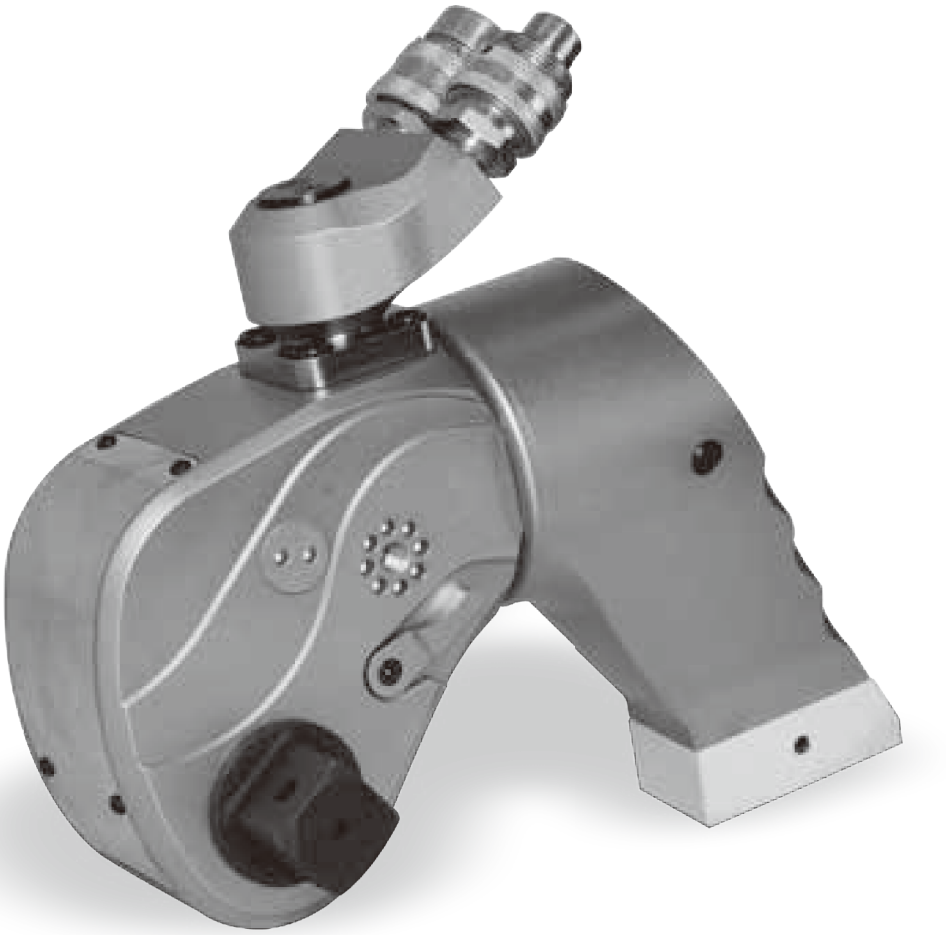


WREN®

ATWS SERIES

Hydraulic Torque Wrench

Operation and Maintenance Manual

Use the ATWS Series Torque Wrenches to install and remove threaded fasteners requiring precise high torque during bolt makeup and maximum torque during boltbreakout.

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

Table of Contents

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 Manufacturer, 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 ATWS 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 new manuafactrer 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.

Operating 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 System Connecting

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 Chart provided with the hydraulic torque wrench.

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.

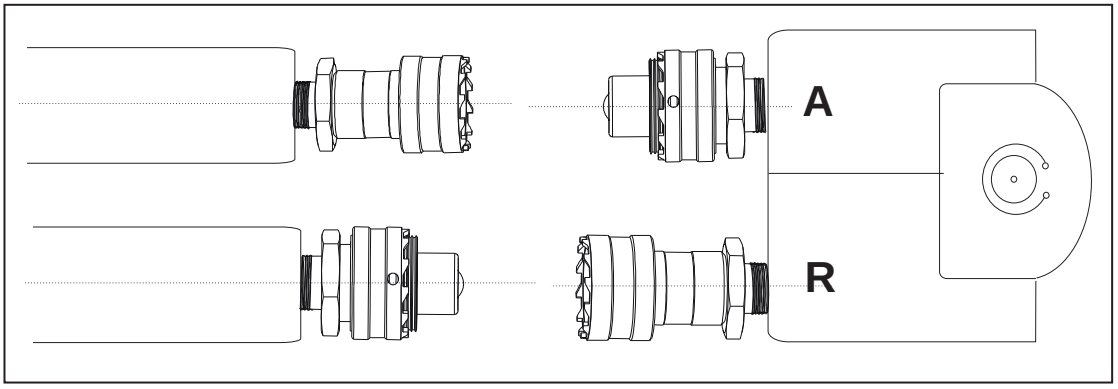


Figure1

CAUTION

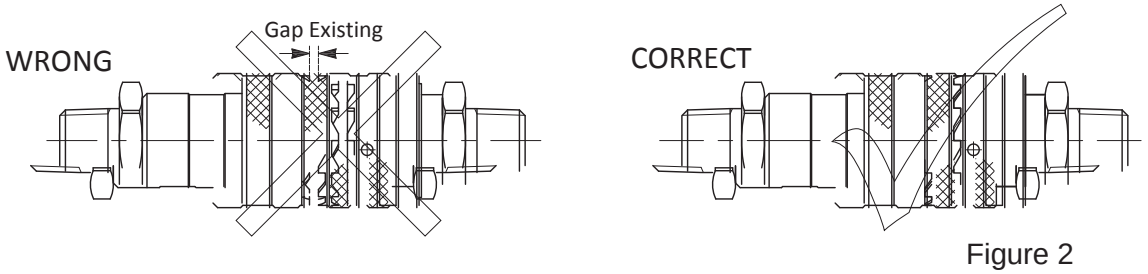


Figure 2

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.

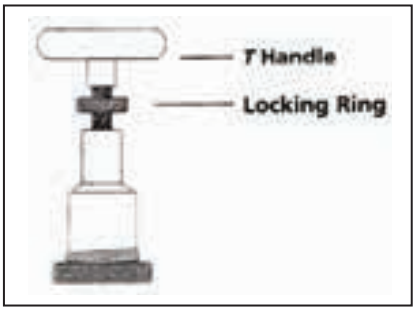


Figure 3

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%. Repeatability is +/-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 ATWS Series

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.

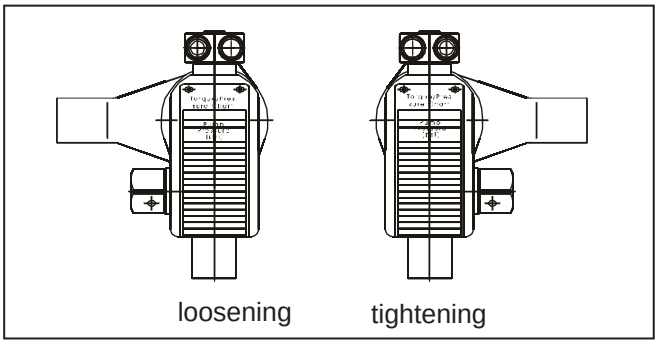


Figure 4

LEFT IS LOOSE. RIGHT IS TIGHT.

Removing the square drive:

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

Inserting the square drive:

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

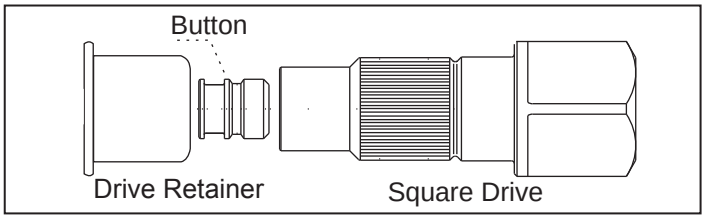


Figure 5

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.

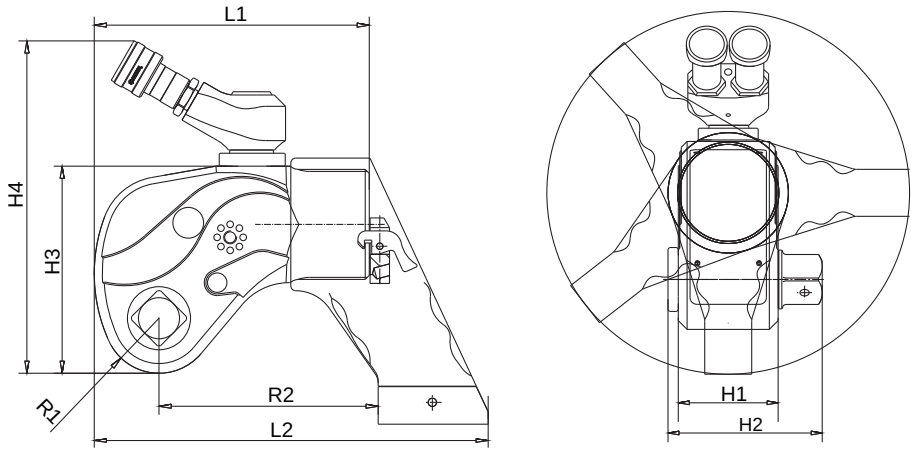
Figure 6

Trouble Shooting Chart For ATWS Series Torque Wrench

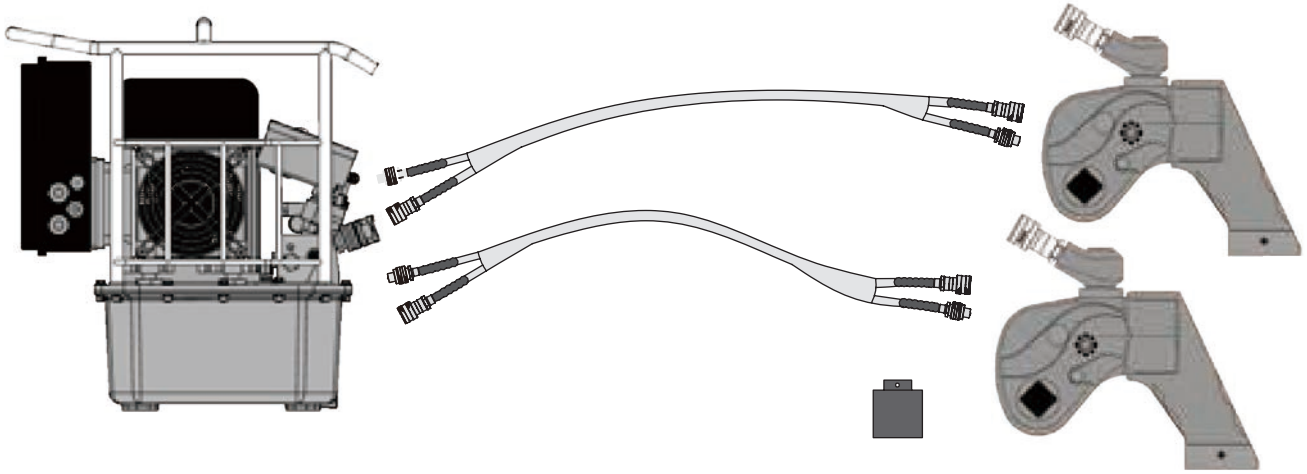
SYSTEM	PROBLEM CAUSE	REMEDY
Cylinder will not advance	Coupler loose or damaged Direction-control valve on pump Coupler not mated securely	Tighten/Replace Disassemble and clean /replace Tighten
Cylinder will not retract	See above	See above
Cylinder will not build up pressure	Piston seal leak Coupling 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

ATWS Series Square Drive Torque Wrench Specification Sheet

Model	1ATWS	3ATWS	5ATWS	8ATWS	10ATWS	20ATWS
Torque (Ft-Lbs.)	134-1334	331-3,308	551-5,507	796-7,956	1,058-10,577	1,889-18,888
Weight	3.96 lbs.	11 lbs.	17.6 lbs.	24.2 lbs.	33 lbs.	58.3 lbs.
Drive	.75"	1.00"	1.50"	1.50"	1.50"	2.50"
L1 (inch)	5.34	6.70	8.04	8.67	9.50	11.94
L2 (inch)	7.31	9.59	11.23	12.33	13.79	17.73
H1 (inch)	1.97	2.68	3.15	3.55	4.04	4.73
H2 (inch)	2.84	4.14	5.20	5.59	6.09	7.43
H3 (inch)	3.76	5.04	5.99	6.58	7.25	8.75
H4 (inch)	6.34	8.10	9.06	9.61	10.28	11.82
R1 (inch)	1.02	1.34	1.62	1.83	2.01	2.40
R2 (inch)	3.90	5.34	5.91	6.90	7.05	10.03



The drawing for a pump with two ATWS series torque wrench



ATWS SERIES HYDRAULIC TORQUE WRENCH PRESSURE-TORQUE CHART

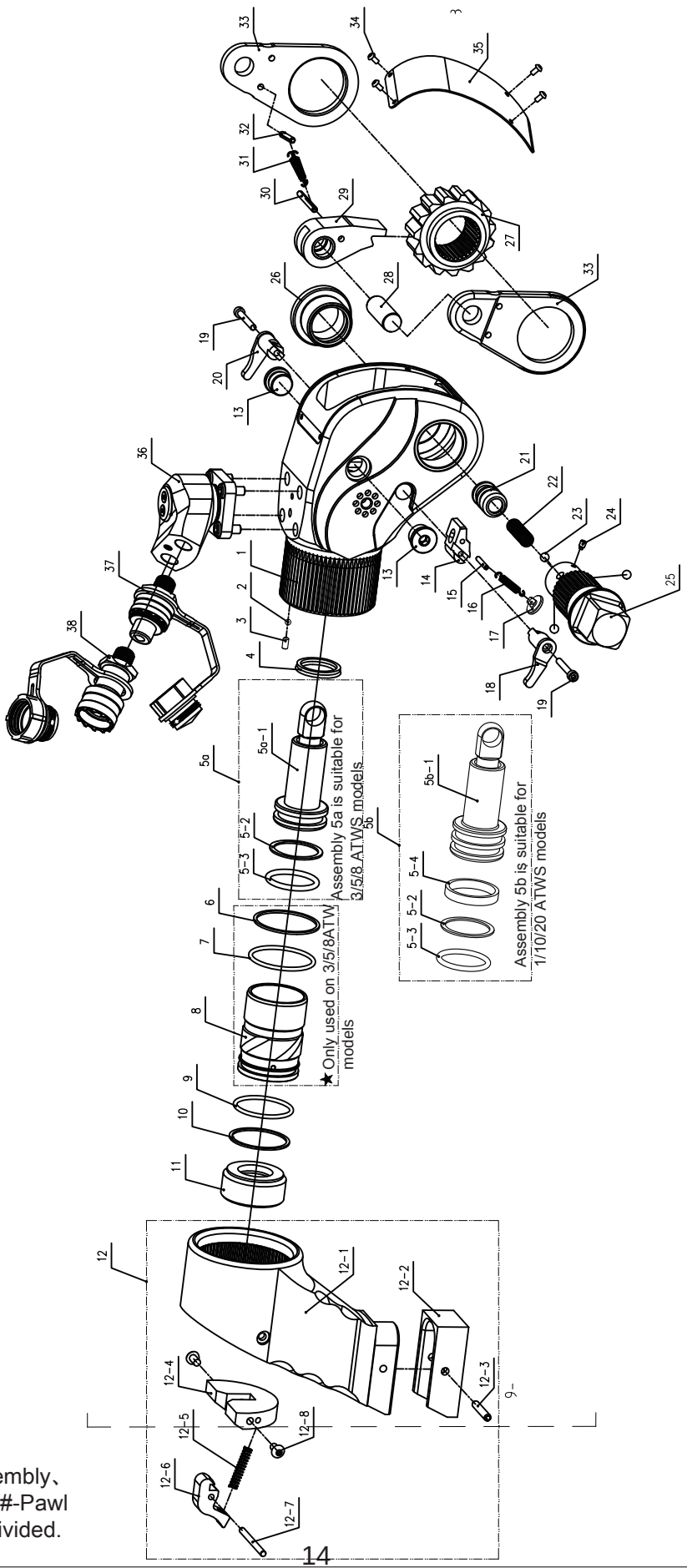
Model	1ATWS	3ATWS	5ATWS	8ATWS	10ATWS	20ATWS
psi	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs	ft.lbs
1000	134	331	551	796	1,058	1,889
1200	161	397	661	955	1,269	2,267
1400	188	463	771	1,114	1,481	2,644
1600	215	529	881	1,273	1,692	3,022
1800	242	595	991	1,432	1,904	3,400
2000	268	662	1,101	1,591	2,115	3,778
2200	295	728	1,211	1,750	2,327	4,155
2400	322	794	1,322	1,910	2,539	4,533
2600	349	860	1,432	2,069	2,750	4,911
2800	376	926	1,542	2,228	2,962	5,289
3000	403	992	1,652	2,387	3,173	5,666
3200	430	1,058	1,762	2,546	3,385	6,044
3400	457	1,125	1,872	2,705	3,596	6,422
3600	483	1,191	1,982	2,864	3,808	6,800
3800	510	1,257	2,093	3,023	4,019	7,178
4000	537	1,323	2,203	3,183	4,231	7,555
4200	564	1,389	2,313	3,342	4,443	7,933
4400	591	1,455	2,423	3,501	4,654	8,311
4600	618	1,522	2,533	3,660	4,866	8,689
4800	645	1,588	2,643	3,819	5,077	9,066
5000	672	1,654	2,753	3,978	5,289	9,444
5200	698	1,720	2,863	4,137	5,500	9,822
5400	725	1,786	2,974	4,296	5,712	10,200
5600	752	1,852	3,084	4,456	5,923	10,577
5800	779	1,918	3,194	4,615	6,135	10,955
6000	806	1,985	3,304	4,774	6,346	11,333
6200	833	2,051	3,414	4,933	6,558	11,711
6400	860	2,117	3,524	5,092	6,770	12,088
6600	887	2,183	3,634	5,251	6,981	12,466
6800	914	2,249	3,745	5,410	7,193	12,844
7000	940	2,315	3,855	5,569	7,404	13,222
7200	967	2,381	3,965	5,729	7,616	13,600
7400	994	2,448	4,075	5,888	7,827	13,977
7600	1,021	2,514	4,185	6,047	8,039	14,355
7800	1,048	2,580	4,295	6,206	8,250	14,733
8000	1,075	2,646	4,405	6,365	8,462	15,111
8200	1,102	2,712	4,515	6,524	8,673	15,488
8400	1,129	2,778	4,626	6,683	8,885	15,866
8600	1,155	2,845	4,736	6,842	9,097	16,244
8800	1,182	2,911	4,846	7,002	9,308	16,622
9000	1,209	2,977	4,956	7,161	9,520	16,999
9200	1,236	3,043	5,066	7,320	9,731	17,377
9400	1,263	3,109	5,176	7,479	9,943	17,755
9600	1,290	3,175	5,286	7,638	10,154	18,133
9800	1,317	3,241	5,397	7,797	10,366	18,510
10000	1,344	3,308	5,507	7,956	10,577	18,888

ATWS SERIES HYDRAULIC TORQUE WRENCH PRESSURE-TORQUE CHART

Model	1ATWS	3ATWS	5ATWS	8ATWS	10ATWS	20ATWS
mpa	N.m	N.m	N.m	N.m	N.m	N.m
7	183	455	758	1,096	1,456	2,611
8	209	520	866	1,252	1,664	2,983
9	236	585	975	1,408	1,872	3,354
10	262	650	1,083	1,565	2,080	3,725
11	288	715	1,191	1,721	2,288	4,096
12	314	781	1,299	1,877	2,496	4,468
13	341	846	1,408	2,034	2,704	4,839
14	367	911	1,516	2,190	2,912	5,210
15	393	976	1,624	2,347	3,120	5,581
16	419	1,041	1,733	2,503	3,328	5,953
17	446	1,106	1,841	2,660	3,536	6,324
18	472	1,171	1,949	2,816	3,744	6,695
19	498	1,236	2,057	2,973	3,952	7,066
20	524	1,301	2,166	3,129	4,160	7,438
21	551	1,366	2,274	3,286	4,368	7,809
22	577	1,431	2,382	3,442	4,576	8,180
23	603	1,496	2,491	3,598	4,784	8,551
24	629	1,561	2,599	3,755	4,992	8,923
25	656	1,626	2,707	3,911	5,200	9,294
26	682	1,691	2,815	4,068	5,408	9,665
27	708	1,756	2,924	4,224	5,616	10,036
28	734	1,821	3,032	4,381	5,824	10,408
29	761	1,886	3,140	4,537	6,032	10,779
30	787	1,951	3,249	4,694	6,240	11,150
31	813	2,016	3,357	4,850	6,448	11,521
32	839	2,081	3,465	5,007	6,656	11,893
33	866	2,146	3,573	5,163	6,864	12,264
34	892	2,211	3,682	5,320	7,072	12,635
35	918	2,276	3,790	5,476	7,280	13,006
36	944	2,342	3,898	5,632	7,488	13,378
37	971	2,407	4,007	5,789	7,696	13,749
38	997	2,472	4,115	5,945	7,904	14,120
39	1,023	2,537	4,223	6,102	8,112	14,491
40	1,049	2,602	4,331	6,258	8,320	14,863
41	1,076	2,667	4,440	6,415	8,528	15,234
42	1,102	2,732	4,548	6,571	8,736	15,605
43	1,128	2,797	4,656	6,728	8,944	15,977
44	1,154	2,862	4,765	6,884	9,152	16,348
45	1,181	2,927	4,873	7,041	9,360	16,719
46	1,207	2,992	4,981	7,197	9,568	17,090
47	1,233	3,057	5,089	7,353	9,776	17,461
48	1,259	3,122	5,198	7,510	9,984	17,833
49	1,286	3,187	5,306	7,666	10,192	18,204
50	1,312	3,252	5,414	7,823	10,400	18,575
51	1,338	3,317	5,523	7,979	10,608	18,946
52	1,364	3,382	5,631	8,136	10,816	19,318
53	1,391	3,447	5,739	8,292	11,024	19,689
54	1,417	3,512	5,847	8,449	11,232	20,060
55	1,443	3,577	5,956	8,605	11,440	20,431
56	1,469	3,642	6,064	8,762	11,648	20,803
57	1,496	3,707	6,172	8,918	11,856	21,174
58	1,522	3,772	6,281	9,075	12,064	21,545
59	1,548	3,838	6,389	9,231	12,272	21,916
60	1,574	3,903	6,497	9,387	12,480	22,288
61	1,601	3,968	6,605	9,544	12,688	22,659
62	1,627	4,033	6,714	9,700	12,896	23,030
63	1,653	4,098	6,822	9,857	13,104	23,401
64	1,679	4,163	6,930	10,013	13,312	23,773
65	1,706	4,228	7,039	10,170	13,520	24,144
66	1,732	4,293	7,147	10,326	13,728	24,515
67	1,758	4,358	7,255	10,483	13,936	24,886
68	1,784	4,423	7,363	10,639	14,144	25,258
69	1,811	4,488	7,472	10,796	14,352	25,629
70	1,837	4,553	7,580	10,952	14,560	26,000

ATWS Series Square Drive Torque Wrench Exploded View Drawing

1ATWS、3ATWS、5ATWS、8ATWS、10ATWS、20ATWS SERIES



Remak：1#-Body Assembly、5#-Piston Assembly,29#-Pawl Assembly can not be divided.

PARTS LIST--ATWS SERIES

Item	Name	1ATWS	3ATWS	5ATWS	8ATWS	10ATWS	20ATWS
1	Body	1	1	1	1	1	1
2	Steel Ball(Body)	1	—	—	—	1	1
3	Screw(Body)	1	—	—	—	1	1
4	U Ring(Body)	1	1	1	1	1	1
5a	Piston Rod Assembly	—	1	1	1	—	—
5b		1	—	—	—	1	1
5a-1	Piston	—	1	1	1	—	—
5b-1		1	—	—	—	1	1
5-2	Retaining Ring(Piston)	1	1	1	1	1	1
5-3	O Ring(Piston)	1	1	1	1	1	1
5-4	Wearable Ring(Piston)	1	—	—	—	1	1
6	Retaining Ring(Cylinder)	—	1	1	1	—	—
7	O Ring(Cylinder)	—	1	1	1	—	—
8	Cylinder	—	1	1	1	—	—
9	O Ring(Body)	1	1	1	1	1	1
10	Retaining Ring(Body)	1	1	1	1	1	1
11	End Cap	1	1	1	1	1	1
12	Reaction Arm Assembly	1	1	1	1	1	1
12-1	Reaction Arm	1	1	1	1	1	1
12-2	Reaction Arm Cover	1	1	1	1	1	1
12-3	Pin(Reaction Arm Cover)	1	1	1	1	2	2
12-4	Reaction Arm Fixer	1	1	1	1	1	1
12-5	Compressed Spring(Reaction Arm)	1	1	1	1	1	1
12-6	Fixed Hook	1	1	1	1	1	1
12-7	Pin(Fixed Hook)	1	1	1	1	1	1
12-8	Screw(Fixer)	2	2	2	2	2	2
13	Screw	2	2	2	2	2	2
14	Reaction Pawl	1	1	1	1	1	1
15	Pin(Reaction Pawl)	1	1	1	1	1	1
16	Tension Spring(Reaction Pawl)	1	1	1	1	1	1
17	Drag Hook	1	1	1	1	1	1
18	Button Lever(Left)	1	1	1	1	1	1
19	Screw(Button Lever)	2	2	2	2	2	2
20	Button Lever(Right)	1	1	1	1	1	1
21	Push Button	1	1	1	1	1	1
22	Compressed Spring(Square Drive)	1	1	1	1	1	1
23	Steel Ball(Square Drive)	3	3	3	3	3	3
24	Screw(Square Drive)	1	1	1	1	1	1
25	Square Drive	1	1	1	1	1	1
26	Drive Retainer	1	1	1	1	1	1
27	Ratchet Spline	1	1	1	1	1	1
28	Drive Pin	1	1	1	1	1	1
29	Pawl Assembly(Incluing Bush)	1	1	1	1	1	1
30	Pin(Pawl)	1	1	1	1	1	1
31	Tension Spring(Pawl)	2	2	2	2	2	2
32	Pin(Drive Plate)	1	1	1	1	1	1
33	Drive Plate	1	1	1	1	1	1
34	Screw(Shroud)	4	4	4	4	4	4
35	Shroud	1	1	1	1	1	1
36	Swivel Joint	1	1	1	1	1	1
37	Male Coupler(High Pressure)	1	1	1	1	1	1
38	Female Coupler(Low Pressure)	1	1	1	1	1	1
Rema	1#-Body Assembly、5#-Piston Assembly。29#-Pawl Assembly can not be divided.						

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