-86	Hose connector10 ll -1400	2
27	ZQ25.2-9	Piston	2
28	ZQ25.2-10	Cover plate	1
29	XYQ3C.Z-5	spacer	1
30	GB70-85	Hexagon socket head cap screw M6×10	4
31	ZQ25.2-11	Axle(1)	1
32	ZQ25.2-12	Duplex gear	1
33	GB1235-76	O-ring50×3.1	1
34	ZQ25.2-13	Gear cover	1
35	GB70-85	Hexagon socket head cap screw M6×20	5
36	GB93-87	Standard elastic washer 16	1
37	ZQ25.2-14	Positioning screw	1
38	ZQ25.2-15	Tail seat	1
39	ZQ25.2-16	Cylinder sleeve	1
40	ZQ25.2-17	Rack plunger	1
41	ZQ25.1.8-5	Knob axle	1
42	ZQ25.1.8-7	Washer	1
43	ZQ25.2-18	Axle(2)	1
44	ZQ25.2-19	Handle	1
45	GB70-85	General flat key C5×5×14	3
46	ZQ25.2-20	Gear(1)	1

Attached figures and part list**特 达®****Part list table for backup tong**

Serial No.	Part No.	Part name and specification	quantity
1	ZQ25.2-1	Front support seat	2
2	GB70-85	Hexagon socket head cap screw M12×25	34
3	ZQ25.2-2	Main body	1
4	ZQ25.2-3	Ramp plate	4
5	ZQ25.2-4	Jaw plate frame	1
6	XYQ12.B-10	Positioning screw	2
7	ZQ25.1.1-4	Jaw plate	2
8	GB119-86	Cylindrical pin 6×18	4
9	ZQ25.1.1-5	Roller	2
10	ZQ25.1.1-6	Roller axle	2
11	ZQ25.1.1-7	Die seat(1, 2, 4,6)	2 each
12	XYQ12.Z-01.12	Die (2-3)	4 each
13	XYQ12.Z-01.11	Screw bumper pin ...	24
14	ZQ25.2-5	Bumper pin ...	1
15	ZQ25.2-6	Support seat	1
16	GB70-85	Hexagon socket head cap screw M8×20	2
17	ZQ25.2-7	Tail handle	1
18	GB1096-79	General flat key	1
19	GB93-87	Standard elastic washer16	4
20	GB5781-86	Hexagon bolt M16×40	4
21	ZQ25.2-8	Cylinder cover	2
22	GB1235-76	O-ring45×3.1	4
23		O-ring retainer45	4