

BSW& BHW SERIES

HYDRAULIC TORQUE WRENCH

USERS' MANUAL



BELIUM HYDRAULIC TOOLS

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OPERATION AND MAINTENANCE MANUAL

BSW AND BHW HYDRAULIC TORQUE WRENCH

This is operating manual of BSW and BHW series Torque Wrench, please read carefully with following instruction, warning and caution before using tool.

a) IMPORTANT INSTRUCTIONS ON RECEIPT (OPEN PACKAGE INSPECTION)

Carefully inspect all components for shipping damages, if any shipping damage is found, notify the carrier at once, shipping damage is NOT covered by warranty. The Carrier is responsible for all repairs.

b) SAFETY FIRST!

The hydraulic torque wrench is a power tool. Read all instructions, warnings and cautions before operation. Comply with the safety precautions to avoid personal injury or equipment damage while operating this tool! Neither Belium, nor its distributors are responsible for damage to the tools caused by unsafe and/or faulty operation.

c) PRODUCTIONS DESCRIPTION

Alloy and super high strength alloy steel for increased strength intensity and durability of the too. Double acting hydraulic design, can lock and loosen the bolt connection, widely suitable for large torque bolt and disassembly, high repeatability, a precise design is with accuracy $\pm 3\%$.

BSW SERIES Square Drive Torque Wrenches

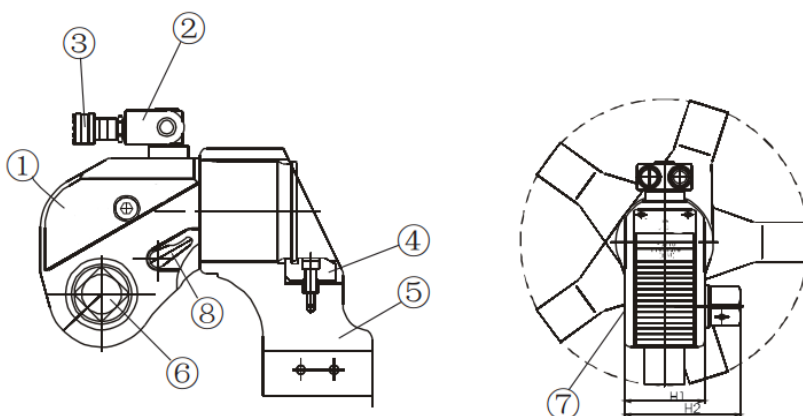
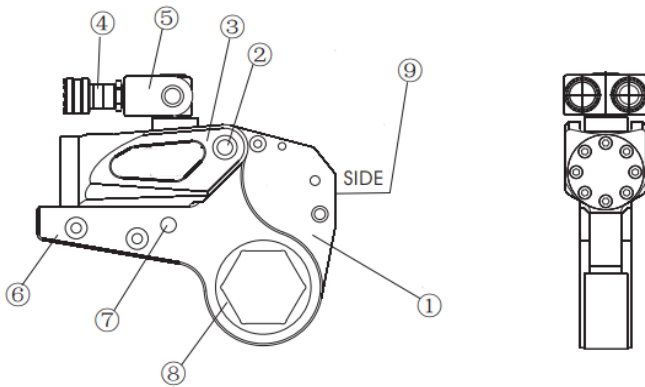


FIG1

ITEM	NAME
①	BODY
②	360° × 180° SWIVEL JOINT
③	QUICK COUPLING
④	FIXING HOOK
⑤	360° SWIVEL REACTION ARM
⑥	SQUARE DRIVE
⑦	DRIVE RETAINER
⑧	QUICK RELEASE ARM

BHW series, BHW Torque Wrenches:



ITEM	NAME
①	LOW PROFILE CASSETTE
②	PIN
③	POWER HEAD
④	QUICK COUPLING
⑤	360° × 360° SWIVEL JOINT
⑥	REACTION ARM
⑦	LINK PIN
⑧	RATCHET
⑨	360° SWIVEL JOINT

● **WARNING AND CAUTION**

SAFETY FIRST!

WARNING

To avoid personal injuries and/or equipment damage, be sure that every hydraulic component of the hydraulic torque wrench. Hydraulic hose assembly, hydraulic power pack and gauge are rated for 10,000PSI (700KG/M²) operating pressure.

WARNING

To minimize the danger of injury and damage to equipment: Never use the hydraulic torque wrench without a hydraulic gauge to indicate the working pressure. The hydraulic gauge is window to show what is happening in the hydraulic system.

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

WARNING

Immediately replace any worn or damaged parts of the tool with genuine BELIUM Parts.

CAUTION

Reduce damage to the hydraulic hose assembly by avoiding sharp bends and kinks when routing the hydraulic hose assembly. Using a bent or kinked hydraulic hose assembly will cause severe back-pressure. Also, sharp bends and kinks will internally damage the hose leading to premature failure. A kinked or damaged hydraulic hose assembly should be replaced immediately.

CAUTION

DO NOT drop heavy objects, crush, or drive over the hydraulic hose assembly. A sharp impact may cause internal damage to the hose wire strands. Applying pressure to a damaged hose may cause it to rupture. A crushed hydraulic hose assembly should be replaced immediately.

CAUTION

Avoid high temperature exposure to the hydraulic hose assembly.

ALWAYS INSPECT THE HYDRAULIC HOSE ASSEMBLY FOR DAMAGE AND WEAR PRIOR TO USE.

WARNING

To avoid personal injuries, equipment damage and /or warranty invalidation:

DO NOT: Remove the shroud from the hydraulic torque wrench. Modify any component of the hydraulic torque wrench. Adjust the hydraulic torque wrench safety relief valve located inside the swivel couplings.

CAUTION

The incorrect system connection may cause failure and injury. Before connecting the hydraulic torque wrench and hydraulic hose assembly to the assembled power pack, make sure the hydraulic torque wrench swivel couplings, hose couplings and hydraulic power pack couplings are clean and free of debris.

LOOSE FOR DIRTY COUPLERS WILL CAUSE TOOL NOT TO OPERATE PROPERLY

CAUTION

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

WARNING

Only use a high quality socket. The socket must measure up to standard ISO2725 and ISO-1174 or DIN3129 and DIN3121 or ASME-B107.0/1995. Never use a chrome plated socket.

WARNING



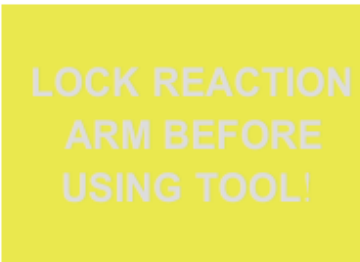
Always use a pin to lock the socket with the square drive in order to avoid the socket from falling off.

PROPER SAFETY AT TIRE

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

WARNING SIGN

Warning signs are shown in the following table.

warning table	Meaning	Affixed Position
	<p>PROHIBIT USING BY HAND</p>	<p>REVERSE LEVER</p>
	<p>THE SQUARE DRIVE IN POSITION, LEFT LOOSEN, RIGHT TIGHTEN</p>	<p>WORK HEAD</p>
	<p>PRIOR TO USE, FIXED THE REACTION ARM</p>	<p>REVERSE LEVER</p>

● BOLTING TIGHTENING FORCE RECOMMENDED CHART

FORM 1

Strength Grade		4.8		6.8		8.8		10.9		12.9	
Min breaking strength		392MPa		588MPa		784MPa		941MPa		1176MPa	
Material		Q235(SS41)		35(S35C)		35CrMo(SCM3)		42CrMo(SCM4)		40 GrNiMoA(SNCM)	
Bolting	Thread	Torque values		Torque values		Torque values		Torque values		Torque values	
		M	mm	KGM	N.m	KGM	N.m	KGM	N.m	KGM	N.m
14	22	7	69	10	98	14	137	17	165	23	225
16	24	10	98	14	137	21	206	25	247	36	363
18	27	14	137	21	206	29	284	35	341	49	480
20	30	18	176	28	296	41	402	58	569	69	680
22	32	23	225	34	333	55	539	78	765	93	911
24	36	32	314	48	470	70	686	100	981	120	1176
27	41	45	441	65	637	105	1029	150	1472	180	1764
30	46	60	588	90	882	125	1225	200	1962	240	2352
33	50	75	735	115	1127	150	1470	210	2060	250	2450
36	55	100	980	150	1470	180	1764	250	2453	300	2940
39	60	120	1176	180	1764	220	2156	300	2943	370	3626
42	65	155	1519	240	2352	280	2744	390	3826	470	4606
45	70	180	1764	280	2744	320	3136	450	4415	550	5390
48	75	230	2254	350	3430	400	3920	570	5592	680	6664
52	80	280	2744	420	4116	480	4704	670	6573	850	8330
56	85	360	3528	530	5149	610	5978	860	8437	1050	10290
60	90	410	4018	610	5978	790	7742	1100	10791	1350	13230
64	95	510	4998	760	7448	900	8820				
68	100	580	5684	870	8526	1100	10780				
72	105	660	6468	1000	9800	1290	12642				
76	110	750	7350	1100	10780	1500	14701				
80	115	830	8143	1250	12250	1850	18130				
85	120	900	8820	1400	13720	2250	22050				
90	130	1080	10584	1650	16170	2500	24500				
100	145	1400	13720	2050	20090						
110	155	1670	16366	2550	24990						
120	175	2030	19894	3050	29890						

REMARKS

1. All recommendations above are in accordance with the Germany standard (DIN).
2. The figures above represent the maximum bolt torque; the recommended torque is 80% of this chart figure.
3. The recommended tightening torque is 80% of the chart figure above. For example; for bolt for bolt M52 the strength grade is 8.8 therefore, the torque is $4708 \times 80\% = 3763 \text{N.m}$
4. The recommended loosening torque is 150% of the tightening torque. For example; the tightening torque is $3763 \times 150\% (200\%) = 5645 (7526) \text{N.M.}$

● OPERATION SECTION

HYDRAULIC TORQUE WRENCH SET UP

Connect the BSW square drive hydraulic torque wrench and hydraulic power pack with the proper twin line hydraulic hose assembly making sure all connections are proper and snug. If the couplings are not properly mated the hydraulic torque wrench may not operate.

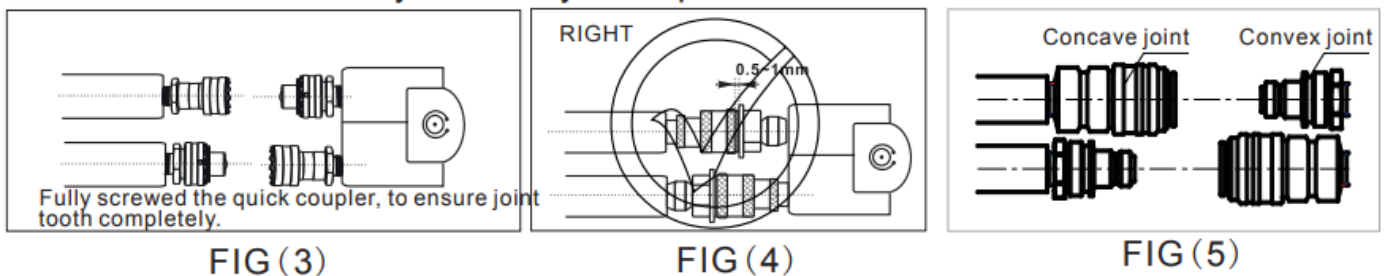
PREPARATION

1. Make certain of the size of the nut or bolt head, material, strength grade and determine the desired torque.

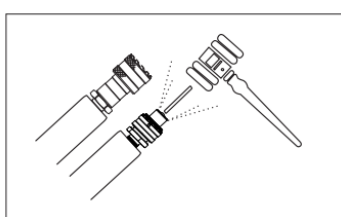
ALWAYS ABIDE BY THE MANUFACTURERS/ENGINEERS PROCEDURES

2. Determine the torque value needed and then determine the corresponding pressure of the torque wrench pump. This can be found in the Pressure-Torque Conversion Chart that was provided with the hydraulic torque wrench.
3. Inspect the hydraulic torque wrench set. Connect the hydraulic torque wrench, hydraulic Hose assembly and the hydraulic power pack in to a hydraulic circuit. Ensure that all hydraulic Connections are securely connected. Verify that the hydraulic hose assembly is not kinked, Crushed or damaged.
4. Connecting the hydraulic torque wrench:
The hydraulic torque wrench and torque wrench power pack are connected by a 10,000PSI Operation pressure twin line hydraulic hose assembly.

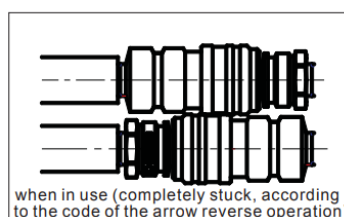
To connect the hydraulic hose assembly to the swivel as shown below Insure the connectors are fully engaged and screwed snugly together (FIG4), do as photo (4)show can ensure the connection success fully. This way can open the check valve, make the oil circuit smoothly



Otherwise, the check valve will lock under the steel ball without top connection, as a result the oil circuit will not pass through, the wrench will not operate, the reason is that the connection is filled with pressure, in order to protect the tool, the top swivel will automatic drain oil. Right way to do correction, please loose the hydraulic hose, check all of the steel ball inside the quick coupler, please try to press the steel ball by hand, as normal the ball will be flexible when you touch it, if it is hard, you may find a hammer to knock the ball until your carefully with the spray oil, to avoid stain your clothes. Perfectly done, you may reconnect the quick coupler again. If you prefer to card set quick coupler, it will be easier. Ref.: The arrow on the coupler put the male coupler into the female coupler directly.



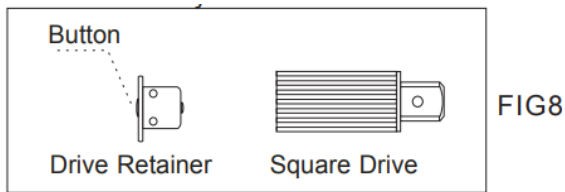
FIG(6)



FIG(7)

FOR BSW SERIES

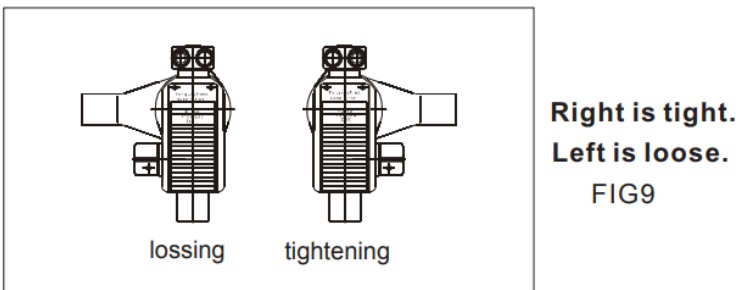
To remove the square, disengage the drive retainer assembly by depressing the center round button and gently pulling on the square end of square drive, The square drive will slide easily out.



To insert the square drive in the tool (FIG8), place the drive in the desired direction, engage drive and bushing splines, and then twist drive and bushing until ratchet spline can be engaged push drive through ratchet. Depress drive retainer button, engage retainer with drive and Release button to lock.

● TO 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.



5. Connecting the hydraulic pump:

The hydraulic torque wrench and torque wrench power pack are connected by a 10,000PSI operation pressure twin line hydraulic hose assembly.

IMPORTANT

TO AVOID HYDRAULIC TORQUE WRENCH MALFUNCTION:

DO NOT reverse connectors.

When use the hydraulic hose with quick coupler, the connection should follow from the Hydraulic torque wrench advance side to the pump advance side, from the hydraulic torque wrench retract side to the pump retract side, Each quick coupler should be inserted in the end, then screw the threaded sleeve by hand.

Carefully check whether the quick coupler is reliable; carefully check the oil in the pump

No oil shortage operation. Please plug the power electric power supply

● OPERATING THE HYDRAULIC TORQUE WRENCH

1. Put the wrench to the ground
2. Open the pump power switch, start the pump, then press the lock button to confirm the Pump is running normally
3. By pushing the remote control advance button, the rear of the hydraulic torque wrench will be pushed back until the reaction arm will make contact with the reaction point.
4. Continuing to hold the advance button as the square drive turns until you hear an audible "click" which will signify the hydraulic cylinder inside the hydraulic torque wrench is fully extended and will not turn the socket further. Release button.
5. Continuing to hold the remote control advance button, will result in a rapid buildup of Pressure to the point where the gauge reads what the hydraulic power pack was preset to prior to applying the hydraulic torque wrench.

IMPORTANT: the reading of full preset pressure after the cylinder is extended DOES NOT INDICATE that 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

6. Releasing the remote control button will automatically retract the cylinder. The hydraulic Torque wrench will automatically reset itself and the operator will hear an audible “click” indicating he can again push the remote control button and the square drive 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%. Repeatability is ±1%. Please repeat again and again make the wrench turn without loading, observe the wrench tightening or loosening no abnormalities can be put into the socket

IMPORTANT: ALWAYS ATTEMPT ONE FINAL CYCLE TO INSURE THE “STALL” POINT HAS BEEN REACHED.

REMARKS: When the hydraulic torque wrench is not in use, you may turn off the lock button; if long time no using of the wrench, please shut off the motor switch.

● ADJUST THE PRESSURE

Setting the pressure of the hydraulic power pack.

To set the pressure on the pump, follow this procedure:

1. Loosen the locking ring below the “T” handle on the hydraulic power pack external pressure regulator. Then turn the “T” handle counter clockwise until it turns freely and easily.
2. Turn the hydraulic power pack on. Using the hydraulic power pack remote pendant, push the advance switch (or button on the air hydraulic power pack) and hold it.
3. While holding the hydraulic power pack in the advance mode, slowly turn the “T” handle
4. Clockwise and observe the hydraulic power pack pressure gauge rise.

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

5. When your gauge reaches the predetermined pressure, stop turning the “T” handle and let the gauge settle.
6. If the pressure continues to rise above the predetermined pressure, release the back pressure slightly by turning the “T” handle counter clockwise. Then, depress the advance switch on the remote and slowly bring pressure up to the predetermined pressure.
7. When the pressure is correct, turn the pump off and tighten the locking ring which is under the “T” handle. This sets the pump pressure, which determines torque wrench output.
8. Once your target pressure is set and locked, cycle the hydraulic power pack once more to ensure that your pressure setting did not change as you tightened the locking ring.

● THE LOOSENING PROCESS

1. Set the pump to 10000 PSI. Change the drive to the loosening mode, assuring the reaction arm abuts squarely on a solid reaction point.
2. Press and hold the remote control advance button. Pressure will decrease as the Socket begins to turn. As the cylinder extends fully, you will hear an audible “chick”.
3. Release the remote control advance button and the cylinder automatically retracts, at which time you again hear the audible “chick”.
4. Repeat this process until the fastener can be removed by hand

NOTE: IF THE BOLT/NUT DOES NOT LOOSEN WITH THE ABOVE PROCEDURES, IT IS AN INDICATION THAT YOU REQUIRE A LARGER HYDRAULIC TORQUE WRENCH TO LOOSEN THE BOLT/NUT

THE TIGHTENING PROCESS

1. Hydraulic torque wrench setting

Firstly, accords to the design requirements set torque. If no design torque, please ref the 80% of the recommended torque.

Way: the setting torque=(the recommended torque of these chart figures)×(80%-90%)

For example: the recommended tightening torque is 90% of the chart figure above. For example; for bolt M48 the strength grade is 8.8 therefore, the torque is 3920×90%=3528Nm

2. Pump pressure setting

According to a desired torque value and the wrench model to set the pressure of the pump. For example 8.8 grade, M48 bolt, the setting torque is 3528N.m, if you prefer to BHW-4 wrench, you may find the torque is 3528N.m, the pump pressure is 54Mpa, so the pump pressure setting is 54Mpa.

3. Confirm the wrench is tightening, put the wrench on the nut, perform it until the nut does not move far.

LOCKED-ON

Should the hydraulic torque wrench be “locked-on” after the final cycle, push down the remote control advance button once more (to build pressure) and while maintaining this pressure, pull back on the accuracy assurance pawl lever (located on the side of the tool). Release the remote control advance button, while continuing to push down on the accuracy assurance lever (this will allow the hydraulic torque wrench to be removed easily).

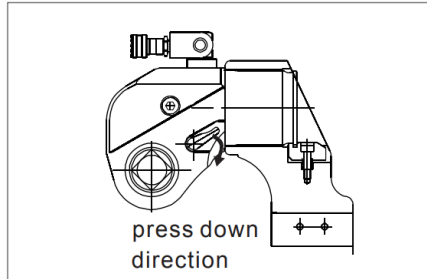


FIG10

BHW SERIES

The Ratchet link and the power head assembly and disassembly

Insert the hex ratchet links. The BHW profile hex ratchet links are inserted and removed from the power head as follows:

The “hook” described by the links drive plate is inserted around the fixed pin of the power head and the link is sung down to rest along the base of the power head cylinder. At this point, the link pin holes of the power head an link will align. Insert the link pin to secure. Pull out the pin, pull up the power head, and then along the groove direction, disassembly the power head and the ratchet link.

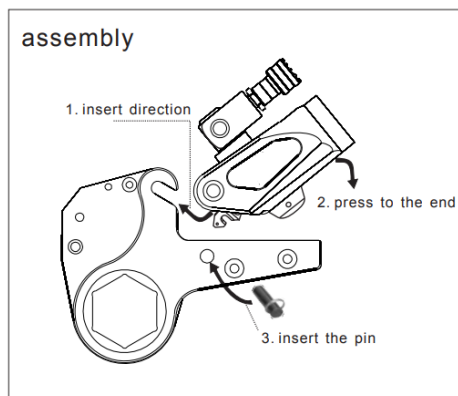


FIG 11

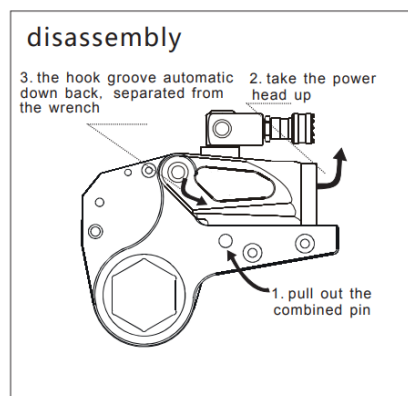


FIG 12

Direction position

Setting for tightening or loosening the nut:

The position of the tool relative to the nut determines whether the action will tighten or loosen the nut. The power stroke of the piston rod will always turn the ratchet toward the shroud.

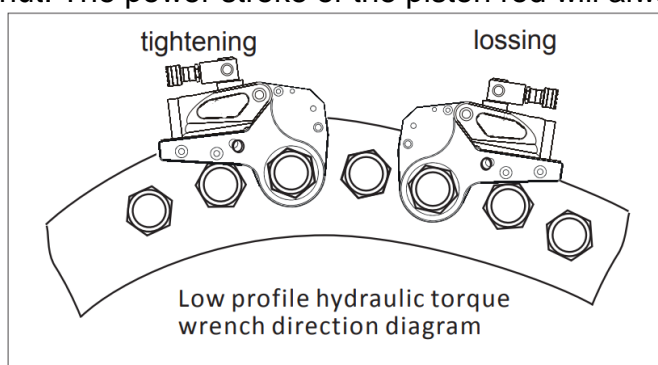


FIG 13

The nut turns clockwise for tightening and counters clockwise for loosening.

Preparation Determined the loose (tighten) nut size, select appropriated power head and ratchet link and reducer inserts.

CONNECT THE POWER PACK

Use twin hose to connect the high pump pressure outlet with the high pressure outlet of hydraulic wrench, low pressure outlet of the pump to low pressure outlet of the hydraulic torque wrench. Insert the quick couple sleeve into the end, then screw tightly without space. Check carefully whether the twin hose joint connection is reliable; please ensure the oil is enough. And the pump power is supplying.

WARNING No oil shortage!

TEST RUN

1. Put the wrench assembly in space, first start to finish, Check whether the rotating ratchet normal return or not, if the rotation is not normal. Maybe the hook position does not correspond between the power head and ratchet link, open to check.
2. Turn on the pump power switch, start the pump, then press the lock button to confirm the pump is running normally.
3. By pushing the remote control advance button, the rear of the hydraulic torque wrench will be pushed back until the reaction arm will make contact with the reaction point.
4. Continue to hold the advance button as the cassette turns until you hear an audible “click”, which will signify the hydraulic cylinder inside the hydraulic torque wrench is fully extended and will not turn the socket further. Release button.
5. Continuing to hold the remote control advance button, will result in a rapid buildup of procedure to the point where the gauge reads what the hydraulic power pack was preset to prior to applying the hydraulic torque wrench.

IMPORTANT: The reading of full preset pressure after the cylinder is extended does not indicate that 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.

6. Releasing the remote control button will automatically retract the cylinder. The hydraulic torque wrench will automatically reset itself and the operator will hear an audible “click”, indicating he can again push the remote control button and the cassette 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 $\pm 3\%$. Repeatability is $\pm 1\%$. Please repeat again and again, make the wrench turn without loading, observe the wrench tightening or loosening, no abnormalities, can be put into the nut directly.

IMPORTANT: ALWAYS ATTEMPT ONE FINAL CYCLE TO INSURE THE “STALL” POINT HAS BEEN REACHED.

REMARKS: When the hydraulic torque wrench not in use, you may turn off the lock button, if long no using the wrench, please shut off the pump motor switch.

OPERATION

Setting the pressure on the hydraulic power pack:

To set the pressure on the pump, follow this procedure:

- a) Loosen the locking ring below the “T” handle on the hydraulic power pack external pressure regulator. Then, turn the “T” handle counterclockwise until it turns freely and easily.
- b) Turn the hydraulic power pack on. Using the hydraulic power pack remote pendant, push the advance switch (or button on the air hydraulic power pack) and hold it.
- c) While holding the hydraulic power pack in the advance mode, slowly turn the “T” handle clockwise and observe the hydraulic power pack pressure gauge rise.

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

- d) When your gauge reaches the predetermined pressure, stop turning the “T” handle and let the gauge settle.

If the pressure continues to rise above the predetermined pressure, release the back pressure slightly by turning the “T” handle counterclockwise. Then, depress the advance switch on the remote and slowly bring pressure up to the predetermined pressure.

When the pressure is correct, turn the pump off and tighten the locking ring which is under the “T” handle. This sets the pump pressure, which determines torque wrench output. Once your target pressure is set and locked, run the hydraulic power pack once more to ensure that your pressure setting does not change as you tightened the locking ring.

THE LOOSENING PROCESS

1. Set the pump to 10000 PSI. Change the drive to the loosening mode, assuring the reaction arm abuts squarely on a solid reaction point.
2. Press and hold the remote control advance button. Pressure will decrease as the cassette begins to turn. As the cylinder extends fully, you will hear an audible “click”.
3. Release the remote control advance button and the cylinder automatically retracts, at which time you again hear the audible “click”.
4. Repeat this process until the fastener can be removed by hand.

NOTE: IF THE BOLT/NUT DOES NOT LOOSEN WITH THE ABOVE PROCEDURES, IT IS AN INDICATION THAT YOU REQUIRE A LARGER HYDRAULIC TORQUE WRENCH TO LOOSEN THE BOLT/NUT

THE TIGHTENING PROCESS

1. Hydraulic torque wrench setting

First, refer to the design requirements set torque, If no design torque, please ref the 80% of the recommended torque.

Way: the setting torque= (the recommended torque of these chart figures) × (80%-90%)

For example: the recommended tightening torque is 90% of the chart figure above. For example; for bolt M48 the strength grade is 8.8 therefore, the torque is $3920 \times 90\% = 3528\text{Nm}$

2. Pressure setting

According to a desired torque value and the wrench model to set the pressure of the pump. For example 8.8 grade, M48bolt, the setting torque is 3528N.m, if you prefer to BHW-4 wrench, you may find the torque is 3528N.m, the pump pressure is 42Mpa, so the pump pressure setting is 42Mpa

3. Confirm the wrench is tightening, put the wrench on the nut, perform it until the nut does not move far

LOCKED-ON

Should the hydraulic torque wrench be “locked-on” after the final cycle, push down the remote control advance button once more (to build pressure) and while maintaining this pressure, pull back on the accuracy assurance pawl lever (located on the side of the tool). Release the remote control advance button, while continuing to push down on the accuracy assurance lever (this will allow the hydraulic torque wrench to be removed easily).

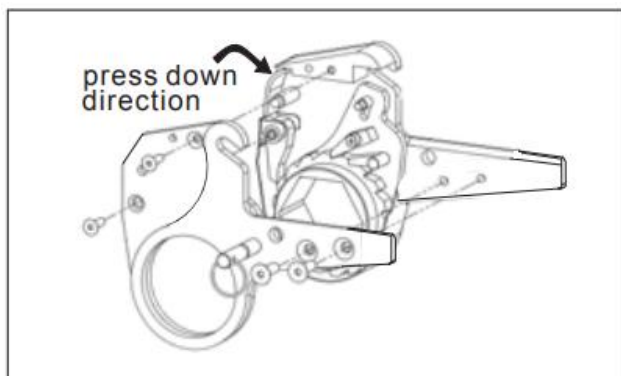


FIG 14

● BSW SERIES HYDRAULIC TORQUE WRENCH PRESSURE-TORQUE CHART

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

● **BSW SERIES HYDRAULIC TORQU WRENCH PRESSURE-TORQUE CHART**

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

● **BHW SERIES HYDRAULIC TORQU WRENCH PRESSURE-TORQUE CHART**

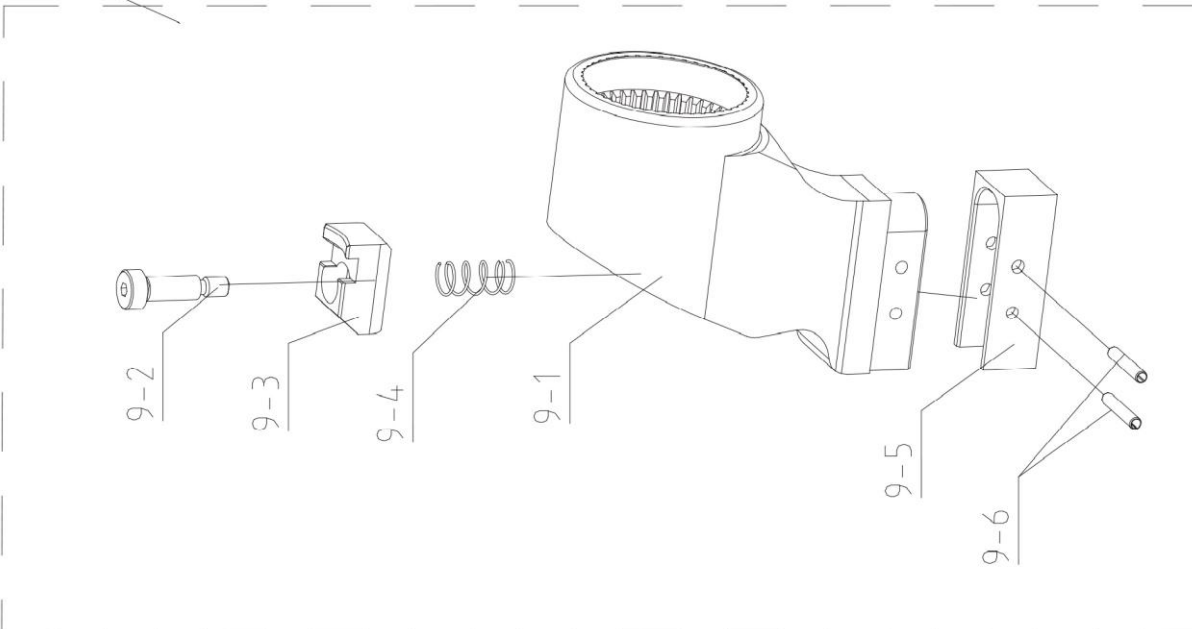
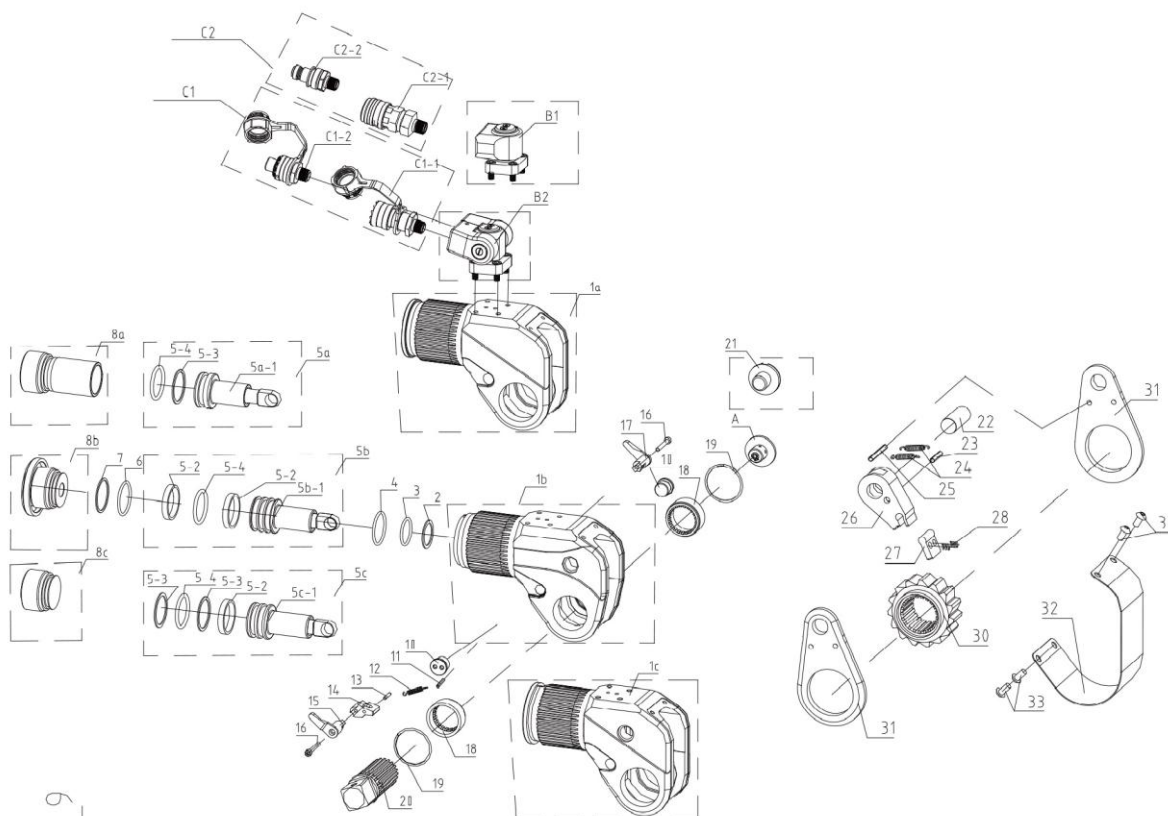
MODEL	BHW-2		BHW-4		BHW-8		BHW-14	BHW-30	
CROSS SIDE	19-55	60	34-65	70-80	41-95	100-105	50-117	110-155	160-175
MPA	N.M	N.M	N.M	N.M	N.M	N.M	N.M	N.M	N.M
7	232	241	585	647	1094	1177	1852	4188	4459
8	265	275	669	739	1250	1345	2117	4786	5096
9	299	310	752	832	1407	1513	2381	5385	5733
10	332	344	836	924	1563	1682	2646	5983	6370
11	365	379	920	1017	1719	1850	2910	6581	7007
12	398	413	1003	1109	1876	2018	3175	7180	7644
13	432	448	1087	1202	2032	2186	3440	7778	8281
14	465	482	1171	1294	2188	2354	3704	8376	8918
15	498	517	1255	1387	2344	2532	3969	8975	9555
16	531	551	1338	1479	2501	2691	4233	9573	10192
17	565	586	1422	1572	2657	2859	4498	10171	10829
18	598	620	1506	1664	2813	3027	4762	10769	11467
19	631	655	1589	1757	2970	3195	5027	11368	12104
20	665	689	1673	1849	3126	3364	5292	11966	12741
21	698	724	1757	1942	3282	3532	5556	12564	13378
22	731	758	1840	2034	3439	3700	5821	13163	14015
23	764	793	1924	2127	3595	3868	6085	13761	14652
24	798	827	2008	2219	3751	4037	6350	14359	15289
25	831	862	2092	2312	3907	4205	6615	14958	15926
26	864	896	2175	2404	4064	4373	6879	15556	16563
27	897	931	2259	2497	4220	4541	7144	16154	17200
28	931	965	2343	2589	4376	4709	7408	16753	17837
29	964	1000	2426	2682	4533	4878	7673	17351	18474
30	997	1034	2510	2774	4689	5046	7938	17949	19111
31	1030	1069	2594	2867	4845	5214	8202	18548	19748
32	1064	1103	2677	2959	5002	5382	8467	19146	20385
33	1097	1138	2761	3052	5158	5550	8731	19744	21022
34	1130	1172	2845	3144	5314	5719	8996	20343	21659
35	1164	1207	2929	3237	5470	5887	9260	20941	22296
36	1197	1241	3012	3329	5627	6055	9525	21539	22933
37	1230	1276	3096	3422	5783	6223	9790	22138	23570
38	1263	1310	3180	3514	5939	6391	10054	22736	24207
39	1297	1345	3263	3607	6096	6560	10319	23334	24845
40	1330	1379	3347	3699	6252	6728	10583	23932	25482
41	1363	1414	3431	3792	6408	6896	10848	24531	26119
42	1396	1448	3514	3884	6565	7064	11113	25129	26756
43	1430	1483	3598	3977	6721	7232	11377	25727	27393
44	1463	1517	3682	4069	6877	7401	11642	26326	28030
45	1496	1552	3766	4162	7033	7569	11906	26924	28667
46	1530	1586	3849	4254	7190	7737	12171	27522	29304
47	1563	1621	3933	4347	7346	7905	12435	28121	29941
48	1596	1655	4017	4439	7502	8073	12700	28719	30578
49	1629	1690	4100	4532	7659	8242	12965	29317	31215
50	1663	1724	4184	4624	7815	8410	13229	29916	31852
51	1696	1759	4268	4717	7971	8578	13494	30514	32489
52	1729	1793	4351	4809	8128	8746	13758	31112	33126
53	1762	1828	4435	4902	8284	8914	14023	31711	33763
54	1796	1862	4519	4994	8440	9083	14288	32309	34400
55	1829	1897	4603	5087	8596	9251	14552	32907	35037
56	1862	1931	4686	5179	8753	9419	14817	33506	35674
57	1895	1966	4770	5272	8909	9587	15081	34104	36311
58	1929	2000	4854	5364	9065	9756	15346	34702	36948
59	1962	2035	4937	5457	9222	9924	15611	35301	37585
60	1995	2069	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

● **BHW SERIES HYDRAULIC TORQU WRENCH PRESSURE-TORQUE CHART**

MODEL	BHW-2		BHW-4		BHW-8		BHW-14	BHW-30		
	CROSS SIDE	19-55	60	34-65	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
1000	169	175	426	470	795	855	1346	3043	3240	
1200	203	210	511	564	954	1026	1615	3652	3888	
1400	237	245	596	658	1113	1197	1884	4260	4536	
1600	270	280	681	752	1272	1368	2153	4869	5184	
1800	304	315	766	846	1431	1539	2422	5477	5832	
2000	338	350	852	940	1590	1710	2692	6086	6480	
2200	372	385	937	1034	1749	1881	2961	6694	7127	
2400	406	421	1022	1128	1908	2052	3230	7303	7775	
2600	440	456	1107	1222	2067	2223	3499	7911	8423	
2800	473	491	1192	1317	2226	2395	3768	8520	9071	
3000	507	526	1277	1411	2385	2566	4037	9128	9719	
3200	541	561	1362	1505	2544	2737	4306	9737	10367	
3400	575	596	1447	1599	2703	2908	4575	10345	11015	
3600	609	631	1533	1693	2861	3079	4844	10954	11663	
3800	642	666	1618	1787	3020	3250	5113	11562	12311	
4000	676	701	1703	1881	3179	3421	5383	12171	12959	
4200	710	736	1788	1975	3338	3592	5652	12779	13606	
4400	744	771	1873	2069	3497	3763	5921	13388	14254	
4600	778	806	1958	2163	3656	3934	6190	13996	14902	
4800	812	842	2043	2257	3815	4105	6459	14605	15550	
5000	845	877	2128	2351	3974	4276	6728	15213	16198	
5200	879	912	2214	2445	4133	4447	6997	15822	16846	
5400	913	947	2299	2539	4292	4618	7266	16430	17494	
5600	947	982	2384	2633	4451	4789	7535	17039	18142	
5800	981	1017	2469	2727	4610	4960	7804	17647	18790	
6000	1015	1052	2554	2822	4769	5132	8074	18256	19438	
6200	1048	1087	2639	2916	4928	5303	8343	18865	20085	
6400	1082	1122	2724	3010	5087	5474	8612	19473	20733	
6600	1116	1157	2809	3104	5246	5645	8881	20082	21381	
6800	1150	1192	2894	3198	5405	5816	9150	20690	22029	
7000	1184	1227	2980	3292	5564	5987	9419	21299	22677	
7200	1217	1262	3065	3386	5723	6158	9688	21907	23325	
7400	1251	1298	3150	3480	5882	6329	9957	22516	23973	
7600	1285	1333	3235	3574	6041	6500	10226	23124	24621	
7800	1319	1368	3320	3668	6200	6671	10495	23733	25269	
8000	1353	1403	3405	3762	6359	6842	10765	24341	25917	
8200	1387	1438	3490	3856	6518	7013	11034	24950	26564	
8400	1420	1473	3575	3950	6677	7184	11303	25558	27212	
8600	1454	1508	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	

● **BSW SERIES DRAWING AND PARTS LIST**

BSW-1 BSW-3 BSW-8 BSW-10 BSW-20 BSW-25 BSW-35 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.

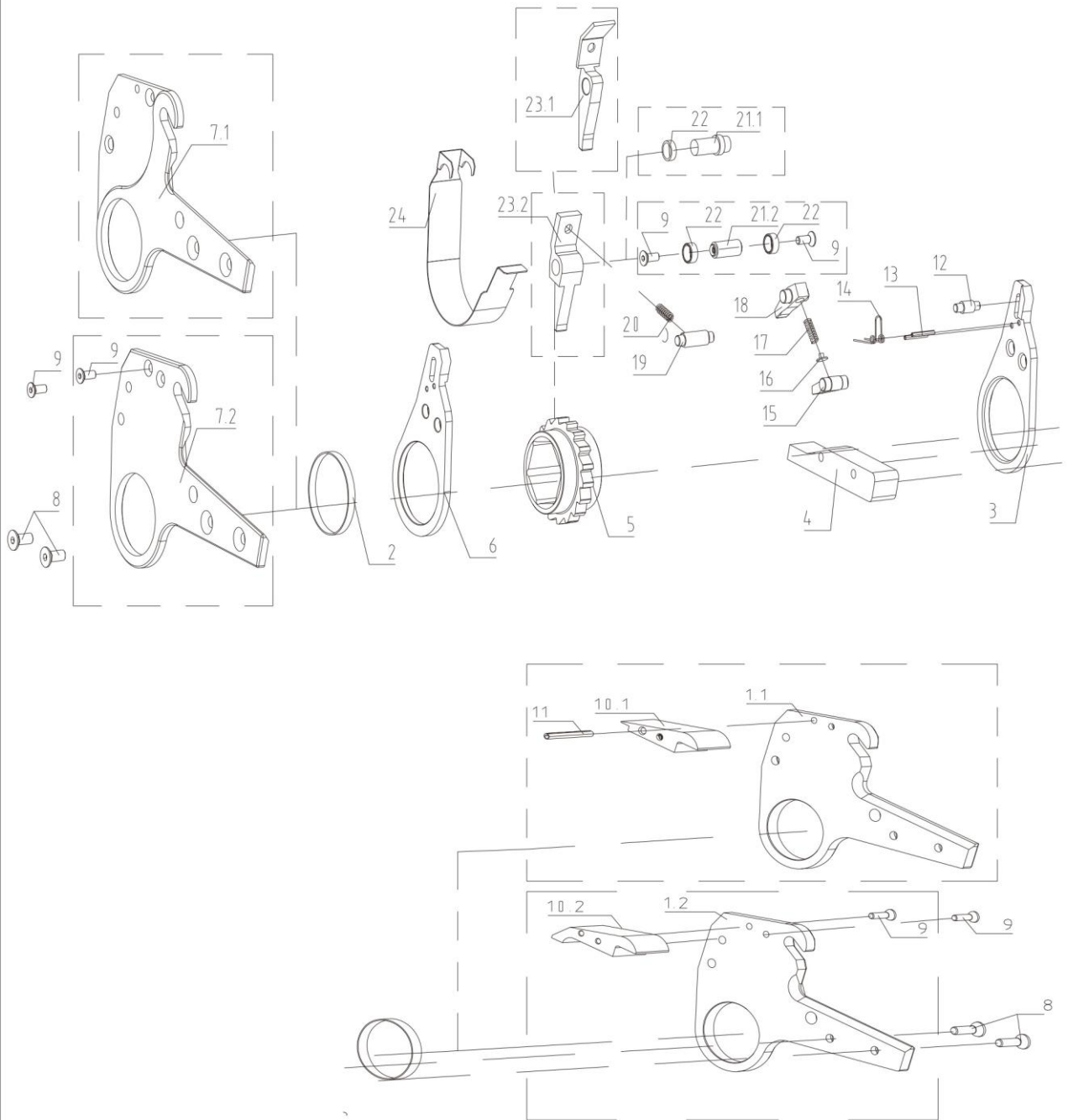
● PARTS LIST--BSW SERIES

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

● **ASSEMBLING DRAWING FOR RATCHET LINK--BHW SERIES**

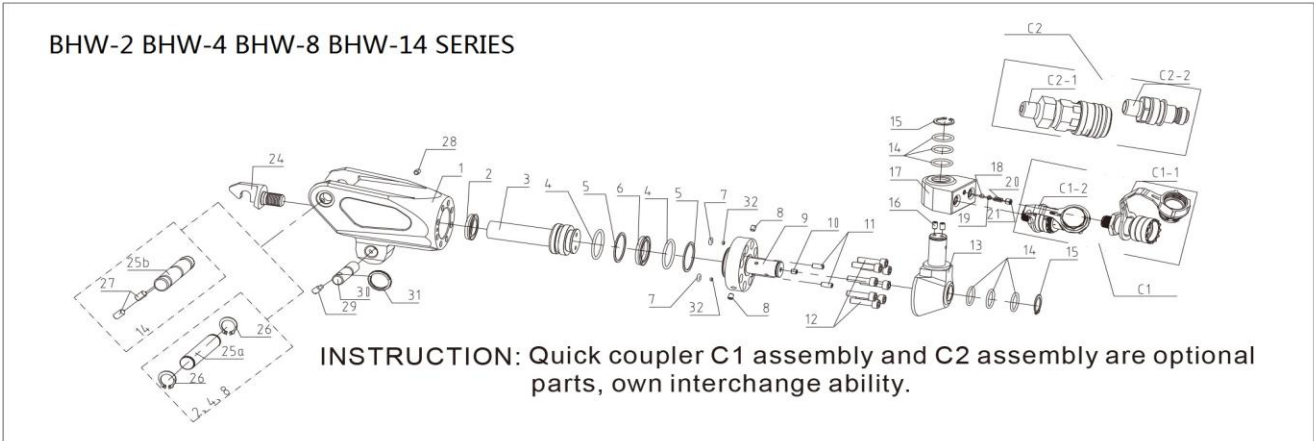
BHW-2 BHW-4 BHW-8 BHW-14 BHW-30 SERIES



● PARTS LIST FOR RATCHET LINK--BHW SERIES

	Model Number	BHW-2	BHW-4	BHW-8	BHW-14	BHW-30
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

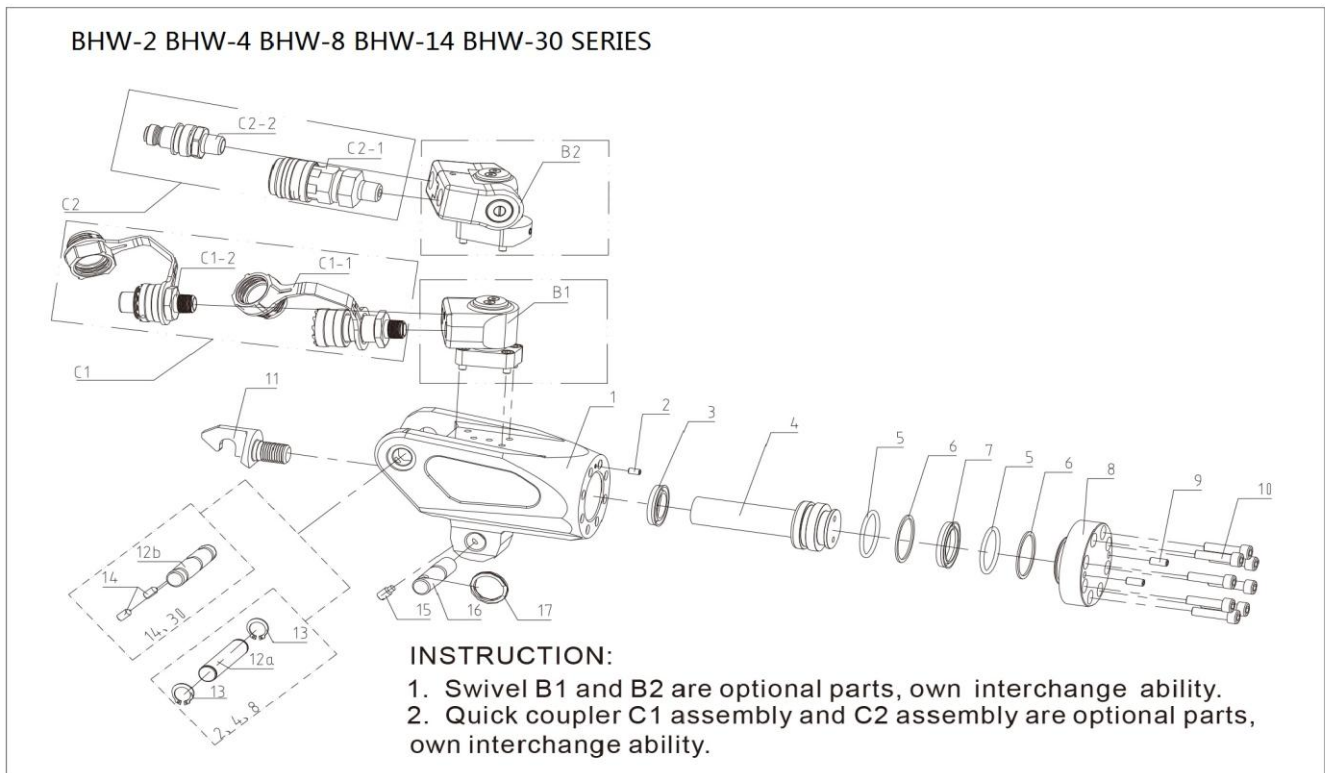
● **DRAWING FOR POWER HEAD WITH SWIVEL ON TOP AND ITS PART LIST-BHW SERIES**



Model Number		BHW-2 DIII	BHW-4 DIII	BHW-8 DIII	BHW-14 DIII
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	O-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.

● **DRAWING FOR POWER HEAD WITH SWIVEL ON TOP AND ITS PART LIST-BHW SERIES**



Model Number		BHW-2 DII	BHW-4 DII	BHW-8 DII	BHW-14 DII	BHW-30 DII	
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:

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

● TROUBLE SHOOTING GUIDE

TROUBLE	PROBABLE CAUSE	SOLUTION
Piston will not advance or retract	Couplers are not securely attached to tool or pump	Check the coupler connections and make certain that they are connected
	Coupler is defective	Replace any defective coupler
	Defective remote control unit	Replace the button and/or control pendant
	Dirt in the direction-control valve of the pump unit	Disassemble the pump and clean the direction-control valve
Piston will not retract	Hose connections reversed	Make certain the advance on the pump is connected to the advance on the tool and retract on the pump is connected to the retract on the tool
	Retract hose not connected	Connect the retract hose securely
	Retract pin and/or spring broken	Replace the broken pin and/or spring
Cylinder will not build up pressure	Piston seal and/or End Plug seal leaking coupler is defective	Replace any defective o-ring Replace any defective Coupler
Square drive will not turn	Greaser or dirt build up in the teeth of the ratchet and segment pawl	Disassemble the Ratchet and clean the grease or dirt out of the teeth
	Worn or broken teeth on Ratchet and/or Segment pawl	Replace any worn or damaged parts
Pump will not build up pressure	Defective relief valve	Inspect, adjust or replace the relief valve
	Electric power source is too low	Make certain the amperage, voltage and any extension, all size comply with the pump manual requirements
	Defective gauge	Replace the gauge
	Low oil level	Check and fill the pump reservoir
	Clogged filter	Inspect, clean and /or replace the pump filter
Nut returns with retract stroke	Ball plungers are not engaging the drive sleeves	Thread the ball plungers to the correct depth in the housing

● ROUTINE MAINTENANCE AND TRANSPORT OF HYDRAULIC TORQUE WRENCH

● MAINTENANCE OF THE HYDRAULIC TORQUE WRENCH

1. Before and after use, should check the screws are loose or not on the torque wrench, if loose should be tightened. If you do not tighten, it may cause damage to the equipment.
2. Inside of the Torque Wrench, all parts should be regularly smear MLGI # 2, in complex environmental conditions, should be cleaned and lubricated.
3. The coupler should be kept clean after work, tighten the dust cap to prevent dust entering the hydraulic system failure to make the equipment damage.
4. Connecting devices, switch direction control valves, check the pressure with or without exception.
5. Check for leakage, if a similar situation, please identify the reasons and processed.
6. The parts of inside torque wrench are connected, if one part fails, it is bound to affect other parts caused by wear, so regular inspection and maintenance are very important.

HYDRAULIC TORQUE WRENCH NOISE DECLARATION

Hydraulic torque wrench noise value: ≤ 70 db.

HYDRAULIC TORQUE WRENCH TRANSPORT INFORMATION

1. Handle with care.
2. The shipment should be vertical upward, as shown in the figure 9-1.

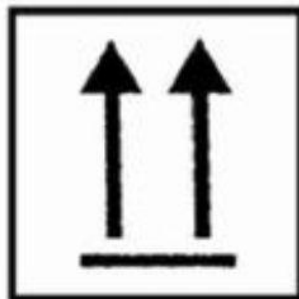


FIG 9-1

3. Product handling, generally using portable, car handling and lifting and moving, as shown in the figure 9-2

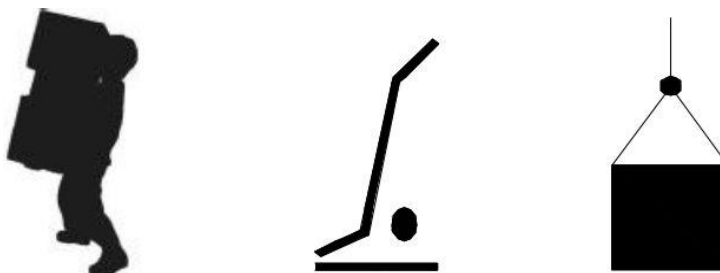


FIG 9-2

● SPECIFICATION & PARAMETER

Model	Torque (N·m)	Screw Sizes (M)	Square drive (inch)		
BSW-07	112-1120	14-30	3/4		
BSW-1	183-1837	16-36	3/4		
BSW-3	451-4512	22-48	1		
BSW-5	752-7528	27-56	1-1/2		
BSW-8	1078-10780	30-64	1-1/2		
BSW-10	1551-15516	36-72	1-1/2		
BSW-20	2666-26664	42-90	2-1/2		
BSW-25	3472-34725	48-100	2-1/2		
BSW-35	4866-48666	64-120	2-1/2		
BSW-50	7200-72000	72-125	2-1/2		
Model	Torque (N·m)	Bolt size (mm)	Model	Torque (N·m)	Bolt size (mm)
BHW-2 27	232-2328	19-27	BHW-8 85	1097-10941	81-85
BHW-2 32	232-2328	28-32	BHW-8 90	1097-10941	86-90
BHW-2 36	232-2328	33-36	BHW-8 95	1097-10941	91-95
BHW-2 41	232-2328	37-41	BHW-8 100	1177-11774	96-100
BHW-2 46	232-2328	42-46	BHW-8 105	1177-11774	101-105
BHW-2 50	232-2328	47-50	BHW-14 70	1852-18521	50-70
BHW-2 55	232-2328	51-55	BHW-14 75	1852-18521	71-75
BHW-2 60	241-2414	56-60	BHW-14 80	1852-18521	76-80
BHW-4 36	585-5858	30-36	BHW-14 85	1852-18521	81-85
BHW-4 41	585-5858	37-41	BHW-14 90	1852-18521	86-90
BHW-4 46	585-5858	42-46	BHW-14 95	1852-18521	91-95
BHW-4 50	585-5858	47-50	BHW-14 100	1852-18521	96-100
BHW-4 55	585-5858	51-55	BHW-14 105	1852-18521	101-105
BHW-4 60	585-5858	56-60	BHW-14 110	1852-18521	106-110
BHW-4 65	585-5858	61-65	BHW-14 117	1852-18521	111-117
BHW-4 70	647-6474	66-70	BHW-30 90	4188-41882	65-90
BHW-4 75	647-6474	71-75	BHW-30 100	4188-41882	91-100
BHW-4 80	647-6474	76-80	BHW-30 110	4188-41882	101-110
BHW-8 50	1097-10941	41-50	BHW-30 120	4188-41882	111-120
BHW-8 55	1097-10941	51-55	BHW-30 130	4188-41882	121-130
BHW-8 60	1097-10941	56-60	BHW-30 135	4188-41882	131-135
BHW-8 65	1097-10941	61-65	BHW-30 145	4188-41882	136-145
BHW-8 70	1097-10941	66-70	BHW-30 155	4188-41882	146-155
BHW-8 75	1097-10941	71-75	BHW-30 175	4459-44593	15-175
BHW-8 80	1097-10941	76-80			