W215

WREN®

IBT AND LOW SERIES

Hydraulic Torque Wrenches
Operation and Maintenance Manual

http://www.wrenus.com

Use the IBT and LOW Series Torque Wrenches install and remove threaded fasteners requiring precise high torque during bolt makeup and maximum torque during bolt breakout.

Read and understand this Operation and Maintenance Manual before using WREN Torque Wrenches. Use only genuine WREN replacement parts. Other parts may result in safety hazards, decreased tool performance, increased maintenance and an invalidated warranty.

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Important Safety Instructions

UPON RECEIPT OF THIS TOOL, INSPECT THE PACKAGE FOR DAMAGE.

Carefully inspect all components for damage incurred during shipping. If any shipping damage is found, notify the carrier at once. Shipping damage is NOT covered by warranty. The carrier is responsible for all repair or replacement costs resulting from damage in shipment.

The hydraulic torque wrench is a power tool. Read all instructions, warnings and precautions before every operation. Comply with the safety precautions to avoid personal injury or equipment damage while operating this tool.

Neither WREN , nor its distributors are responsible for damages caused by unsafe and/or faulty operations. If a problem arises during use, shut off the power immediately and consult your IBT distributor.

ALL OF OUR PRODUCTS MAY HAVE UPGRADES AND MODIFICATIONS WITHOUT NOTICE.

Warnings and Cautions: Safety First!

▲ WARNING

Never use a hydraulic torque wrench without a hydraulic gauge to indicate the working pressure.

▲ WARNING

To avoid personal injuries and/or equipment damage, be sure that all hydraulic components are rated for 10,000PSI (700bar) operating pressure.

▲ WARNING

DO NOT exceed the allowable maximum torque of the hydraulic torque wrench.

▲ WARNING

Immediately replace any worn or damaged parts with genuine WREN replacement parts.

▲ WARNING

To avoid personal injuries, equipment damage and/or warranty invalidation:
DO NOT remove the shroud from the hydraulic torque wrench.
DO NOT modify any component of the hydraulic torque wrench.
DO NOT adjust the hydraulic torque wrench safety relief valve located inside the swivel couplings.

▲ WARNING

Only use a high quality socket. The socket must measure up to standard ISO-2725 and ISO-1174 or DIN3129 and DIN3121 or ASME-B107.2/1995. Never use a chrome plated socket.

▲ WARNING

Always use a pin to lock the socket with the square drive in order to avoid the socket from falling off or damaging the square drive.

▲ CAUTION

Keep all hydraulic torque wrench components away from excessive heat, flame, moving machine parts, sharp edges and chemicals.

▲ CAUTION

Avoid sharp bends and kinks when routing the hydraulic hose assembly. A bent or kinked hydraulic hose assembly will cause severe back-pressure. They will also damage the internal lining of the hose leading to premature failure. Replace a kinked or damaged hydraulic hose assembly immediately.

▲ CAUTION

DO NOT drive over, crush or drop heavy objects onto the hydraulic hose assembly. Crush forces may damage hose wire strands and applying pressure to a damaged hose assembly may cause it to rupture. Replace all crushed hydraulic hose assemblies immediately.

▲ CAUTION

DO NOT expose the hydraulic hose assembly to high temperatures.

▲ CAUTION

DO NOT use old or damaged sockets.
DO NOT use the wrong size sockets.

Other Safety Notes

- Loose or dirty couplers will cause tool not to operate properly.
- To avoid personal injuries and/or equipment damage, be sure that all hydraulic components are rated for 10,000PSI (700bar) operating pessure.
- Always inspect the hydraulic hose assembly for damage and wear before using it
- Make sure the hydraulic torque wrench swivel couplings , hose couplings and hydraulic power pack couplings are clean and free of debris prior to connecting the hydraulic torque wrench and hydraulic hose assembly to the assembled power pack.

Personal Protective Equipment (PPE)

When operating hydraulic equipment, use proper safety equipment and clothing. Consult with your company's safety representative for this information.

Operate Precondition

Reference the Operation and Maintenance Manual of the electric or air powered hydraulic power pack before using.

Preparation

Prior to use determine:

- Nut or bolt head size
- Material and strength grade
- Determine the desired torque

Appendix I, presented for reference only, gives typical torque values specified for the most commonly encountered fasteners. You should always abide by established procedures for the job site. Torque sequence may vary from manufacturer to manufacturer and even on job sites depending on the gasket material etc.Refer to your company's engineering department for this information.

Hydraulic Torque Wrench Set Up

1. Inspect the components of the hydraulic torque wrench set.
2. Connect the hydraulic torque wrench,hydraulic hose assembly and the hydraulic power pack to a hydraulic circuit.
3. Ensure all hydraulic connections are securely connected.
4. Verify that the hydraulic hose assembly is not kinked, crushed or damaged.

Torque value

Determine the corresponding pressure of the hydraulic power pack to achieve the required torque value.

You can find this information in the Pressure - Torque Conversion Chart provided with the hydraulic torque wrench. You may also find this chart on the web @ http://www.wrenus.com/

Important

To avoid hydraulic torque wrench malfunction:

- DO NOT reverse connectors.
- DO NOT tamper with the set screw on the swivel assembly. (It is factory preset for safety purposes and adjustments should only be made by trained personnel.)

Connect the hydraulic hose assembly to the swivel as shown below:

Ensure the connectors are fully engaged and screwed snugly together.

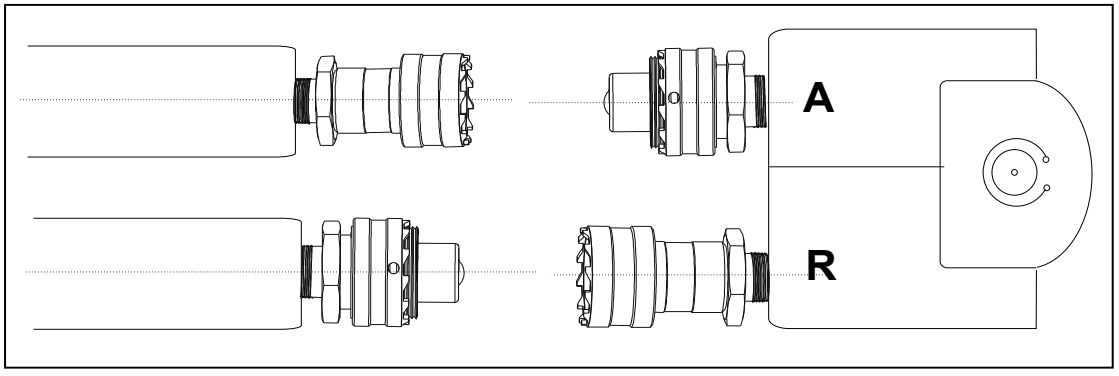


Figure1

CAUTION

Figure 2

Setting the pressure on the hydraulic power pack:

1. Loosen the locking ring below the “T” handle on the hydraulic power pack external pressure regulator.
2. Turn the “T” handle counterclockwise until it turns freely and easily.
3. Turn the hydraulic power pack on.
4. Push the advance switch (or button on the air hydraulic power pack) on the hydraulic power pack remote pendant and hold it.
5. Keep the hydraulic power pack in advance mode and slowly turn the “T” handle clockwise.
6. Observe the hydraulic power pack pressure gauge rise.

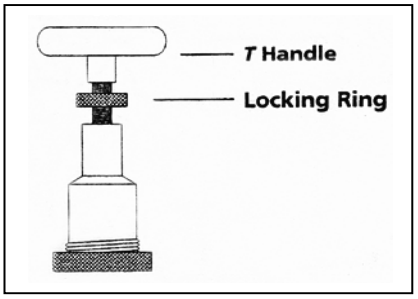


Figure 3

Note: Always adjust the regulator pressure UP-never down.

7. When the gauge reaches the correct predetermined pressure, stop turning the “T” handle.
8. Let the gauge settle.
9. If pressure goes up over predetermined value, please use the "T-Handle" to regulate in counterclockwise to make pressure at predetermined value. Lock regulator by fixed screw. Try operating by pressure up and down and make sure to achieve predetermined value.
10. When the pressure is correct, turn the pump off and tighten the locking ring under the “T” handle.
11. This sets the pump pressure, controlling the torque wrench output.
12. Cycle the hydraulic power pack to ensure the pressure setting did not change as you tightened the locking ring.

Important:

The reading of full preset pressure after the cylinder is extended DOES NOT INDICATE this pressure (torque) is applied to the bolt /nut . It only indicates that the cylinder is fully extended and cannot turn the socket further until the tool automatically resets itself.

- Releasing the remote control button automatically retracts the cylinder.
- The hydraulic torque wrench will automatically reset itself.
- You will hear an audible“click” indicating that you can again push the remote control button and the socket will turn.
- Each time the cylinder is extended and retracted, it is called a cycle.
- Successive cycles are made until the tool “stalls”at the preset Torque/PSI with an accuracy of +/-3%.Repeatabilityis +/-1%.
- Cycle the tool one last time to achieve total torque.

The Loosening Process:

1. Set the hydraulic power pack to 10,000 PSI.
2. Reposition the tool so the reaction surface abuts squarely on a solid reaction point.
3. Press and hold hydraulic power pack's remote control advance button.
4. Pressure will decrease as the nut begins to turn.
5. When the cylinder is fully extended, you will hear an audible "click".
6. Release the remote control advance button and the hydraulic torque wrench's cylinder will automatically retract
7. Listen again for the audible "click".
8. Repeat this process until you can remove the fastener by hand.

After the operation

1. Upon completing the project; turn off the power to the hydraulic power pack.
2. First disconnect the coupler connections between the hydraulic torque wrench and hydraulic hose assembly.
3. Then disconnect the hose addembly from the hydraulic power pack.
4. Loosen the locking ring below the "T" handle on the hydraulic power pack external pressure regulator.
5. Turn the "T" handle counterclockwise until it turns freely and easily.
6. When not in use, store tools and accessories properly to avoid damage.

Operating For IBT Series Square Drive Torque Wrench

Before every operating, always read and follow the operation instructions.

Applying the Hydraulic Torque Wrench

1. Place the socket on the nut.
2. Ensure it is the correct size and fully engaged
3. Remove socket from nut.
4. Attach the socket to the square drive and place it on the nut.
5. Cycle the hydraulic torque wrench.
6. Position the reaction surface against an adjacent nut, flange or solid system component.
7. Make certain that there is clearance for the hydraulic hose assembly, swivels and couplings.
8. Do not allow the tool to react against the hydraulic hose assembly , swivels or couplings.
9. Depress the remote control advance button to turn the square drive.
10. Check to make sure all body parts are safely out of harm's way before applying pressure to the hydraulic wrench.
    a. This tool has massive power and can cause physical harm.
11. The nut will beg in to turn when you apply hydraulic pressure to the hydraulic torque wrench and the reaction surface moves against the reaction point.
12. Once the piston reaches the end of its stroke, release the remote button and the tool will automatically retract the piston.
13. The operator will hear an audible "click".
    a. Each "advance and retract" is considered on cycle.
14. Continue cycling the hydraulic torque wrench until it "stalls" and the preset PSI/ Torque has been attained.
15. Cycle the tool one last time to ensure total torque.

Setting the Square Drive for Rotation

The position of the square drive when looking at the shroud will determine if the hydraulic torque wrench is set to loosen or tighten

- When the square drive extends to the LEFT when looking at the shroud, the hydraulic torque wrench is set to loosen.
- When the square drive extends to the RIGHT, the hydraulic torque wrench is set to tighten.

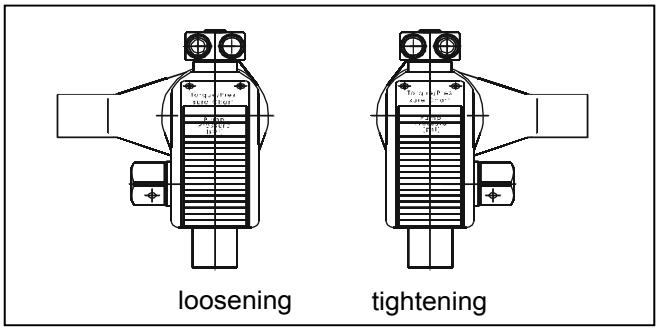


Figure 4

LEFT IS LOOSE. RIGHT IS TIGHT.

Removing the square drive:

Disengage the drive retainer assembly by depressing the center round button and gently pulling on the square end of the square drive. The square drive will slide out.

Inserting the drive:

1. Place the drive in the desired direction and engage the drive and bushing splines.

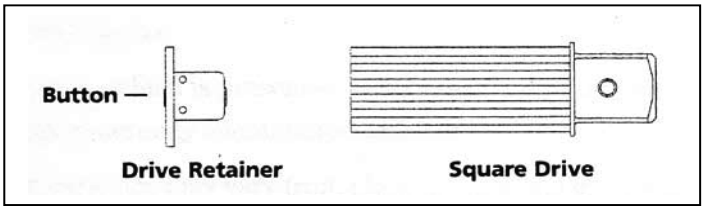


Figure 5

2. Twist the drive and bushing until the ratchet spline can be engaged.
3. Push the drive through the ratchet.
4. Depress drive retainer button, engage retainer with drive and release button to lock.

“Locked-On”

Should the hydraulic torque wrench be “locked-on” after the final cycle:

1. Push the remote control advance button to build pressure.
2. Maintain this pressure and push the release lever located on the side of the tool.
3. Release the remote control advance button, while continuing to push down on the release lever.
4. Remove the hydraulic torque wrench.

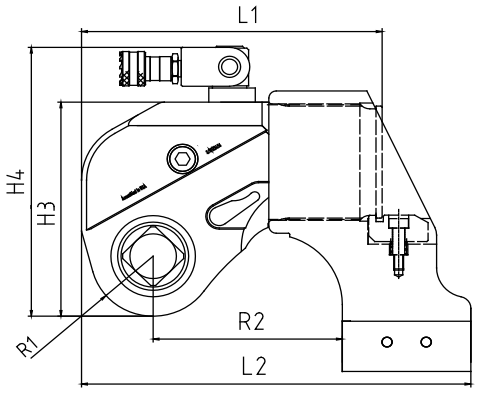
Figure 6

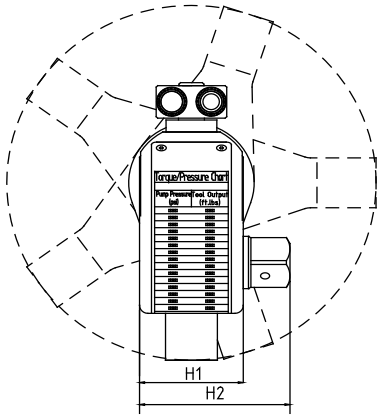
Trouble Shooting Chart For IBT Series Torque Wrench

SYSTEM	PROBLEM CAUSE	REMEDY
Cylinder will not advance	Coupler loose or damaged Direction-control valve on pump Coupler not mated securely	Tighten/Replace Disassemble and clean /replace Tighten
Cylinder will not retract	See above	See above
Cylinder will not build up pressure	Piston seal leak Coupling is not mated properly or is defective Gauge	Replace seals Replace coupling Replace gauge
Cylinder leaks	Leaking seals	Replace housing seals
Cylinder operates backwards	Couplers are reversed on hoses, pump , or tool	Reverse couplers
Ratchet returns on retract stroke	Broken reaction pawl Defective reaction pawl spring	Replace Replace
Ratchet will notmake successive strokes	Defective drive pawl spring Defective drive pawl Cylinder is not retracting completely	Replace Replace Remove and cycle tool freely and return to job
Tool cannot be removed from nut	Reaction pawl is engaged	Begin forward cylinder stroke. While applying pressure, push down on release lever (on side of tool). While holding release, allow the cylinder to retract. Remove tool
No pressure reading on gauge	Gauge not tight Pump coupling broken Gauge defective Defective cylinder seals	Tighten coupler Replace Replace Inspect and replace all cylinder seals
Pump will not build pressure	Defective relief valve Air supply too low or air hose size too small Electric power source is too low Gauge Filter is clogged	Inspect and replace Check for 100 PSI air pressure, 1 ID air hose Insure suitable electric power source–25amps–12 gauge or larger extension cord Replace Inspect and clean, or replace
Pressure reading erratic	Defective gauge Differential control valve bad	Replace Replace

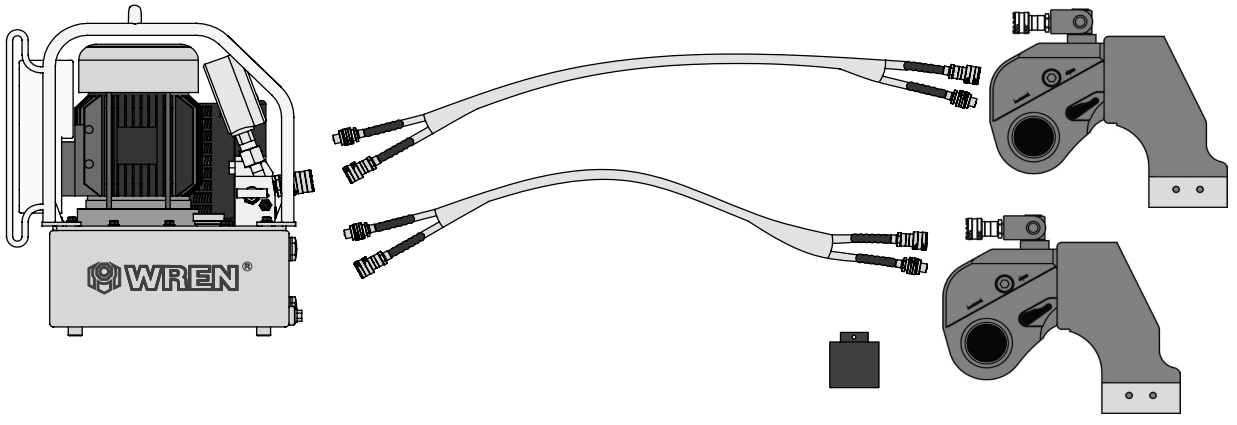
IBT Series Square Drive Torque Wrench Spec Sheet

Model	07IBT	1IBT	3IBT	5IBT	8IBT	10IBT	20IBT	25IBT	35IBT	50IBT
Torque (Ft-Lbs.)	81-814	134-1,344	328-3,278	547-5,470	783-7,831	1,127-11,272	1,937-19,370	2,523-25,226	3,535-35,354	5,230-52,300
Weight	3.96 lbs.	5.5 lbs.	11 lbs.	17.6 lbs.	24.2 lbs.	33 lbs.	58.3 lbs.	77 lbs.	110 lbs.	191.4 lbs.
Drive	.75"	.75"	1.00"	1.50"	1.50"	1.50"	2.50"	2.50"	2.50"	2.50"
L1 (inch)	4.37	5.71	7.01	8.31	8.75	9.69	12.14	12.73	14.70	15.76
L2 (inch)	5.48	6.86	9.02	10.68	11.54	12.53	15.09	15.80	19.58	20.33
H1 (inch)	1.65	1.97	2.68	3.15	3.55	3.94	4.73	5.40	6.03	6.30
H2 (inch)	2.60	2.84	3.74	4.85	5.28	5.59	7.21	7.88	8.51	8.79
H3 (inch)	2.99	3.78	5.00	5.87	6.58	7.17	8.67	9.73	11.11	11.47
H4 (inch)	4.26	5.16	6.97	7.84	8.55	9.14	10.64	11.70	13.08	13.44
R1 (inch)	0.83	1.02	1.34	1.54	1.85	2.01	2.32	2.60	3.03	3.19
R2 (inch)	2.68	3.35	4.49	5.40	6.03	6.07	7.33	7.84	9.50	10.20





The Drawing For A Pump With Two IBT Series Torque Wrenches



IBT SERIES HYDRAULIC TORQUE WRENCH PRESSURE-TORQUE CHART

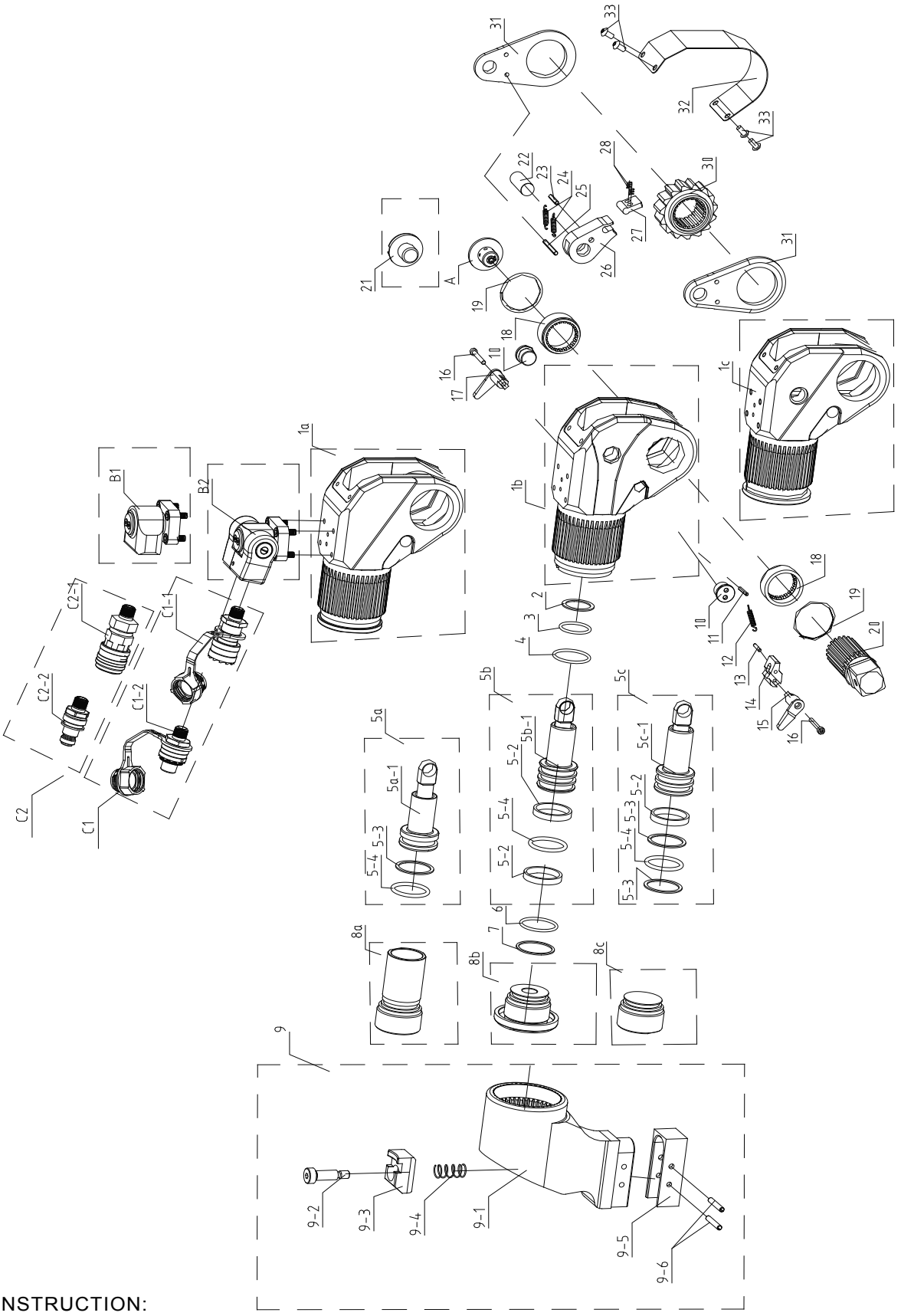
Model	07IBT	1IBT	3IBT	5IBT	8IBT	10IBT	20IBT	25IBT	35IBT	50IBT
psi	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs
1000	81	134	328	547	783	1127	1937	2523	3535	5230
1200	97	161	394	656	940	1352	2324	3028	4242	6276
1400	114	188	459	766	1096	1578	2712	3532	4949	7322
1600	130	215	525	875	1253	1803	3099	4037	5656	8368
1800	146	242	590	985	1409	2029	3487	4541	6363	9414
2000	162	268	656	1094	1566	2254	3874	5046	7070	10460
2200	179	295	721	1203	1723	2480	4261	5550	7777	11506
2400	195	322	787	1313	1879	2705	4649	6055	8485	12552
2600	211	349	852	1422	2036	2931	5036	6559	9192	13598
2800	228	376	918	1532	2193	3156	5424	7064	9899	14644
3000	244	403	984	1641	2349	3381	5811	7568	10606	15690
3200	260	430	1049	1750	2506	3607	6198	8073	11313	16736
3400	276	457	1115	1860	2662	3832	6586	8577	12020	17782
3600	293	483	1180	1969	2819	4058	6973	9082	12727	18828
3800	309	510	1246	2079	2976	4283	7361	9586	13434	19874
4000	325	537	1311	2188	3132	4509	7748	10091	14141	20920
4200	341	564	1377	2297	3289	4734	8135	10595	14848	21966
4400	358	591	1443	2407	3446	4959	8523	11100	15555	23012
4600	374	618	1508	2516	3602	5185	8910	11604	16262	24058
4800	390	645	1574	2626	3759	5410	9298	12109	16970	25104
5000	407	672	1639	2735	3915	5636	9685	12613	17677	26150
5200	423	698	1705	2844	4072	5861	10072	13118	18384	27196
5400	439	725	1770	2954	4229	6087	10460	13622	19091	28242
5600	455	752	1836	3063	4385	6312	10847	14127	19798	29288
5800	472	779	1901	3173	4542	6538	11235	14631	20505	30334
6000	488	806	1967	3282	4699	6763	11622	15136	21212	31380
6200	504	833	2033	3391	4855	6988	12009	15641	21919	32426
6400	521	860	2098	3501	5012	7214	12397	16145	22626	33472
6600	537	887	2164	3610	5168	7439	12784	16650	23333	34518
6800	553	914	2229	3720	5325	7665	13172	17154	24040	35564
7000	569	940	2295	3829	5482	7890	13559	17659	24747	36610
7200	586	967	2360	3938	5638	8116	13946	18163	25454	37656
7400	602	994	2426	4048	5795	8341	14334	18668	26162	38702
7600	618	1021	2491	4157	5951	8567	14721	19172	26869	39748
7800	635	1048	2557	4267	6108	8792	15109	19677	27576	40794
8000	651	1075	2623	4376	6265	9017	15496	20181	28283	41840
8200	667	1102	2688	4485	6421	9243	15883	20686	28990	42886
8400	683	1129	2754	4595	6578	9468	16271	21190	29697	43932
8600	700	1155	2819	4704	6735	9694	16658	21695	30404	44978
8800	716	1182	2885	4814	6891	9919	17046	22199	31111	46024
9000	732	1209	2950	4923	7048	10145	17433	22704	31818	47070
9200	748	1236	3016	5032	7204	10370	17820	23208	32525	48116
9400	765	1263	3082	5142	7361	10595	18208	23713	33232	49162
9600	781	1290	3147	5251	7518	10821	18595	24217	33939	50208
9800	797	1317	3213	5361	7674	11046	18983	24722	34647	51254
10000	814	1344	3278	5470	7831	11272	19370	25226	35354	52300

IBT SERIES HYDRAULIC TORQUE WRENCH PRESSURE-TORQUE CHART

Model	07IBT	1IBT	3IBT	5IBT	8IBT	10IBT	20IBT	25IBT	35IBT	50IBT
mpa	N.m	N.m	N.m	N.m	N.m	N.m	N.m	N.m	N.m	N.m
7	112	183	451	752	1078	1551	2666	3472	4866	7200
8	128	209	515	860	1232	1773	3047	3968	5561	8229
9	144	236	580	967	1386	1994	3428	4464	6256	9257
10	160	262	644	1075	1540	2216	3809	4960	6952	10286
11	176	288	709	1182	1694	2438	4190	5456	7647	11314
12	192	314	773	1290	1848	2659	4571	5952	8342	12343
13	208	341	838	1397	2002	2881	4952	6448	9037	13371
14	224	367	902	1505	2156	3103	5332	6945	9733	14400
15	240	393	967	1612	2310	3324	5713	7441	10428	15429
16	256	419	1031	1720	2464	3546	6094	7937	11123	16457
17	272	446	1096	1828	2618	3768	6475	8433	11818	17486
18	288	472	1160	1935	2772	3989	6856	8929	12514	18514
19	304	498	1225	2043	2926	4211	7237	9425	13209	19543
20	320	524	1289	2150	3080	4433	7618	9921	13904	20571
21	336	551	1353	2258	3234	4654	7999	10417	14599	21600
22	352	577	1418	2365	3388	4876	8380	10913	15295	22629
23	368	603	1482	2473	3542	5098	8761	11409	15990	23657
24	384	629	1547	2580	3696	5319	9142	11905	16685	24686
25	400	656	1611	2688	3850	5541	9523	12401	17380	25714
26	416	682	1676	2796	4004	5763	9903	12898	18076	26743
27	432	708	1740	2903	4158	5984	10284	13394	18771	27771
28	448	734	1805	3011	4312	6206	10665	13890	19466	28800
29	464	761	1869	3118	4466	6428	11046	14386	20161	29829
30	480	787	1934	3226	4620	6649	11427	14882	20856	30857
31	496	813	1998	3333	4774	6871	11808	15378	21552	31886
32	512	839	2063	3441	4928	7093	12189	15874	22247	32914
33	528	866	2127	3548	5082	7314	12570	16370	22942	33943
34	544	892	2191	3656	5236	7536	12951	16866	23637	34971
35	560	918	2256	3764	5390	7758	13332	17362	24333	36000
36	576	944	2320	3871	5544	7979	13713	17858	25028	37029
37	592	971	2385	3979	5698	8201	14094	18354	25723	38057
38	608	997	2449	4086	5852	8423	14475	18850	26418	39086
39	624	1023	2514	4194	6006	8644	14855	19347	27114	40114
40	640	1049	2578	4301	6160	8866	15236	19843	27809	41143
41	656	1076	2643	4409	6314	9088	15617	20339	28504	42171
42	672	1102	2707	4516	6468	9309	15998	20835	29199	43200
43	688	1128	2772	4624	6622	9531	16379	21331	29895	44229
44	704	1154	2836	4732	6776	9753	16760	21827	30590	45257
45	720	1181	2900	4839	6930	9974	17141	22323	31285	46286
46	736	1207	2965	4947	7084	10196	17522	22819	31980	47314
47	752	1233	3029	5054	7238	10418	17903	23315	32676	48343
48	768	1259	3094	5162	7392	10639	18284	23811	33371	49371
49	784	1286	3158	5269	7546	10861	18665	24307	34066	50400
50	800	1312	3223	5377	7700	11083	19046	24803	34761	51429
51	816	1338	3287	5484	7854	11304	19427	25299	35456	52457
52	832	1364	3352	5592	8008	11526	19807	25796	36152	53486
53	848	1391	3416	5700	8162	11748	20188	26292	36847	54514
54	864	1417	3481	5807	8316	11969	20569	26788	37542	55543
55	880	1443	3545	5915	8470	12191	20950	27284	38237	56571
56	896	1469	3610	6022	8624	12413	21331	27780	38933	57600
57	912	1496	3674	6130	8778	12634	21712	28276	39628	58629
58	928	1522	3738	6237	8932	12856	22093	28772	40323	59657
59	944	1548	3803	6345	9086	13078	22474	29268	41018	60686
60	960	1574	3867	6452	9240	13299	22855	29764	41714	61714
61	976	1601	3932	6560	9394	13521	23236	30260	42409	62743
62	992	1627	3996	6668	9548	13743	23617	30756	43104	63771
63	1008	1653	4061	6775	9702	13964	23998	31252	43799	64800
64	1024	1679	4125	6883	9856	14186	24378	31749	44495	65829
65	1040	1706	4190	6990	10010	14408	24759	32245	45190	66857
66	1056	1732	4254	7098	10164	14629	25140	32741	45885	67886
67	1072	1758	4319	7205	10318	14851	25521	33237	46580	68914
68	1088	1784	4383	7313	10472	15073	25902	33733	47276	69943
69	1104	1811	4448	7420	10626	15294	26283	34229	47971	70971
70	1120	1837	4512	7528	10780	15516	26664	34725	48666	72000

IBT Series Square Drive Torque Wrench Exploded View Drawing

07IBT、1IBT、 3IBT、5IBT、8IBT、10IBT、 20IBT、 25 IBT、35IBT、 50IBT SERIES



INSTRUCTION:

1. Swivel B1 and B2 are optional parts, own interchange ability.
2. Quick coupler C1 assembly and C2 assembly are optional parts, own interchange ability.
3. #1 Body assembly and 5-1# piston assembly are not detachable parts.

PARTSLIST--IBT SERIES

Model Number		07IBT	IBT	3IBT	5IBT	8IBT	10IBT	20IBT	25IBT	35IBT	50IBT
Item	Name	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity
1a	Body	1									1
1b				1	1	1	1	1	1	1	
1c			1								
2	Retaining Ring of Body		1								
3	O-Ring/U-Ring for Body	1	1	1	1	1	1	1	1	1	1
4	O-Ring for Piston Housing	1									
5a	Piston Rod Assembly	1									
5b								1	1	1	1
5c			1	1	1	1	1				
5a- 1	Piston Assembly	1									
5b- 1								1	1	1	1
5c- 1			1	1	1	1	1				
5-2	Wearable Ring for Piston Rod		1	1	1	1	1	2	2	2	2
5-3	Retaining Ring	1	1	1	1	2	1				
5-4	O-Ring for Piston Rod	1	1	1	1	1	1	1	1	1	1
6	O-Ring for End Cap	1	1	1	1	1	1	1	1	1	1
7	Retaining Ring for End Cap		1	1	1	1	1	1	1	1	1
8a	End Cap			1	1	1	1	1	1	1	
8b		1									
8c			1								1
9	Reaction Arm Assembly	1	1	1	1	1	1	1	1	1	1
9-1	Reaction Arm	1	1	1	1	1	1	1	1	1	1
9-2	Screw	1	1	1	1	1	1	1	1	1	1
9-3	Reaction Arm Fixer	1	1	1	1	1	1	1	1	1	1
9-4	Compressed Spring for Reaction Arm	1	1	1	1	1	1	1	1	1	1
9-5	Reaction Arm Cover	1	1	1	1	1	1	1	1	1	1
9-6	Pin for Reaction Arm Cover	1	1	1	2	2	2	2	2	2	2
10	Screw	2	2	2	2	2	2	2	2	2	2
11	Pin for Body	1	1	1	1	1	1	1	1	1	1
12	Tension Spring for Reaction Pawl	1	1	1	1	1	1	1	1	1	1
13	Reaction Pawl Pin	1	1	1	1	1	1	1	1	1	1
14	Reaction Pawl	1	1	1	1	1	1	1	1	1	1
15	Button Lever(Left)	1	1	1	1	1	1	1	1	1	1
16	Screw for Button Lever	2	2	2	2	2	2	2	2	2	2
17	Button Lever(Right)	1	1	1	1	1	1	1	1	1	1
18	Drive Sleeve Spline	2	2	2	2	2	2	2	2	2	2
19	Circlip	2	2	2	2	2	2	2	2	2	2
20	Square Drive	1	1	1	1	1	1	1	1	1	1
A	Drive Retainer	1	1	1	1	1	1	1	1	1	
21	Drive Retainer Screw										1
22	Drive Pin	1	1	1	1	1	1	1	1	1	1
23	Roll Pin for Drive Pawl Primary	1	1	1	1	1	1	1	1	1	1
24	Tension Spring for Drive Pawl Prmary	2	2	2	2	2	2	2	2	2	2
25	Drive Plate Pin	1	1	1	1	1	1	1	1	1	1
26	Drive Pawl Prmary	1	1	1	1	1	1	1	1	1	1
27	Drive Pawl Secondary	1	1	1	1	1	1	1	1	1	1
28	Compressed Spring Drive Pawl Secondary	1	2	1	2	2	1	1	1	1	1
29	Roll Pin for Compressed Spring Drive Pawl Secondary	1					1	1	1	1	1
30	Ratchet Spline	1	1	1	1	1	1	1	1	1	1
31	Drive Plate	2	2	2	2	2	2	2	2	2	2
32	Shroud	1	1	1	1	1	1	1	1	1	1
33	Screw for Cover Plate	4	4	4	4	4	4	4	4	4	4
B1	Swivel Assembly	1	1	1	1	1	1	1	1	1	1
B2		1	1	1	1	1	1	1	1	1	1
C1 -1	Male Coupler	1	1	1	1	1	1	1	1	1	1
C2 -1		1	1	1	1	1	1	1	1	1	1
C1 -2	Female Coupler	1	1	1	1	1	1	1	1	1	1
C2 -2		1	1	1	1	1	1	1	1	1	1

INSTRUCTION: 1. Swivel B1 and B2 are optional parts, own interchange ability.
2. Quick coupler C1 assembly and C2 assembly are optional parts, own interchange ability.
3. #1 Body assembly and 5-1# piston assembly are not detachable parts.

Operating For LOW Series LOW Profile Torque Wrench

Before every operation, always read and follow the operations instructions.

Inserting hex ratchet links

Low profile hex ratchet links are inserted and removed from the power head as follows:

1. Insert the “hook” described by the link’s drive plate around the fixed pin of the power head.
2. Swing the link down to rest along the base of the power head cylinder.
3. The link pin holes of the power head and link will align.
4. Insert the link pin to secure.

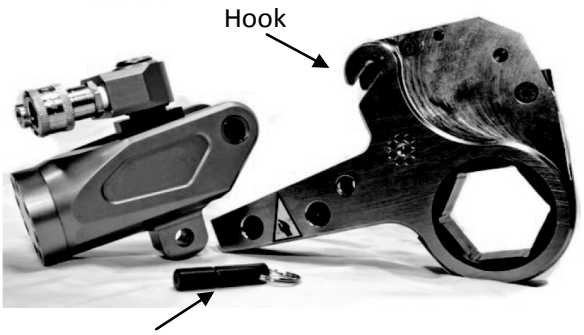


Figure 7

Figure 8

Operation position

Loosening and tightening the nut:

Position the tool relative to the nut to tighten or loosen the nut. The nut turns clockwise for tightening and counterclockwise for Loosening.

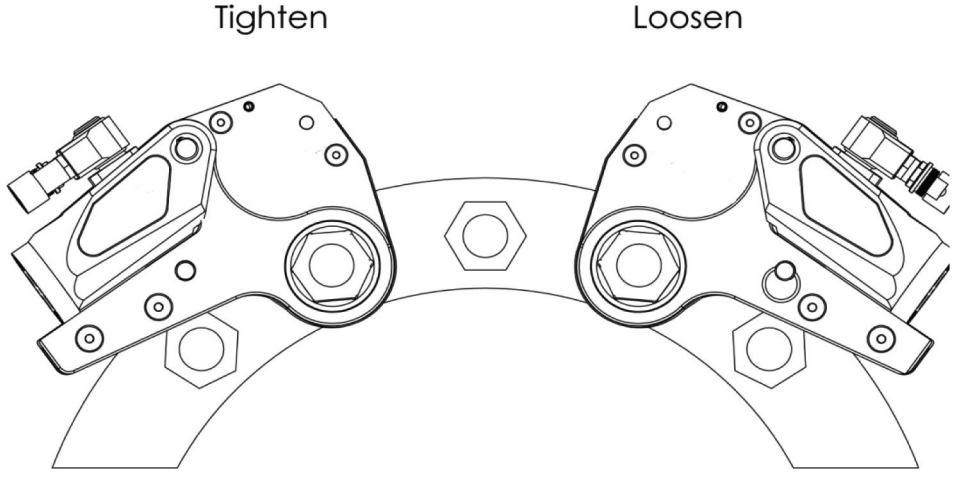


Figure 9

“Locked-On”

Should the hydraulic torque wrench be “locked-on” after the final cycle:

1. Push the remote control advance button to build pressure.
2. Maintain this pressure and push the release lever located on the front of the ratchet link.
3. Release the remote control advance button, while continuing to push down on the release lever. (Figure 10)
4. Remove the hydraulic torque wrench.

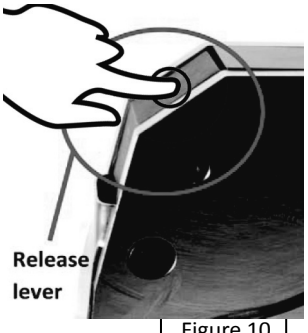


Figure 10

After the operation

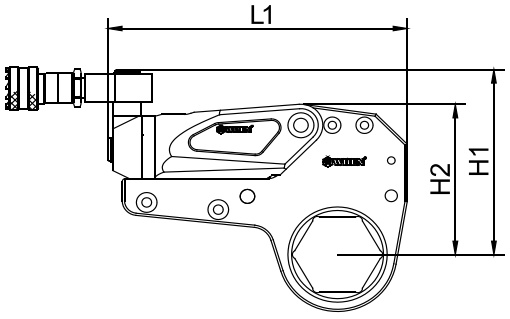
1. Upon completing the project, turn off the power to the hydraulic power pack.
2. First disconnect the coupler connections between the hydraulic torque wrench and hydraulic hose assembly.
3. Then disconnect the hose assembly from the hydraulic power pack.
4. Loosen the locking ring below the “T” handle on the hydraulic power pack external pressure regulator.
5. Turn the “T” handle counterclockwise until it turns freely and easily.
6. When not in use, store tools and accessories properly to avoid damage.

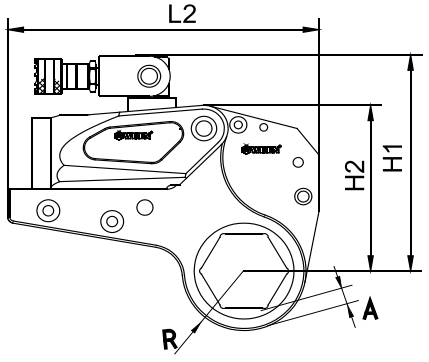
Trouble Shooting Chart For LOW Profile Torque Wrench

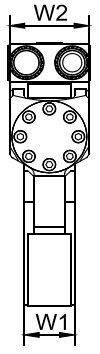
SYSTEM	PROBLEM CAUSE	REMEDY
Cylinder will not advance	Couplers are loose or damaged Directional control valve on pump Couplers not mated securely	Tighten/Replace Assemble and clean Tighten
Cylinder will not retract	See above	See above
Cylinder will not build pressure	Piston seal leaks Pump coupling may be broken, not mated properly or coupler is defective Gauge	Replace seals Replace coupling Replace gauge
Cylinder leaks	Leaking Seals	Replace housing seal kit
Cylinder operates backwards	Couplers are reversed on hoses, pump or tool	Reverse couplers
Ratchet returns on retract stroke	Broken reaction pawl Defective reaction pawl spring	Replace Replace
Ratchet will not make successive strokes	Defective drive pawl spring Defective drive pawl Cylinder is not retracting completely	Replace Replace Remove tool from job, cycle freely once or twice, and return to job
Tool cannot be removed from nut	Reaction pawl is engaged	Begin forward cylinder stroke. While applying pressure, push the reaction pawl release (on front ratchet link). While pressing release mechanism, allow the cylinder to retract. Remove tool
No pressure reading on gauge	Gauge not tight Pump coupling broken Gauge defective Defective cylinder seals	Tighten gauge coupler Replace Replace Inspect and replace all cylinder seals
Pump will not build pressure	Defective high pressure relief valve Electric power source is too low Gauge Filter is clogged	Inspect and replace Ensure suitable electric power source – 25amps – 12 gauge or larger cord Replace Inspect and clean, or replace
Pressure reading erratic	Defective gauge Differential Control Valve Bad	Replace Replace

LOW Series Low Profile Wrenches Spec Sheet

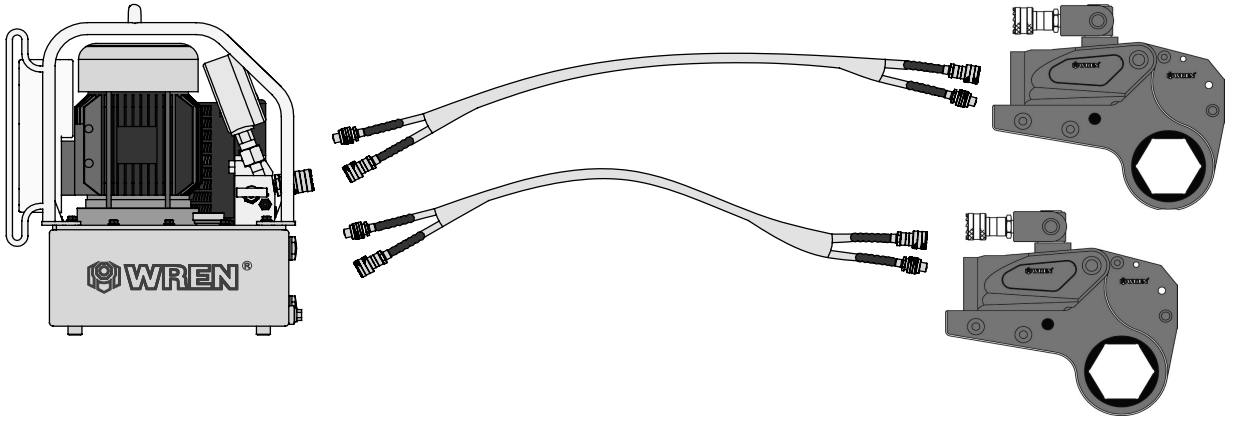
Model	2 LOW		4 LOW		8 LOW		14 LOW	30 LOW	
Torque (Ft-Lbs.)	170-1,770		431-4,775		808-8,864		1,364-13,644	3,083-32,819	
Bolt (inch)	3/4- 2.3/16	2.1/4- 2.3/8	1.5/16- 2.9/16	2.5/8- 3.1/8	1.1/2- 3.3/4	3.13/16 4.1/8	2 - 4.5/8	3.1/8- 6.1/8	6.3/16- 6.7/8
Power Head (lbs)	2.25	2.25	4.4	4.4	7.25	7.25	12.1	25	25
Ratchet Link(lbs)	3.5	3.75	9.75	10	18	19	25	64	66
L1 (inch)	7.69	7.69	10.30	10.30	11.96	11.96	14.22	17.38	17.38
L2 (inch)	7.33	7.33	9.65	9.65	11.82	11.82	14.22	16.94	16.94
H1 (inch)	4.96	5.06	6.97	7.63	8.16	8.51	9.42	11.94	12.41
H2 (inch)	4.03	4.14	5.35	5.74	6.66	7.01	8.04	10.72	11.23
W1 (inch)	1.26	1.26	1.65	1.65	2.09	2.09	2.52	3.35	3.35
W2 (inch)	2.01	2.01	2.60	2.60	3.27	3.27	3.90	5.16	5.16







The Drawing For A Pump With Two LOW Series Torque Wrenches



LOW SERIES HYDRAULIC TORQUE WRENCH PRESSURE-TORQUE CHART

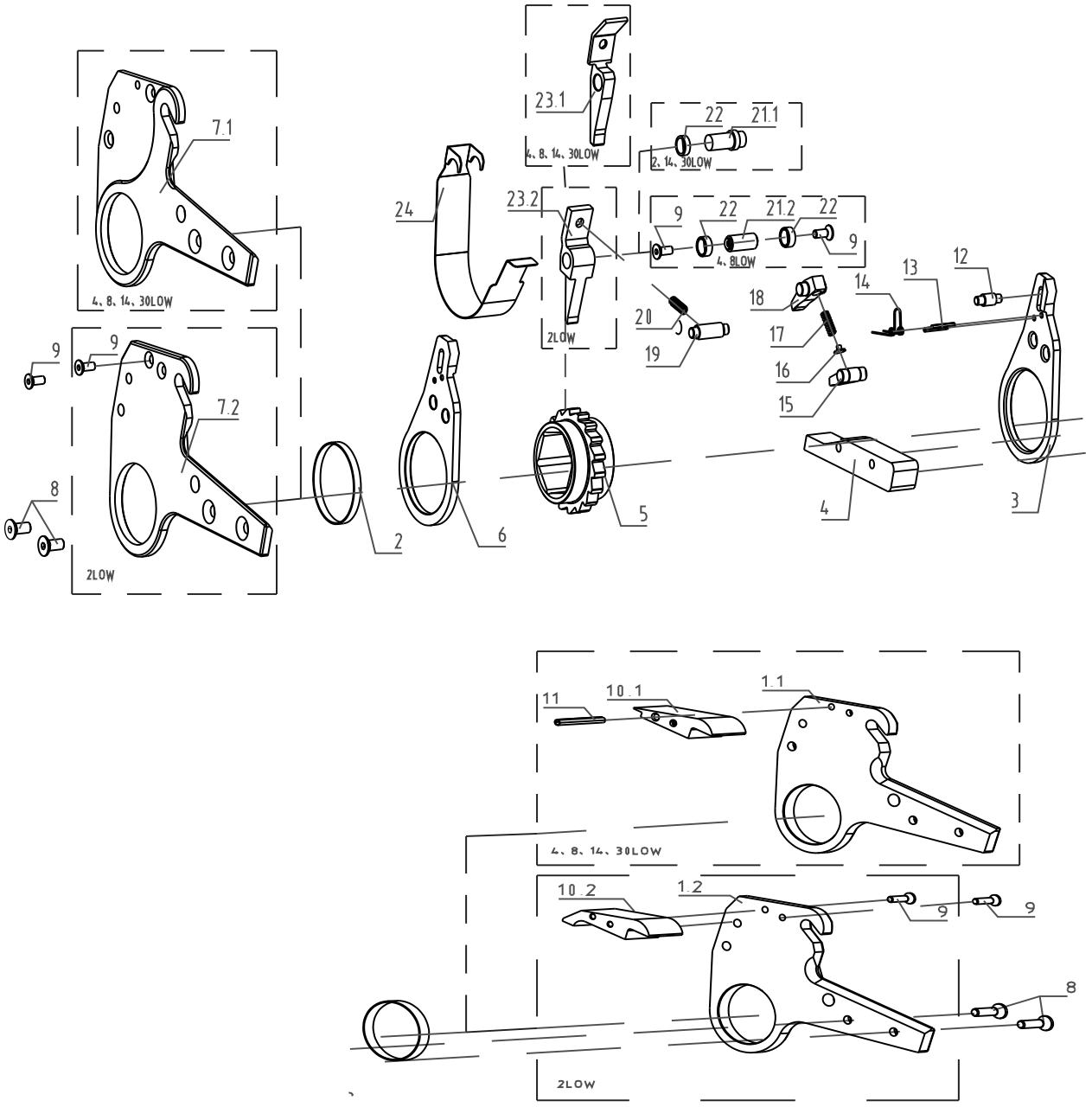
Model	2LOW		4LOW				8LOW		14LOW	30LOW	
Bolt Size Range	19-55	60	34-36	41	46-65	70-80	41-95	100-105	50-117	110-155	160-175
psi	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs
1000	169	175	426	426	426	470	795	855	1346	3043	3240
1200	203	210	511	511	511	564	954	1026	1615	3652	3888
1400	237	245	596	596	596	658	1113	1197	1884	4260	4536
1600	270	280	681	681	681	752	1272	1368	2153	4869	5184
1800	304	315	766	766	766	846	1431	1539	2422	5477	5832
2000	338	350	852	852	852	940	1590	1710	2692	6086	6480
2200	372	385	937	937	937	1034	1749	1881	2961	6694	7127
2400	406	421	1022	1022	1022	1128	1908	2052	3230	7303	7775
2600	440	456	1107	1107	1107	1222	2067	2223	3499	7911l	8423
2800	473	491	1192	1192	1192	1317	2226	2395	3768	8520	9071
3000	507	526	1277	1277	1277	1411	2385	2566	4037	9128	9719
3200	541	561	1362	1362	1362	1505	2544	2737	4306	9737	10367
3400	575	596	1447	1447	1447	1599	2703	2908	4575	10345	11015
3600	609	631	1533	1533	1533	1693	2861	3079	4844	10954	11663
3800	642	666	1618	1618	1618	1787	3020	3250	5113	11562	12311
4000	676	701	1703	1703	1703	1881	3179	3421	5383	12171	12959
4200	710	736	1788	1788	1788	1975	3338	3592	5652	12779	13606
4400	744	771	1873	1873	1873	2069	3497	3763	5921	13388	14254
4600	778	806		1958	1958	2163	3656	3934	6190	13996	14902
4800	812	842		2043	2043	2257	3815	4105	6459	14605	15550
5000	845	877		2128	2128	2351	3974	4276	6728	15213	16198
5200	879	912		2214	2214	2445	4133	4447	6997	15822	16846
5400	913	947		2299	2299	2539	4292	4618	7266	16430	17494
5600	947	982		2384	2384	2633	4451	4789	7535	17039	18142
5800	981	1017		2469	2469	2727	4610	4960	7804	17647	18790
6000	1015	1052		2554	2554	2822	4769	5132	8074	18256	19438
6200	1048	1087		2639	2639	2916	4928	5303	8343	18865	20085
6400	1082	1122		2724	2724	3010	5087	5474	8612	19473	20733
6600	1116	1157		2809	2809	3104	5246	5645	8881	20082	21381
6800	1150	1192		2894	2894	3198	5405	5816	9150	20690	22029
7000	1184	1227		2980	2980	3292	5564	5987	9419	21299	22677
7200	1217	1262		3065	3065	3386	5723	6158	9688	21907	23325
7400	1251	1298		3150	3150	3480	5882	6329	9957	22516	23973
7600	1285	1333		3235	3235	3574	6041	6500	10226	23124	24621
7800	1319	1368		3320	3320	3668	6200	6671	10495	23733	25269
8000	1353	1403		3405	3405	3762	6359	6842	10765	24341	25917
8200	1387	1438		3490	3490	3856	6518	7013	11034	24950	26564
8400	1420	1473		3575	3575	3950	6677	7184	11303	25558	27212
8600	1454	1508		3661	3661	4044	6835	7355	11572	26167	27860
8800	1488	1543			3746	4138	6994	7526	11841	26775	28508
9000	1522	1578			3831	4232	7153	7697	12110	27384	29156
9200	1556	1613			3916	4326	7312	7868	12379	27992	29804
9400	1589	1648			4001	4421	7471	8040	12648	28601	30452
9600	1623	1683			4086	4515	7630	8211	12917	29209	31100
9800	1657	1719			4171	4609	7789	8382	13186	29818	31748
10000	1691	1754			4256	4703	7948	8553	13456	30426	32396

LOW SERIES HYDRAULIC TORQUE WRENCH PRESSURE-TORQUEC HART

Model	2LOW		4LOW				8LOW		14LOW	30LOW	
Bolt Size Range	19-55	60	34-36	41	46-65	70-80	41-95	100-105	50-117	110-155	160-175
Mpa	N.m	N.m	N.m	N.m	N.m	N.m	N.m	N.m	N.m	N.m	N.m
7	232	241	585	585	585	647	1094	1177	1852	4188	4459
8	265	275	669	669	669	739	1250	1345	2117	4786	5096
9	299	310	752	752	752	832	1407	1513	2381	5385	5733
10	332	344	836	836	836	924	1563	1682	2646	5983	6370
11	365	379	920	920	920	1017	1719	1850	2910	6581	7007
12	398	413	1003	1003	1003	1109	1876	2018	3175	7180	7644
13	432	448	1087	1087	1087	1202	2032	2186	3440	7778	8281
14	465	482	1171	1171	1171	1294	2188	2354	3704	8376	8918
15	498	517	1255	1255	1255	1387	2344	2523	3969	8975	9555
16	531	551	1338	1338	1338	1479	2501	2691	4233	9573	10192
17	565	586	1422	1422	1422	1572	2657	2859	4498	10171	10829
18	598	620	1506	1506	1506	1664	2813	3027	4762	10769	11467
19	631	655	1589	1589	1589	1757	2970	3195	5027	11368	12104
20	665	689	1673	1673	1673	1849	3126	3364	5292	11966	12741
21	698	724	1757	1757	1757	1942	3282	3532	5556	12564	13378
22	731	758	1840	1840	1840	2034	3439	3700	5821	13163	14015
23	764	793	1924	1924	1924	2127	3595	3868	6085	13761	14652
24	798	827	2008	2008	2008	2219	3751	4037	6350	14359	15289
25	831	862	2092	2092	2092	2312	3907	4205	6615	14958	15926
26	864	896	2175	2175	2175	2404	4064	4373	6879	15556	16563
27	897	931	2259	2259	2259	2497	4220	4541	7144	16154	17200
28	931	965	2343	2343	2343	2589	4376	4709	7408	16753	17837
29	964	1000	2426	2426	2426	2682	4533	4878	7673	17351	18474
30	997	1034	2510	2510	2510	2774	4689	5046	7938	17949	19111
31	1030	1069		2594	2594	2867	4845	5214	8202	18548	19748
32	1064	1103		2677	2677	2959	5002	5382	8467	19146	20385
33	1097	1138		2761	2761	3052	5158	5550	8731	19744	21022
34	1130	1172		2845	2845	3144	5314	5719	8996	20343	21659
35	1164	1207		2929	2929	3237	5470	5887	9260	20941	22296
36	1197	1241		3012	3012	3329	5627	6055	9525	21539	22933
37	1230	1276		3096	3096	3422	5783	6223	9790	22138	23570
38	1263	1310		3180	3180	3514	5939	6391	10054	22736	24207
39	1297	1345		3263	3263	3607	6096	6560	10319	23334	24845
40	1330	1379		3347	3347	3699	6252	6728	10583	23932	25482
41	1363	1414		3431	3431	3792	6408	6896	10848	24531	26119
42	1396	1448		3514	3514	3884	6565	7064	11113	25129	26756
43	1430	1483		3598	3598	3977	6721	7232	11377	25727	27393
44	1463	1517		3682	3682	4069	6877	7401	11642	26326	28030
45	1496	1552		3766	3766	4162	7033	7569	11906	26924	28667
46	1530	1586		3849	3849	4254	7190	7737	12171	27522	29304
47	1563	1621		3933	3933	4347	7346	7905	12435	28121	29941
48	1596	1655		4017	4017	4439	7502	8073	12700	28719	30578
49	1629	1690		4100	4100	4532	7659	8242	12965	29317	31215
50	1663	1724		4184	4184	4624	7815	8410	13229	29916	31852
51	1696	1759		4268	4268	4717	7971	8578	13494	30514	32489
52	1729	1793		4351	4351	4809	8128	8746	13758	31112	33126
53	1762	1828		4435	4435	4902	8284	8914	14023	31711	33763
54	1796	1862		4519	4519	4994	8440	9083	14288	32309	34400
55	1829	1897		4603	4603	5087	8596	9251	14552	32907	35037
56	1862	1931		4686	4686	5179	8753	9419	14817	33506	35674
57	1895	1966		4770	4770	5272	8909	9587	15081	34104	36311
58	1929	2000		4854	4854	5364	9065	9756	15346	34702	36948
59	1962	2035		4937	4937	5457	9222	9924	15611	35301	37585
60	1995	2069		5021	5021	5549	9378	10092	15875	35899	38223
61	2029	2104			5105	5642	9534	10260	16140	36497	38860
62	2062	2138			5188	5734	9691	10428	16404	37095	39497
63	2095	2173			5272	5827	9847	10597	16669	37694	40134
64	2128	2207			5356	5919	10003	10765	16933	38292	40771
65	2162	2242			5440	6012	10159	10933	17198	38890	41408
66	2195	2276			5523	6104	10316	11101	17463	39489	42045
67	2228	2311			5607	6197	10472	11269	17727	40087	42682
68	2261	2345			5691	6289	10628	11438	17992	40685	43319
69	2295	2380			5774	6382	10785	11606	18256	41284	43956
70	2328	2414			5858	6474	10941	11774	18521	41882	44593

ASSEMBLING DRAWING FOR RATCHET LINK--LOW SERIES

2LOW、4LOW、8LOW、14LOW、30LOW SERIES

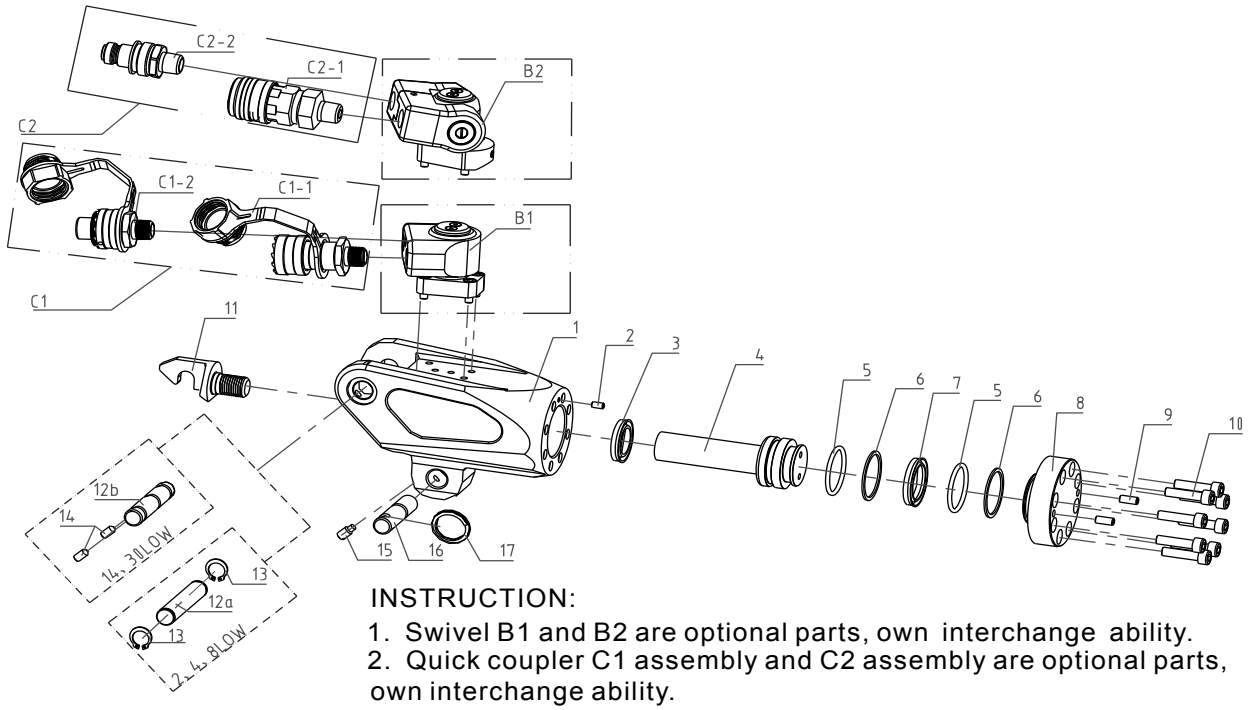


PARTS LIST FOR RATCHET LIINK---LOW SERIES

	Model Number	2LOW	4LOW	8LOW	14LOW	30LOW
Item	Name	Quantity	Quantity	Quantity	Quantity	Quantity
1a	Side Plate(Left)		1	1	1	1
1b						
2	Copper Belt				2	2
3	Drive Plate(Right)	1	1	1	1	1
4	Reaction Block	1	1	1	1	1
5	Ratchet Spline	1	1	1	1	1
6	Drive Plate(Left)	1	1	1	1	1
7a	Side Plate(Right)		1	1	1	1
7b		1				
8	Reaction Block Screw	4	4	4	4	4
9	Screw(Reaction Pawl Bushing And Top Spacer)	4	4	4	2	2
10a	Top Spacer		1	1	1	1
10b		1				
11	Roll Pin for Top Spacer		1	1	1	1
12	Drive Pin for Drive Plate	1	1	1	1	1
13	Roll Pin for Drive Plate	2	2	2	2	2
14	Drive Pin Spring	1	1	1	1	1
15	Drive Pawl	1	1	1	1	1
16	Spring Seat	1				
17	Compressed Spring	1	1	1	1	1
18	Drive Pawl Primary	1	1	1	1	1
19	Pin for Side Plate	1	1	1	1	1
20	Compressed Spring for Reaction Pawl	1	1	1	1	1
21a	Shaft of Rotation	1			1	1
21b			1	1		
22	Reaction Pawl Bushing	1	2	2	1	1
23a	Reaction Pawl		1	1	1	1
23b		1				
24	Shroud	1	1	1	1	1

DRAWING FOR POWER HEAD WITH SWIVEL ON TOP AND PART LIST-LOW SERIES

2LOW、4LOW、8LOW、14LOW、30LOW SERIES



INSTRUCTION:

1. Swivel B1 and B2 are optional parts, own interchange ability.
2. Quick coupler C1 assembly and C2 assembly are optional parts, own interchange ability.

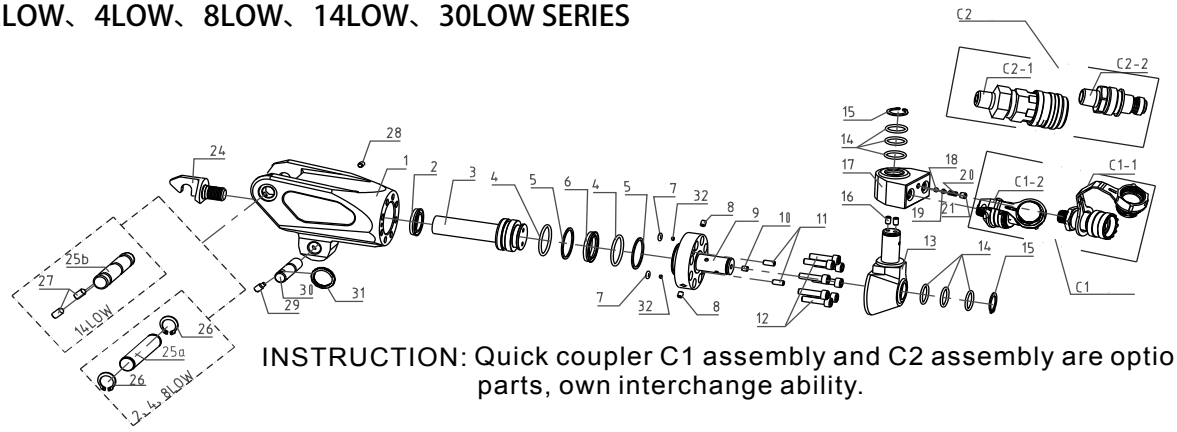
Model Number		2LOW	4LOW	8LOW	14LOW	30LOW
Item	Name	Quantity	Quantity	Quantity	Quantity	Quantity
1	Body	1	1	1	1	1
2	Casing Cap of Body	1		1	1	1
3	U-Ring for Body	1	1	1	1	1
4	Piston Rod	1	1	1	1	1
5	O-Ring for Piston Rod and End Cap	2	2	2	2	2
6	Retaining Ring for Piston Rod and End Cap	1	2	2	2	2
7	U-Ring for Piston Rod	1	1	1	1	1
8	End Cap	1	1	1	1	1
9	End Cap Screw		2	2	2	2
10	Screw of Body	8	8	8	8	8
11	Rod End	1	1	1	1	1
12a	Fixed Pin Upper	1	1	1		
12b					1	1
13	Retaining Ring for Fixed Pin Upper	2	2	2		
14	Screw for Fixed Pin Upper				2	2
15	Screw with Spring	1	1	1	1	1
16	Link Pin	1	1	1	1	1
17	Draw Ring	1	1	1	1	1
B1	Swivel	1	1	1	1	1
B2		1	1			
C1-1	Male Coupler	1	1	1	1	1
C2-1		1	1	1	1	1
C1-2	Female Coupler	1	1	1	1	1
C2-2		1	1	1	1	1

INSTRUCTION:

1. Swivel B1 and B2 are optional parts, own interchange ability.
2. Quick coupler C1 assembly and C2 assembly are optional parts, own interchange ability.

DRAWING FOR POWER HEAD WITH SWIVEL IN BACKSIDE AND PART LIST-LOW SERIES

2LOW、4LOW、8LOW、14LOW、30LOW SERIES



INSTRUCTION: Quick coupler C1 assembly and C2 assembly are optional parts, own interchange ability.

Model Number		2LOW	4LOW	8LOW	14LOW
Item	Name	Quantity	Quantity	Quantity	Quantity
1	Body	1	1	1	1
2	U-Ring for Body	1	1	1	1
3	Piston Rod	1	1	1	1
4	O-Ring for Piston Rod and End Cap	2	2	2	2
5	Retaining Ring for Piston Rod and End Cap	1	2	2	2
6	U-Ring for Piston Rod	1	1	1	1
7	O-Ring for End Cap	2	1	1	2
8	Screw of Side End Cap	2	1	1	2
9	End Cap	1	1	1	1
10	Screw of Top End Cap	2	1	1	2
11	End Cap Screw		2	2	2
12	Screw of Body	8	8	8	8
13	Swivel	1	1	1	1
14	0-Ring for The Swivel	6	6	6	6
15	Retainer Ring for The Swive	2	2	2	2
16	Screw for The Swivel	4	2	2	4
17	Swivel Joint	1	1	1	1
18	Steel Ball	1	1	1	1
19	Spring Pedestal	1	1	1	1
20	Spring	1	1	1	1
21	Plug	1	1	1	1
24	Rod End	1	1	1	1
25a	Fixed Pin Upper	1	1	1	
25b					1
26	Retaining Ring for Fixed Pin Upper	2	2	2	
27	Screw for Fixed Pin Upper				2
28	Screw	2	1	1	1
29	Screw with Spring	1	1	1	1
30	Link Pin	1	1	1	1
31	Draw Ring	1	1	1	1
32	Copper Gasket	2			
C1 -1	Male Coupler	1	1	1	1
C2 -1		1	1	1	1
C1 -2	Female Coupler	1	1	1	1
C2 -2		1	1	1	1
INSTRUCTION:quick coupler c1 assembly and c2 assembly are optional parts, own interchange ability.					

Maintenance

Lubrication:

- Periodically coat all moving parts with a good quality lubricant.
- Under harsh environmental conditions perform cleaning and lubricating more frequently.

Hydraulic Hose Assembly:

- Inspect the hydraulic hose assembly for cracks, burns, kinks, crush spots and leaks after each job.
- Flush hydraulic fittings periodically as they can become plugged with dirt.
- Replace the hydraulic hose assembly immediately if you find any damage.

Connectors:

- Keep hydraulic coupler fittings clean and do not allow them to drag on the floor or ground.
- Even small particles of dirt can cause the internal valves to malfunction.

Cylinder Seals:

- If the cylinder requires disassembly, replace cylinder seals at the same time.
- Seal kits are readily available.

  Unless you have a qualified technician on staff, you should consider shipping the tool to a certified repair technician.

Structural Members:

- Inspect all structural parts on the tool periodically for cracks, chips or deformities.
- If present replace the part immediately.

Calibration:

- Calibrate all hydraulic torque wrenches and gauges annually.

Appendix

Recommended Torque For B7 Studs (ASTM A193)

Based Upon 50% Yield

Bolt diameter	Heavy hex nut size (A.F.)	Lubricated torque using copper,graphite or comparable lubricant with a coefficient of friction F-.100(both nut face and threads should be well lubricated	Dry steel on steel,no lubricant,coefficient offriction F-.400
3/4”	1-1/4”	157	559
7/8”	1-7/16”	250	893
1”	1-5/8”	373	1332
1-1/8”	1-13/16”	538	1994
1-1/4”	2”	746	2720
1-3/8”	2-3/16”	1000	3678
1-1/2”	2-3/8”	1307	4837
1-5/8”	2-9/16”	1682	6260
1-3/4”	2-3/4”	2109	7888
1-7/8”	2-15/16”	2602	9775
2	3-1/8”	3167	11942
2-1/8”	3-5/16”	3809	14408
2-1/4”	3-1/2”	4531	17191
2-3/8”	3-11/16”	5339	20310
2-1/2”	3-7/8”	6238	23786
2-3/4”	3-1/4”	7533	28846
3”	4-5/8”	9803	37670
3-1/4”	5”	12488	48129
3-1/2”	5-3/8”	15622	60365
3-3/4”	5-3/4”	19241	74516
4”	6-1/8”	22162	86146
4-1/4”	6-1/2”	23337	90720
4-1/2”	6-7/8”	26332	102513
4-3/4”	7-1/4”	30994	120831
5”	7-5/8”	36176	141210

WREN®

KLW4000D
Multi-Port Power Pack
Operation and Maintenance Manual

http://www.wrenus.com

Safety Guide

To use the KLW4000DMulti-Port Power Pack safely you must follow correct operation guidelines and inspect the equipment regularly. Read and follow all instructions and put on proper personal protective equipment (PPE) prior to use.

UPON RECEIPT OF THIS TOOL, INSPECT THE PACKAGE FOR DAMAGE.

Carefully inspect all components for damage incurred during shipping. If any shipping damage is found, notify the carrier at once. Shipping damage is NOT covered by warranty. The carrier is responsible for all repair or replacement costs resulting from damage in shipment.

Neither WREN, nor its distributors are responsible for damage caused by unsafe and/or faulty operations. If a problem arises during use, shut off the power immediately and consult your WREN distributor.

ALL OF OUR PRODUCTS MAY HAVE UPGRADES AND MODIFICATIONS WITHOUT NOTICE.

Table of Contents

- -

Warnings

Hydraulic Hose:

- Inspect hose for wear and damage prior to every use.
    - Only use twin line high pressure hydraulic hoses rated for 10,000 PSI with at least a 3:1 safety factor.
    - The maximum operating pressure is 10,000 PSI - Do not exceed 10,000 PSI.
- Do not let the hose kink, twist, curl or bend so tightly that oil flow within the hose is blocked or reduced.
    - The minimum bending radius: R>5 inch.
    - Too small of a bending radius will kink and destroy the high pressure hydraulic hose.
- Before operating the hydraulic power pack, tighten all hydraulic hose connections with the proper tools.
    - **Do not** overtighten.
    - Connections should be tightened securely and leak-free.
    - Over tightening can cause premature coupler thread failure.
- Shut off the electric motor before breaking any hydraulic connections in the system.
    - Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the hydraulic power pack.
    - Never attempt to grasp a leaking pressurized hose with your hands. The force of the escaping hydraulic fluid could cause serious injury.
- **Do not** subject the hose to potential hazards such as:
    - Fire
    - Sharp surfaces
    - Extreme heat or cold
    - Heavy impact
- Hose material and coupler seals must be compatible with the hydraulic fluid.
    - Keep hoses away from contact with corrosive materials such as creosote-impregnated objects and some paints and solvents.
    - Never paint a hydraulic hose.
    - Never paint hydraulic couplers.
    - Hose deterioration due to corrosive materials can result in premature failure and serious personal injury.

KLW4000D Multi-Port Power Pack

- Do not exceed the maximum hydraulic pressure rating of 10,000 PSI.
- Do not tamper with the internal high pressure relief valve.
    - Creating pressure beyond rated capacities can result in serious personal injury.
- Before replenishing the hydraulic oil, retract the system to prevent overfilling the pump reservoir.
    - Overfilling can cause personal injury due to excess reservoir pressure created when the wrenches are retracted.

Power Supply:

- **Disconnect the hydraulic power pack from the power supply when performing maintenance or repairs.**
    - If the power supply is damaged or the inner wiring is exposed in any way, replace immediately.
    - If the power cord is damaged or wiring is exposed, replace or repair immediately.
    - Check the total amperage draw for the electrical circuit you will be using.
    - Low amperage can cause the power pack to generate excessive heat and may cause the electric circuit breakers to trip.

Hydraulic Couplers

- Never overtighten the hydraulic coupler.
    - Overtightening can cause premature thread failure.

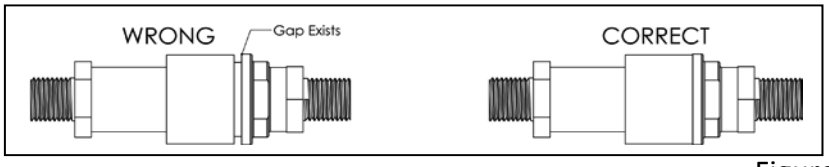


Figure 1

- Check for gaps in the hydraulic coupler.
    - Gaps can cause a disruption in the flow of hydraulic fluid.
    - Gaps will cause the hydraulic torque wrench to not operate.
- Immediately replace any worn or damaged hydraulic couplers.
- Do not use the hose to move the attached equipment.

IMPORTANT

WHEN ONLY USING ONE HYDRAULIC TORQUE WRENCH, COVER THE EMPTY HYDRAULIC COUPLINGS WITH DUST CAPS.

USE A STABLE ELECTRIC SOURCE. IF POWER SUPPLY IS UNSTEADY IT MAY AFFECT THE PERFORMANCE AND MAY DAMAGE THE HYDRAULIC POWER PACK.

IF YOU ARE USING AN EXTENSION CORD TO POWER THE HYDRAULIC PUMP, USE A HEAVY GAUGE CORD (12 GAUGE OR BETTER).

Operation Warnings:

- **Do not** permit anyone to stand in front of open hydraulic couplers during operation.
- **Never** exceed the maximum operating pressure of 10,000 PSI.
- Before performing any maintenance, shut off power.
- **Do not** operate without oil.
- Keep the power pack clean.
- **Do not** operate in wet conditions.

Set Up

Filling the Reservoir:

Attention: The power pack has been shipped **without** oil in the reservoir. Only use a high-grade (Grade 46 or better), quality non-foaming hydraulic oil.

1. Clean the area around the filler cap.
    a. Any dirt or grime in the hydraulic oil can damage the internal workings of the power pack.
2. Remove the filler cap, and insert a clean funnel.
3. Fill with hydraulic oil to 1” from the top of the filler hole.
4. Replace filler cap.
5. Cycle the power pack (with hydraulic torque wrench attached) several times.
6. Retract the hydraulic torque wrench and check the oil level in the power pack reservoir again.
    a. This will also help eliminate air from the system.

Hydraulic Connections:

1. Inspect all hydraulic twin line hoses, threads and fittings for signs of wear or damage and replace as needed.
2. Clean all hose ends and hydraulic couplers.
3. Connect the twin line hydraulic hose to the hydraulic torque wrench and the power pack, making sure all hydraulic couplers are snug.
4. Jog the power pack several times.
    a. The power pack is now ready to be put into regular operation.

Adjusting the Hydraulic Pressure:

IMPORTANT: NEVER EXCEED 10,000 PSI

NOTE: For easy adjustment of the pressure regulating valve always adjust the pressure by increasing to the desired pressure setting.

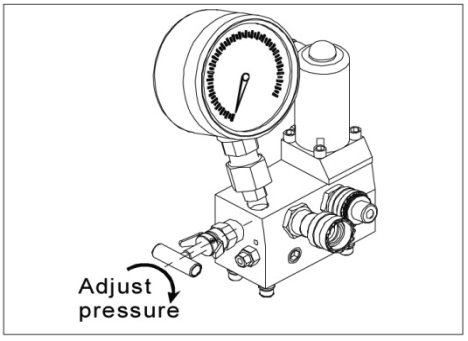


Figure 2

1. Loosen the locknut on the pressure regulating valve, and back the adjusting knob out a few turns.
    a. Do so by turning the adjusting knob in a counterclockwise direction. (Figure 2)
    b. This will decrease the pressure setting to a pressure lower than the desired pressure.

ATTENTION: THE POWER PACK MUST BE COMPLETELY CONNECTED AND THE HYDRAULIC TORQUE WRENCH MUST NOT BE ON THE APPLICATION WHEN ADJUSTING THE PRESSURE.

2. Connect the electric power supply and flip the on/off switch to "On"
    a. This switch is located on the back of the electrical control box.
3. Press the rocker switch on the remote control handle to the center position to turn the power pack on.
    a. The power pack will deliver hydraulic oil to the low pressure port (Port B).
4. Press the rocker switch on the top position to "Advance".
    a. The power pack will deliver hydraulic oil to the high pressure port (Port A).
5. While holding remote rocker in the "Advance" position, slowly turn the adjusting knob in a clockwise direction.
    a. This will gradually increase the pressure setting.
6. When the desired pressure is reached, lock the adjusting knob in position by tightening the locknut.

IMPORTANT: NEVER EXCEED 10,000 PSI

Operation

1. Press the remote rocker switch on the top to advance the hydraulic torque wrench.
2. When you hear an audible "Click" from the hydraulic torque wrench, release the remote rocker.
    a. The hydraulic torque wrench will automatically retract.
3. When the hydraulic torque wrench is fully retracted, repeat the process until the desired pressure/torque rating is reached.

- To disconnect tools and hoses from system, you must release system pressure.
    a. To release pressure from system, press the rubber button on top of the solenoid. (Figure 3)

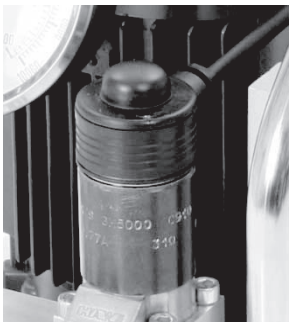


Figure 3

Attention: When using a hydraulic power pack for the first time, activate the hydraulic torque wrench prior to putting tool on an application; this will help remove any air from the system.

Features:

- KLW4000D Multi-Port Power Pack is a three-stage power pack. The pressure relief valve is assembled in the high pressure port.
- Flow rates for the power pack by stage are:
    - 50in /min in high pressure stage
    - 110in /min in mid pressure stage
    - 500in /min in low pressure stage
- Maximum operating pressure: 10,000 PSI
- The KLW4000D Multi-Port Power Pack can simultaneously run two torque wrenches at the same time.
- Electric power options:
    - 115V 60HZ, 1.2 Hp Motor
    - 220V 50HZ, 1.6 Hp Motor
    - 220V 60HZ, 1.6 Hp Motor
- Acceptable working temperature: -20 F to 120 F
- Overall dimensions: 11.8" x 14.8" x 17.9"
- Weight (no oil): 60lbs
- Hydraulic oil: ISO VG 46#

Warranties

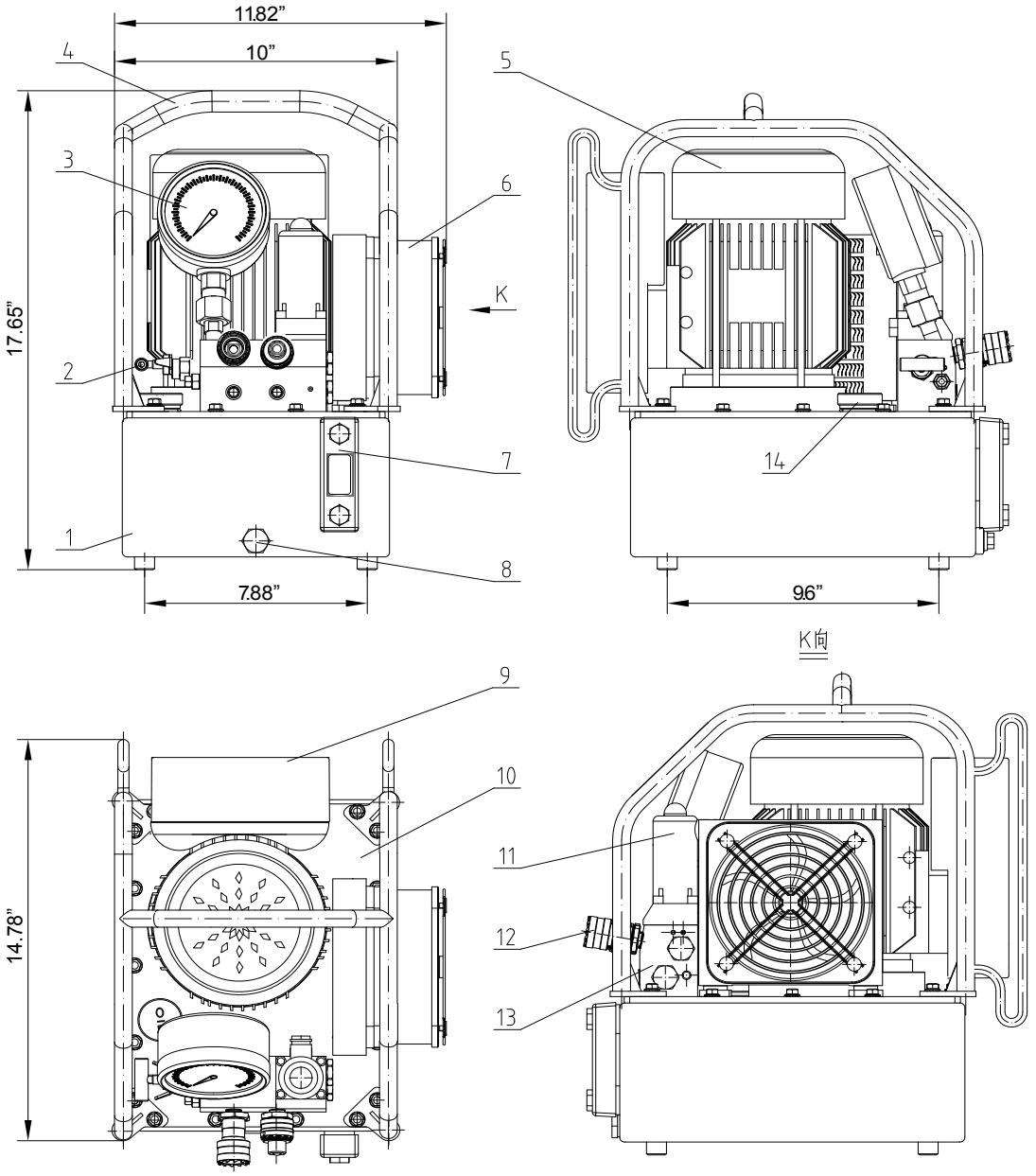
1. WREN guarantees the KLW4000D Multi-Port Power Pack quality for 12 months from the date of purchase.
2. If any quality issue due to the defects of the materials or workmanship is found within the guarantee period, WREN will repair or replace the defective products at WREN's discretion.
3. If the equipment is found to be damaged due to negligence, operating the power pack incorrectly, tampering with, or attempting to repair the power pack in part or whole, the warranty is invalidated.

Trouble Shooting Guide

Malfunction	Reason for malfunction	Solution
The power pack does not start.	Un-suitable power source.	Confirm the power supply meets the pump's specifications.
	The power is not connected.	Check the power connection.
The system has no hydraulic pressure.	The hydraulic couplers are not connected properly.	Tighten or re-install.
	No oil in the tank.	Fill oil.
	Not enough oil in tank.	Fill oil.
	Faulty pressure gauge.	Replace gauge.
The system still has no hydraulic pressure after checking the above.	The hydraulic couplers may have a vacuum lock.	Check hydraulic couplers to hydraulic torque wrench. Inspect couplers to ensure they are completely coupled. Occasionally couplers have to be replaced because the check ball does not stay open due to wear.
Hydraulic couplers are leaking.	The o-ring, is worn or missing in the female hydraulic couplers.	Replace the hydraulic couplers.
The desired hydraulic pressure can not be reached.	The pressure setting for high-pressure relief valve is adjusted too low.	Replace high pressure relief valve.
	Oil is mixed with water.	Replace the oil.
	Pressure relief valve broken.	Replace valve.
	Air may be in system.	Repeat operating the system with no load several time to eliminate air.
	High-pressure relief valve may be loose.	Tighten valve.
	The o-ring for high-pressure relief valve may be worn or missing.	Replace o-rings.
There is a loud noise when the power pack is operated.	The bearing(s) may be worn or broken.	Replace bearing(s).
	Air may be in system.	Repeat operating the system with no load several time to eliminate air.
High-pressure flow is reduced.	Piston or spring may be broken.	Replace piston assembly.
	Hydraulic couplers may be loose.	Tighten hydraulic couplers.
	Oil level may be low.	Fill with oil.
	Oil may be too cold.	Change hydraulic oil to a lighter grade.
	Dirt in pump or filter is clogged.	Replace filter and clean tank.

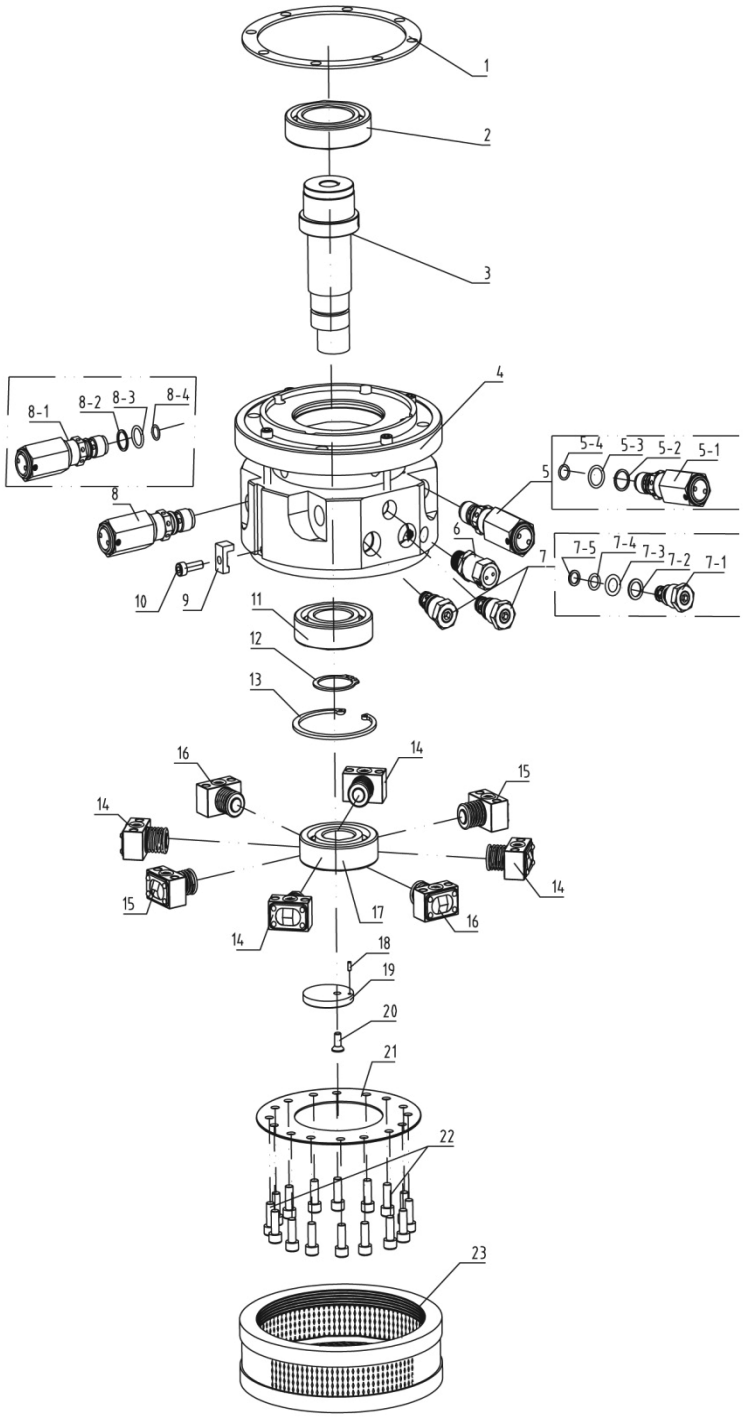
Appendix

EXTERNALD DIMENSION AND DESCRIPT ION OF PARTS



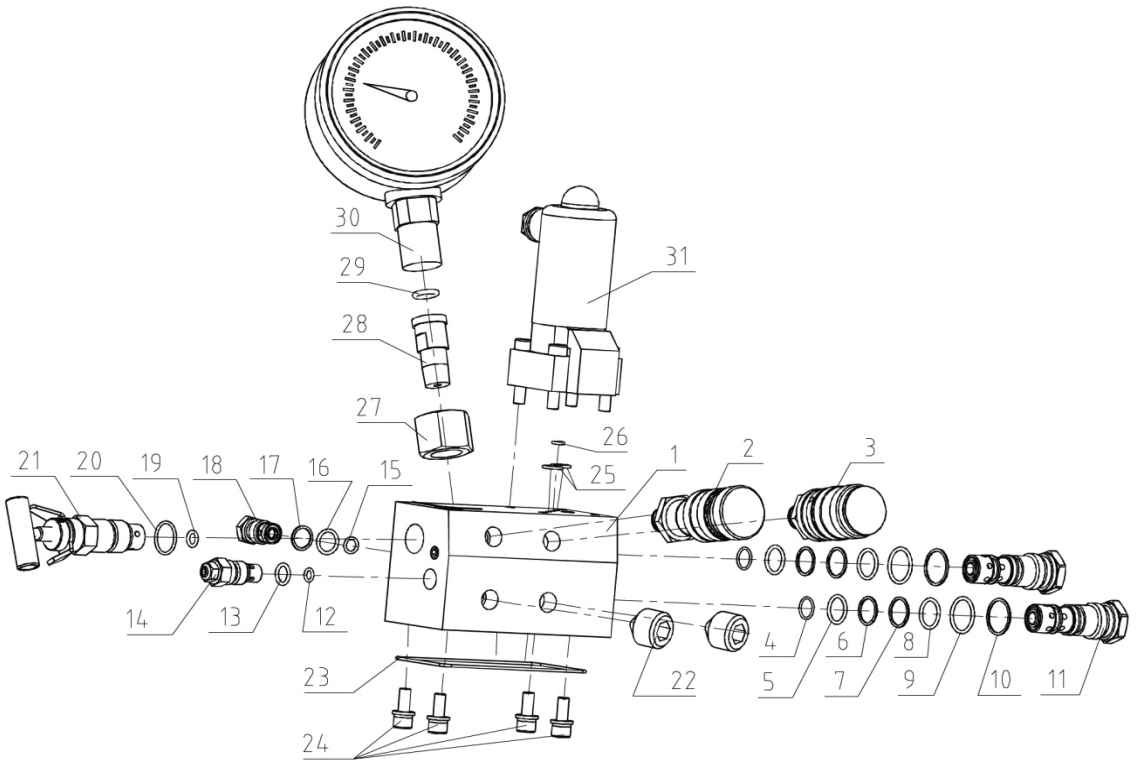
Item	Description	Item	Description
1	Oil reservoir	8	Release oil port
2	Adjusting pressure regulator	9	control system
3	Pressure gauge	10	Coverplate for oil tank
4	Frame for protecting	11	Solenoid valve
5	Motor	12	Quick Coupler
6	Radiator	13	Valve block
7	Oil lever measurer	14	Oil filling port

PART LIST FOR PUMP HEAD



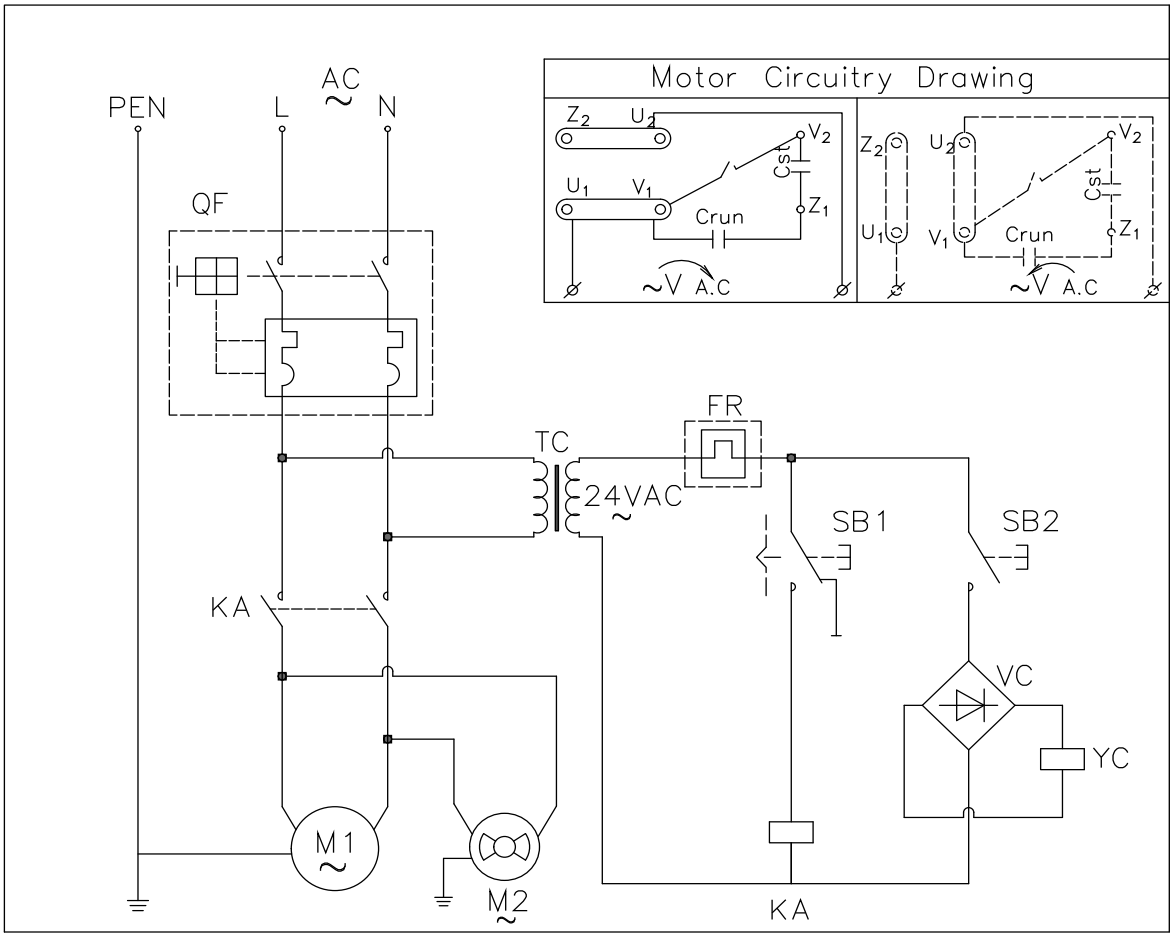
ITEM	DESCRIPTION	QTY
1	Seal Gasket	1
2	Bearing Top	1
3	Bearing Connector	1
4	Pump Body	1
5	Relief Valve Assembly	1
5.1	Relief Valve	1
5.2	Retaining Ring	1
5.3	O-Ring	1
5.4	O-Ring	1
6	Safety Valve Assembly	1
7	Check Valve Assembly	2
7.1	Check Valve	2
7.2	Retaining Ring	2
7.3	O-Ring	2
7.4	O-Ring	2
7.5	Retaining Ring	2
8	Relief Valve Assembly	1
8.1	Relief Valve	1
8.2	Retaining Ring	1
8.3	O-Ring	1
8.4	O-Ring	1
9	Filter Clip	1
10	Screw	1
11	Bearing Middle	1
12	Metal Retaining Ring	1
13	Clip	1
14	Piston	4
15	Piston	2
16	Piston	2
17	Bearing Bottom	1
18	Pin	1
19	Metal Plate	1
20	Screw	1
21	Flange	1
22	Screw	16
23	Screw	1

PARTS LIST FOR VALVE SYSTEM



ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY
1	Valve block	1	17	Retaining ring	1
2	Male coupler	2	18	Directional control valve	1
3	Female coupler	2	19	O-ring	1
4	O-ring	2	20	O-ring	1
5	O-ring	2	21	Adjusting valve	1
6	Retaining ring	2	22	Casing screw	2
7	Retaining ring	2	23	O-ring	1
8	O-ring	2	24	Screw	4
9	O-ring	2	25	O-ring	2
10	Retaining ring	2	26	O-ring	1
11	Directional valve	2	27	Connector	1
12	O-ring	1	28	Connector	1
13	O-ring	1	29	O-ring	1
14	Adjusting valve return pressure	1	30	Gauge	1
15	O-ring	1	31	Solenoid valve	1
16	O-ring	1			

ELECTRICAL CIRCUITRY DIAGRAM



115V 60HZ ELECTRICAL CONFIGURATION TABLE:

SYMBOL	NAME	MODEL
CRUN	Working capacitor	70uF 300V.AC
CST	Start capacitor	300uF 150V.AC
YC	Solenoid valve	GZ3-1 24V.DC
VC	Bridge rectifier	KBL2504
Sb1	Remote switch	LAS2GQH-11Z/S/FP
Sb2	Remote switch	GQ16H-10/s
TC	Transformer	TD-30 110V/24V
KA	Relay	JQX-76F-BLU-2A 24V
QF	Start breaker	BS32A
M1	Electric motor	1.25Hp 115V 60HZ
M2	Heat exchanger	38W 110V

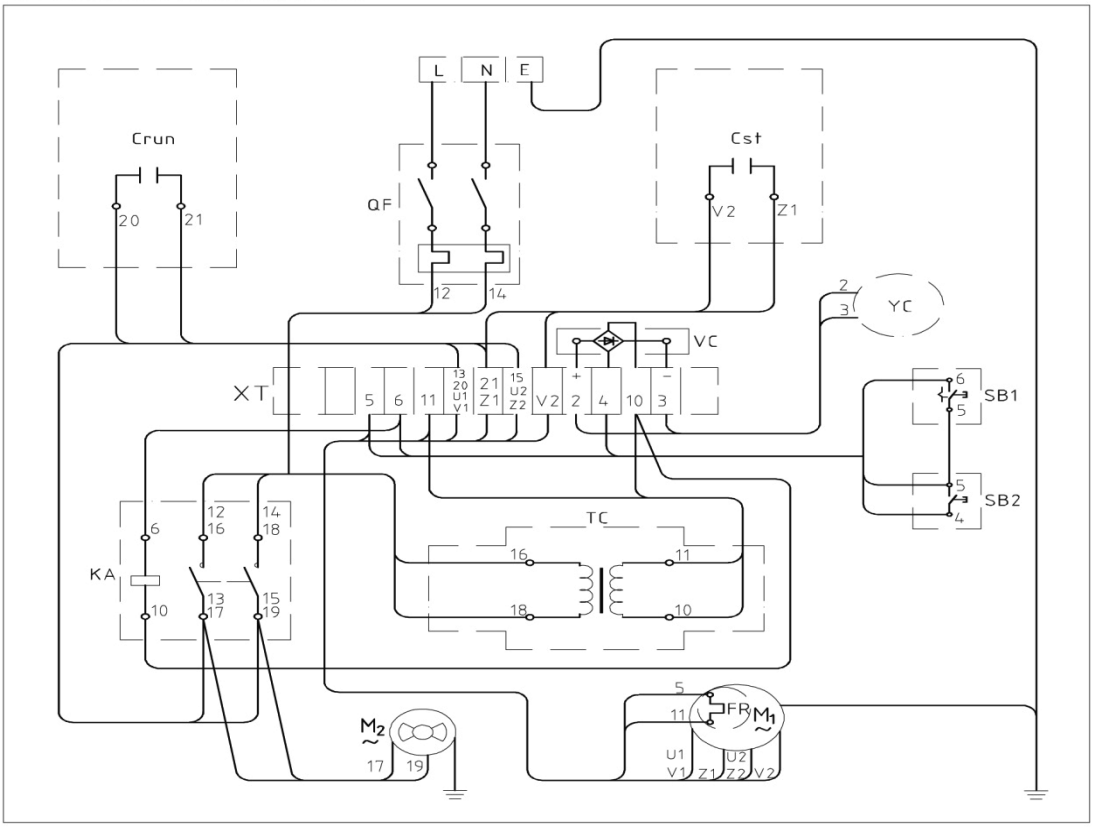
220V 50HZ ELECTRICAL CONFIGURATION TABLE:

SYMBOL	NAME	MODEL
CRUN	Working capacitor	30uF 450V.AC
CST	Start capacitor	150uF 250V.AC
YC	Solenoid valve	GZ3-1 24V.DC
VC	Rectifier bridge	KBL2504
Sb1	Remote switch	LAS2GQH-11Z/S/FP
Sb2	Remote switch	GQ16H-10/s
TC	Transformer	TD-30 220V/24V
KA	Relay	JQX-76F-BLU 24V
QF	Breaker	BS32A
M1	Electric motor	1.6Hp 220V 50HZ
M2	Heat exchanger	38W 220V

220V 60HZ ELECTRICAL CONFIGURATION TABLE:

SYMBOL	NAME	MODEL
CRUN	Working capacitor	30uF 450V.AC
CST	Start capacitor	150uF 250V.AC
YC	Solenoid valve	GZ3-1 24V.DC
VC	Rectifier bridge	KBL2504
Sb1	Remote switch	LAS2GQH-11Z/S/FP
Sb2	Remote switch	GQ16H-10/s
TC	Transformer	TD-30 220V/24V
KA	Relay	JQX-76F-BLU 24V
QF	Start breaker	BS32A
M1	Electric motor	1.6Hp 220V 60HZ
M2	Heat exchanger	38W 220V

ELECTRICAL SCHEMATIC



HYDRAULIC SCHEMATIC