



AXT Series

Drive Hydraulic Torque Wrench

Operation & Maintenance Manual



Pingyuan Jingke Hydraulic Co., Ltd.

Catalogue

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Operation & Maintenance Manual of Hydraulic Torque Wrench

This operating manual includes operating procedures, warnings and precautions, and troubleshooting of the AXT series hydraulic torque wrench. Before use, please read this manual carefully, thoroughly understand its content and keep it properly. This manual is only for the end user's reference.

I. Acceptance notice (unpacking inspection)

Check carefully whether there is any damage to the appearance of the product and whether there is any transportation damage. Transportation damage is not covered by the warranty. If it is found to be damaged due to cargo transportation, it should be reported to the freight forwarder in time. The freight forwarder shall pay for all repair and replacement costs caused by transportation damage.

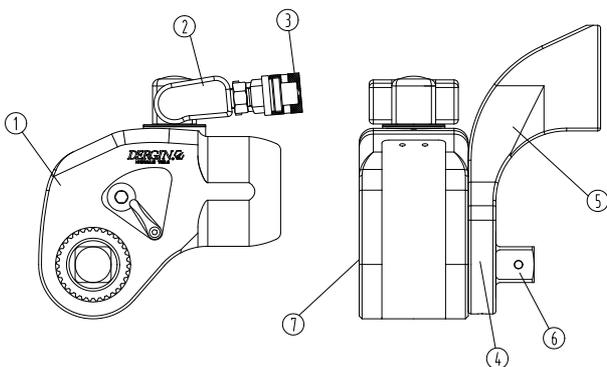
Safety first

Hydraulic torque wrench is a power tool. Read all instructions, warnings and precautions carefully before use, and follow safety measures to avoid personal or equipment damage when operating the equipment! We are not responsible for damage caused by unsafe operation and wrong operation.

II. Product description

The AXT hydraulic torque wrench is made of aluminum-titanium alloy and ultra-high-strength alloy materials. It is manually controlled and has a double-acting hydraulic design, which can tighten and loosen bolt connections. It is widely used for the dis-assembly of high torque bolts. The torque is accurately adjustable, and the error does not exceed $\pm 3\%$.

AXT Hydraulic Torque Wrench:



No.	Item
①	Wrench body-360° adjustable
②	360° × 180° rotary joint
③	Quick connector
④	360° fine-tuning reaction arm
⑤	Reaction arm
⑥	Square drive shaft
⑦	Drive shaft locker
⑧	Quick release trigger

III. Warning

 Warning: To avoid personal injury and possible equipment damage, ensure that each hydraulic component can withstand a working pressure of 700bar.

 Warning: Do not exceed the rated load of the equipment

Minimize the risk of overloading; use a pressure gauge in the system to display the operating load. The pressure gauge is a window of what happens in the system.

Do not exceed the maximum allowable torque when using a hydraulic wrench.

 Warning: Try to replace worn-out parts with original Jingke parts

 Note: Avoid damage to hydraulic tubing

Avoid serious bending and entanglement of hydraulic tubing during use. The use of bent or wound tubing will produce excessive back pressure. Severe bending and entanglement will damage the inside of the tubing and cause it to be scrapped prematurely.

Do not drop or press heavy objects on the oil pipe. Severe impact can cause damage to the metal wires inside the tubing, and the damaged tubing may rupture when pressurized.

Do not use hydraulic tubing to pull or lift other hydraulic components (such as pumps, hydraulic wrenches, valves, etc.).

 Warning: In order to avoid damage to the equipment and personal injury, do not remove the protective plate on the wrench, do not modify the wrench and accessories, and do not change the safety valve on the rotary joint.

 Note: Incorrect connection will cause malfunction and danger. Keep the quick connector clean before connecting, and screw on the dust cap after use

 Note: Do not use worn-out sockets and plugs. Do not use metric sockets to twist inch nuts and bolts, and vice versa.

 Warning: Use Jingke original high-performance sockets.

 Warning: Fasten the drive head of the socket with a pin to prevent the socket from falling off.

IV. Recommendation table of bolt pre-tightening force

Table (1)

Strength grade		4.8		6.8		8.8		10.9		12.9	
Minimum breaking strength		400MPa		600MPa		800MPa		1000MPa		1200MPa	
Material		General structural steel		Steel for mechanical structure		Chrome Molybdenum Alloy Steel		Nickel-chromium-molybdenum alloy steel		Nickel-chromium-molybdenum alloy steel	
Bolt	Nut opposite side	Torque value		Torque value		Torque value		Torque value		Torque value	
M	S	KGM	NM	KGM	NM	KGM	NM	KGM	NM	KGM	NM
16	24	9	87	13	131	18	174	25	245	30	294
18	27	13	128	20	192	26	256	37	360	44	432
20	30	17	170	26	256	35	341	49	479	59	575
22	34	24	232	36	348	47	465	69	653	80	784
24	36	30	294	45	442	60	589	84	828	101	994
27	41	44	432	66	647	88	863	124	1214	149	1457
30	46	60	585	89	877	119	1171	168	1646	201	1975
33	50	81	796	122	1195	162	1593	228	2240	274	2688
36	55	104	1023	157	1535	209	2046	294	2878	352	3453
39	60	135	1324	203	1986	270	2649	380	3725	456	4469
42	65	167	1638	251	2457	334	3277	470	4608	564	5529
45	70	209	2045	313	3068	417	4090	587	5752	704	6903
48	75	251	2461	376	3691	502	4921	706	6921	847	8305
52	80	325	3181	487	4771	649	6362	913	8946	1095	10736
56	85	404	3956	605	5934	807	7912	1135	11127	1362	13352
60	90	504	4932	755	7398	1006	9864	1415	13871	1698	16645
64	95	608	5960	912	8940	1216	11920	1710	16762	2052	20115
68	100	738	7230	1107	10845	1475	14460	2075	20335	2450	24401
72	105	885	8669	1327	13003	1769	17337	2488	24381	2985	29257
76	110	1050	10287	1574	15430	2099	20573	2952	28931		34717
80	115	1234	12094	1851	18141	2468	24188	3471	34014		40815
85	120	1493	14636	2240	21953	2987	29271		41163		49395
90	130	1787	17510	2680	26266	3573	35021		49248		59098
100	145	2484	24341	3726	36512		48683		68460		82152
110	155	3342	32751		49126		65501		92111		110533
120	175	4378	42902		64354		85805		120663		144795
125	180		48683		73024		97366		136920		164304

Note: The values in the table are measured when the bolt reaches 60% of the yield limit.

The recommended tightening torque is: the value in the table × (70-80)%

For example: M52, 8.8 grade bolt, the tightening torque is 6362 × (70-80)% = 4453-5090 N.m

The loosening torque is 1.5-2 times the tightening torque

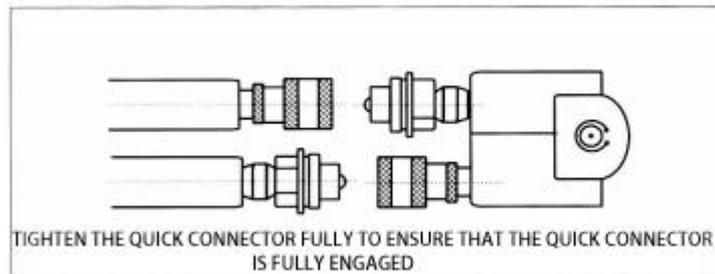
For example: in the above example, the tightening torque is 4453 N.m, then the loosening torque is 4453 × 2 = 8906 N.m

V. Operation and Use

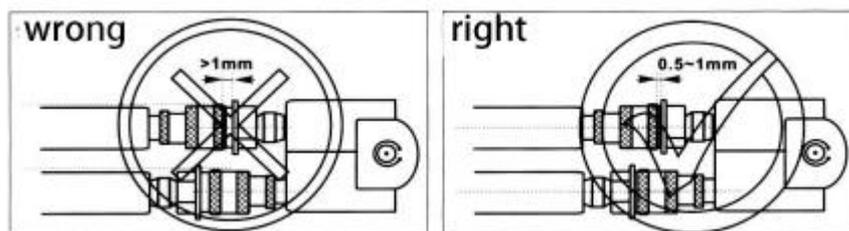
Connect: The wrench and the hydraulic pump are connected by the compound oil pipe woven with steel wire with working pressure of 700bar.

The bottom end of each oil pipe has a female connector and a male connector to ensure the correct connection between the pump and the wrench.

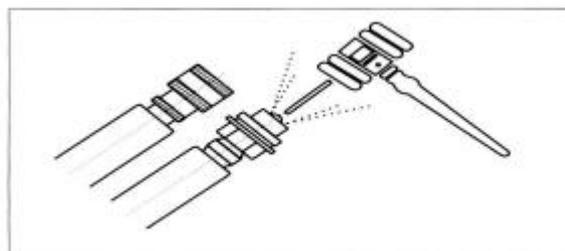
Do not change any bolts on the rotary joint at will. This is set by the manufacturer for safety. Only those who have received professional training can adjust.



When the quick connectors are interconnected, the distance between the gaps after engagement must be $< 1\text{mm}$ (Figure 4). Only in this way can the one-way valve in the connector be opened to make the oil path unblocked. Otherwise, after the connection, the steel ball in the joint does not match up, and the one-way valve in the joint cannot be opened and the oil circuit is blocked. Then the joint will be full of pressure, and the wrench will not work and the oil will be discharged from the automatic drain port on the wrench rotating body, etc.



At this time, you need to disassemble all the hose joints, check all the steel balls in the quick joints, including the wrench joints, and check whether the steel balls can be pressed with your hands and are flexible. If you can't press it, you need to find a hammer to hit the steel ball in the joint (Figure 5) to release the pressure in the joint (please note that hydraulic oil will spray out when you hit the steel ball. Although it is not dangerous, it will stain your Clothes!) until the steel ball in the joint can be pressed by hand. Then reconnect again.



AXT Series

Changing over of the drive

Press the round button in the middle of the locker (Figure 6), and gently pull the drive shaft to release the engagement between the drive shaft and the locker, and then the drive shaft can be pulled out.

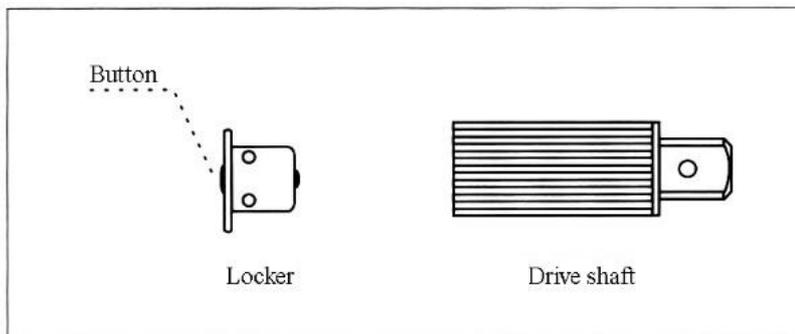
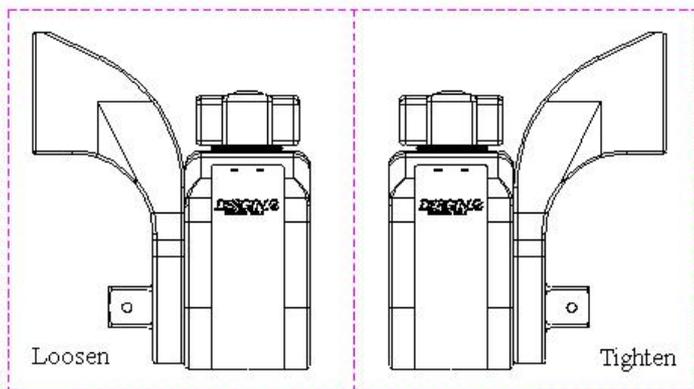


Figure (6)

Put the drive shaft into the wrench, determine the direction (Figure 7), make it fully mesh with the spline sleeve, then rotate the drive shaft to mesh with the spline sleeve and the ratchet groove, and drive the drive shaft to rotate through the ratchet.



Left-Loosen

Right-Tighten

Figure (7)

Preparation

Determine whether to loosen or tighten the nut.

Press down the drive shaft locker; take out the square drive shaft and reaction arm; perform left-right reversal according to the diagram, and install the drive shaft locker;

If the wrench body interferes with the equipment, the wrench body can be adjusted 360° to adjust it to a suitable position. Refer to the diagram (7) for the direction of the square shaft when the lock is removed.

Connect pump station

Connect the high-pressure outlet (H or A) of the pump with the high-pressure outlet (H or A) of the hydraulic wrench, and connect the low-pressure outlet (B or R) of the pump with the low-pressure outlet (B or R) of the hydraulic wrench with high-pressure tubing respectively. When connecting, the quick connector on the oil pipe should be inserted to the end, and then tighten the fixing nut by hand.

Check carefully whether the oil pipe joints are connected reliably and whether there is oil in the pump.

Plug the power plug of the pump into the power source.

Warning Operation without oil is strictly prohibited!

Commissioning

Place the wrench on the open floor.

Turn on the power switch of the pump, start the pump, and check whether the pump is running normally.

Press any button on the wire control switch, and the square shaft starts to rotate at this time. When you hear a "click", the reset trigger jumps down, the wrench stops rotating when it is in place, and the pressure gauge rises from "0" to the set pressure. Release the button and the wrench will return automatically;

When a "click" is heard again, the wrench will automatically return to its position, and the pressure gauge will rise rapidly from "0" to 7.5Mpa. Press the button again, at this time the wrench turns, and a new cycle begins. Repeat several times, let the wrench run idly several times, and observe the direction of the wrench to determine whether to put the wrench on the socket.

Note: When the wrench is not in use, turn off the power of the oil pump immediately!

Operating

Adjust pressure

Press the line control switch button with one hand. When you hear a "click" of the wrench, the reset trigger jumps down, the wrench stops rotating when the wrench is in place, and the pressure gauge rises rapidly from "0", and adjusts the oil pump pressure regulating valve with the other hand to adjust the pressure gauge pointer to the required pressure.

Loosening

Adjust the pumping station pressure to the highest, confirm the rotating direction of the wrench. After confirming the direction is to loosen, put the wrench on the nut, find the reaction fulcrum, hold it firmly, and repeat the third action in the Commissioning until the nut is removed.

Tightening

1. Torque setting

First, the torque can be set according to the design requirements; if there is no design torque, it is recommended to set the torque according to the data in the bolt pre-tightening force recommendation table.

The specific method is: set torque = (value in the table) × (70%-80%)

For example: 8.8 grade, M48 is a bolt, the recommended pre-tightening force in the table is 4921N.m, then the set torque is: $4921 \times 75\% = 3691\text{N.m}$.

2. Pump station pressure setting

Set the pumping station pressure according to the required torque value and the type of wrench used.

For example, the bolt setting torque of the above 8.8 level and M48 is 3691N.m, and select the 3AXT wrench. From the table, you can check that when the 3AXT corresponds to the 3691N.m torque, the pump station pressure is 64Mpa, so the pump station pressure should be set to 64Mpa.

3. Make sure that the direction of the wrench is in the tightening direction, and place the wrench on the nut and repeat the actions of the third item in the Commissioning until the nut does not move.

When the wrench is stuck tightly during use:

In operation, after the bolts are tightened, if the wrench cannot be removed, do not hit it with a hammer; instead, press and hold the wire control switch (button), then press and hold the quick release lever(Figure 12) and at this time release the button, the wrench will be automatically released. Remove the wrench then.

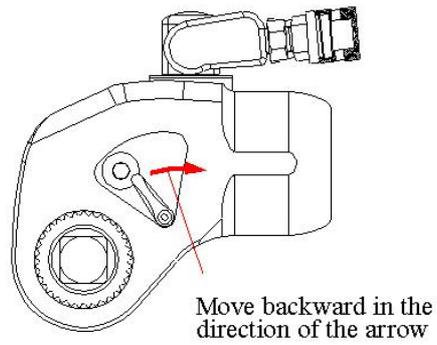
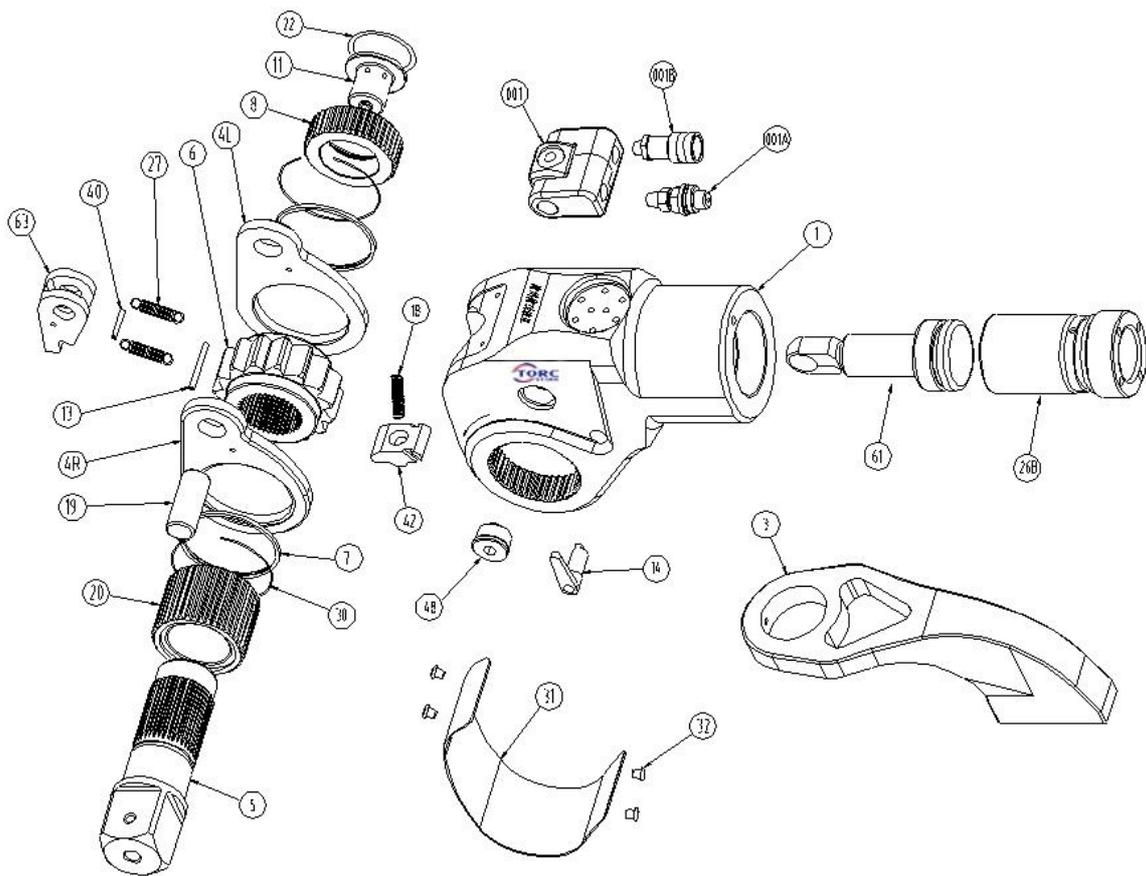


Figure (8)

VI. AXT Hydraulic Torque Wrench: Pressure-torque comparison table

Model	1AXT	3AXT	5AXT	8AXT	10AXT	15AXT
Pressure MPa	Torque Nm					
7	179	406	733	1003	1513	1904
8	204	464	837	1147	1730	2176
9	230	522	942	1290	1946	2448
10	255	580	1046	1433	2162	2720
11	281	638	1151	1577	2378	2992
12	307	696	1256	1720	2594	3264
13	332	754	1360	1863	2810	3536
14	358	812	1465	2007	3027	3808
15	383	870	1570	2150	3243	4080
16	409	928	1674	2293	3459	4352
17	434	986	1779	2437	3675	4624
18	460	1044	1884	2580	3891	4896
19	485	1103	1988	2723	4108	5168
20	511	1161	2093	2867	4324	5440
21	537	1219	2198	3010	4540	5712
22	562	1277	2302	3153	4756	5984
23	588	1335	2407	3297	4972	6256
24	613	1393	2512	3440	5189	6528
25	639	1451	2616	3583	5405	6800
26	664	1509	2721	3727	5621	7073
27	690	1567	2825	3870	5837	7345
28	715	1625	2930	4013	6053	7617
29	741	1683	3035	4157	6269	7889
30	766	1741	3139	4300	6486	8161
31	792	1799	3244	4443	6702	8433
32	818	1857	3349	4587	6918	8705
33	843	1915	3453	4730	7134	8977
34	869	1973	3558	4873	7350	9249
35	894	2031	3663	5017	7567	9521
36	920	2089	3767	5160	7783	9793
37	945	2147	3872	5303	7999	10065
38	971	2205	3977	5447	8215	10337
39	996	2263	4081	5590	8431	10609
40	1022	2321	4186	5733	8648	10881
41	1048	2379	4291	5877	8864	11153
42	1073	2437	4395	6020	9080	11425
43	1099	2495	4500	6163	9296	11697
44	1124	2553	4604	6307	9512	11969
45	1150	2611	4709	6450	9729	12241
46	1175	2669	4814	6593	9945	12513
47	1201	2727	4918	6737	10161	12785
48	1226	2785	5023	6880	10377	13057
49	1252	2843	5128	7023	10593	13329
50	1277	2901	5232	7167	10809	13601
51	1303	2959	5337	7310	11026	13873
52	1329	3017	5442	7453	11242	14145
53	1354	3075	5546	7597	11458	14417
54	1380	3133	5651	7740	11674	14689
55	1405	3192	5756	7883	11890	14961
56	1431	3250	5860	8027	12107	15233
57	1456	3308	5965	8170	12323	15505
58	1482	3366	6070	8313	12539	15777
59	1507	3424	6174	8457	12755	16049
60	1533	3482	6279	8600	12971	16321
61	1558	3540	6383	8743	13188	16593
62	1584	3598	6488	8887	13404	16865
63	1610	3656	6593	9030	13620	17137
64	1635	3714	6697	9173	13836	17409
65	1661	3772	6802	9317	14052	17681
66	1686	3830	6907	9460	14268	17953
67	1712	3888	7011	9603	14485	18225
68	1737	3946	7116	9747	14701	18497
69	1763	4004	7221	9890	14917	18769
70	1788	4062	7325	10033	15133	19041

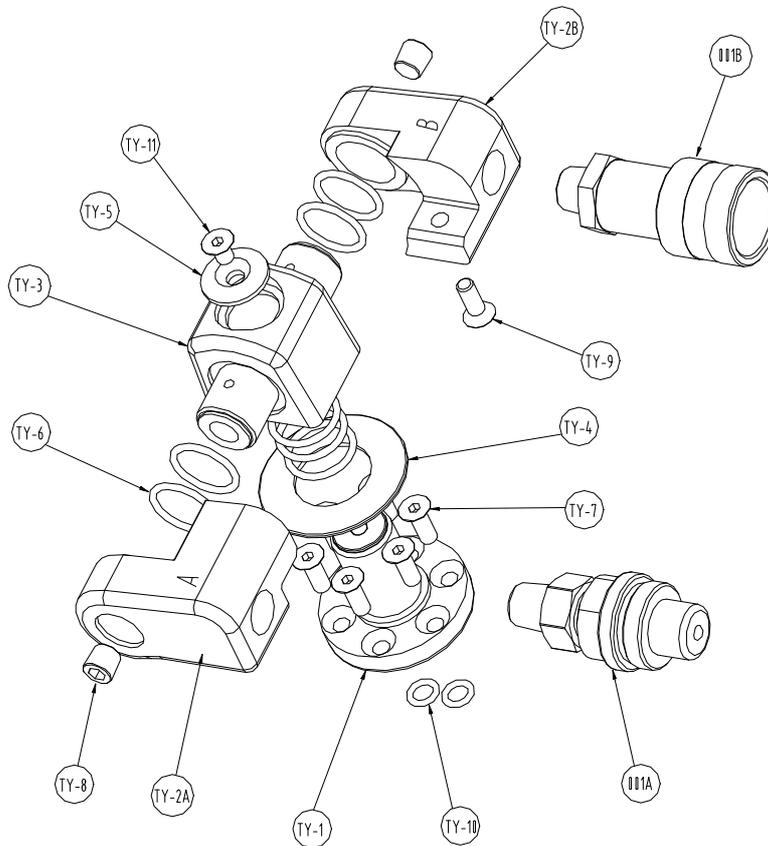
VII. AXT Exploded Diagram



AXT - details

No.	Item	Qty.	Wrench Model					
			1AXT	3AXT	5AXT	8AXT	10AXT	15AXT
1	Shell	1	1AXT-1	3AXT-1	5AXT-1	8AXT-1	10AXT-1	15AXT-1
3	Reaction Arm	1	1AXT-3	3AXT-3	5AXT-3	8AXT-3	10AXT-3	15AXT-3
4R	Baffle -Right	1	1AXT-4R	3AXT-4R	5AXT-4R	8AXT-4R	10AXT-4R	15AXT-4R
4L	Baffle -left	1	1AXT-4L	3AXT-4L	5AXT-4L	8AXT-4L	10AXT-4L	15AXT-4L
5	Actuating shaft	1	1AXT-5	3AXT-5	5AXT-5	8AXT-5	10AXT-5	15AXT-5
6	ratchet Wheel	1	1AXT-6	3AXT-6	5AXT-6	8AXT-6	10AXT-6	15AXT-6
7	Lathedog	2	1AXT-7	3AXT-7	5AXT-7	8AXT-7	10AXT-7	15AXT-7
8	Spline housing	1	1AXT-8	3AXT-8	5AXT-8	8AXT-8	10AXT-8	15AXT-8
11	Locking pin	1	1AXT-11	3AXT-11	5AXT-11	8AXT-11	10AXT-11	15AXT-11
13	Spring Pin	1	1AXT-13	3AXT-13	5AXT-13	8AXT-13	10AXT-13	15AXT-13
14	Trigger	2	1AXT-14	3AXT-14	5AXT-14	8AXT-14	10AXT-14	15AXT-14
18	Check Spring	1	1AXT-18	3AXT-18	5AXT-18	8AXT-18	10AXT-18	15AXT-18
19	Hinge Pin	1	1AXT-19	3AXT-19	5AXT-19	8AXT-19	10AXT-19	15AXT-19
20	Reactive spline sleeve	1	1AXT-20	3AXT-20	5AXT-20	8AXT-20	10AXT-20	15AXT-20
22	Snap ring	1	1AXT-22	3AXT-22	5AXT-22	8AXT-22	10AXT-22	15AXT-22
26B	Steel bushing	1	1AXT-26B	3AXT-26B	5AXT-26B	8AXT-26B	10AXT-26B	15AXT-26B
27	Ratchet spring	2	1AXT-27	3AXT-27	5AXT-27	8AXT-27	10AXT-27	15AXT-27
30	Wire clasp	2	1AXT-30	3AXT-30	5AXT-30	8AXT-30	10AXT-30	15AXT-30
31	Dust shield	1	1AXT-31	3AXT-31	5AXT-31	8AXT-31	10AXT-31	15AXT-31
32	Flat round head screw	4	1AXT-32	3AXT-32	5AXT-32	8AXT-32	10AXT-32	15AXT-32
40	Spring pin	1	1AXT-40	3AXT-40	5AXT-40	8AXT-40	10AXT-40	15AXT-40
42	Lock pawl	1	1AXT-42	3AXT-42	5AXT-42	8AXT-42	10AXT-42	15AXT-42
48	Lock pawl	2	1AXT-48	3AXT-48	5AXT-48	8AXT-48	10AXT-48	15AXT-48
61	Piston assembly	1	1AXT-61	3AXT-61	5AXT-61	8AXT-61	10AXT-61	15AXT-61
63	Ratchet pawl	1	1AXT-63	3AXT-63	5AXT-63	8AXT-63	10AXT-63	15AXT-63
00 1	Adapter assembly	1	1M-00 1	3M-00 1	5M-00 1	8M-00 1	10M-00 1	15M-00 1
00 1A	quick coupling	1	1M-00 1A	3M-00 1A	5M-00 1A	8M-00 1A	10M-00 1A	15M-00 1A
00 1B	Quick coupling	1	1M-00 1B	3M-00 1B	5M-00 1B	8M-00 1B	10M-00 1B	15M-00 1B

VIII. Exploded Diagram of connector group — 001



No.	Item	Qty.	Model
TY-1	Connector base	1	-
TY-2A	Connector-A	1	-
TY-2B	Connector-B	1	-
TY-3	Connector body	1	-
TY-4	Cover plate	1	-
TY-5	Cap	1	-
TY-6	O-ring	7	d18*2
TY-7	Screw	6	M5*14
TY-8	Plugging	2	NPT1/8
TY-9	Screw	1	M5*16
TY-10	O-ring	2	d4.15*1.9
TY-11	Screw	1	M5*8
00 1A	Quick connect plug-male	1	C701E-M
00 1B	Quick connect plug-female	1	C701E-F

IX. After-sales Service

Please read this manual carefully before requesting Jingke after-sales service department to repair the wrench. Please do not repair the wrench by yourself without the approval of the authoritative department of our company.

Pingyuan Jingke Hydraulic Co., Ltd

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