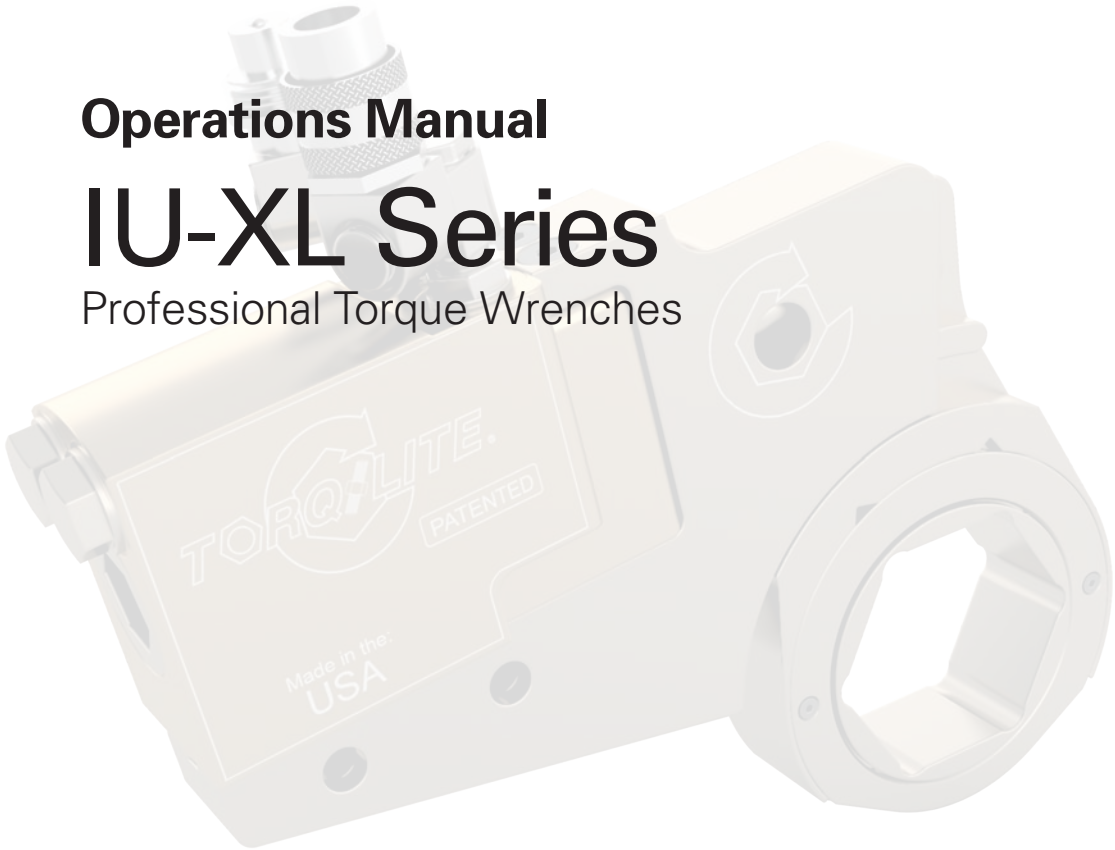
Operations Manual

IU-XL Series

Professional Torque Wrenches



TORQ-LITE®

Table of Contents

Operating Success Checklist

- ☐ Are the hydraulic hoses fully connected to the wrench and pump?
- ☐ Is the head the correct size?
- ☐ Is the cylinder drive pin inserted correctly?
- ☐ Have you allowed the tool to fully advance and fully retract?

  Allowing the tool to fully advance and fully retract prevents short stroking.

- ☐ **Always clean and lubricate!**

Torq/Lite® is an **ISO 9001 Registered Company**

Introduction

Your new Torq/Lite Hydraulic Torque Wrench® is ready to use in the field. The Torq/Lite container holds all the material you need to get started. The **Operations Manual**, the **Quick Start Guide**, and the **Troubleshooting Guide** can be kept in the plastic wrap or taken to the field for reference. You can keep the **Quick Start Guide** in your pocket to reference the torque conversion charts on the job site. Do not worry about getting it dirty and wet – it is sturdy enough to stay in good condition.

The **Operations Manual** is divided into two sections, *Operations* and *Maintenance*. Make sure you read these sections first! It is very important you learn how to safely use the Torq/Lite tool and perform the proper maintenance to avoid injuries and ensure accurate torque.

Included in the **Operations Manual** are safety warnings and pictures that go with the instructions. You will see information labels like these for special safety alerts and notes:

⚠ WARNING

Graphics with this symbol contain information regarding hazardous situations which could cause death or serious injuries if ignored.

⚠ CAUTION

Graphics with this symbol contain information regarding hazardous situations which could cause minor or moderate injuries if ignored.

NOTE

Graphics with this symbol contain information regarding situations which could cause damage to the tool or pump if ignored.

Make sure you look at the pictures and are aware of the safety warnings before you use the Torq/Lite wrench. Follow these steps in the field, and you will be prepared to operate your Torq/Lite wrench under the most difficult or challenging conditions.

Contents

The sections in the Operations Manual are easy-to-read and simple to follow. Just follow the order of the sections and watch for safety notes.

1 Connecting Hydraulic Hoses and Pump

Before Connecting the Hoses

- **Calibration Accuracy** – Use calibrated gauges to make sure the tool works accurately. The system accuracy of your IU-XL tool is +/-3 percent and repeatability of +/-1 percent based upon the manufacturer's specifications. Check your calibration accuracy through Torq/Lite or any other facility certified through the National Institute of Standards and Technology (NIST).

> **NOTE**
> Torq/Lite recommends returning the tool to a certified calibration center for calibration checks once a year.

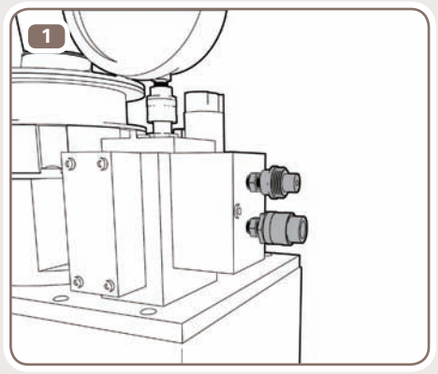
- **HPU** – The wrench and the HPU are connected by a 10,000psi dual-line hose assembly.
- **Clean** the hose quick-connects before attaching.

Bleeding Hydraulic Hoses

Before connecting the Torq/Lite wrench to the pump, you must bleed air from the hydraulic pump. Bleeding excess air from the lines helps maintain an optimal level of pressure and performance from the pump.

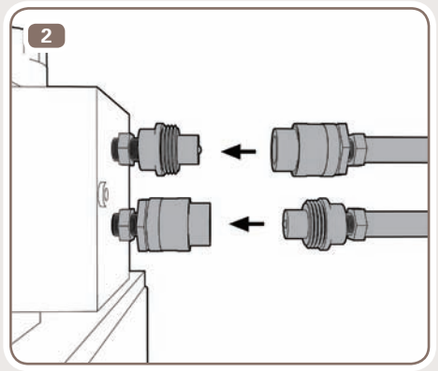
Step 1

Find the female and male quick-connects on the hydraulic pump.



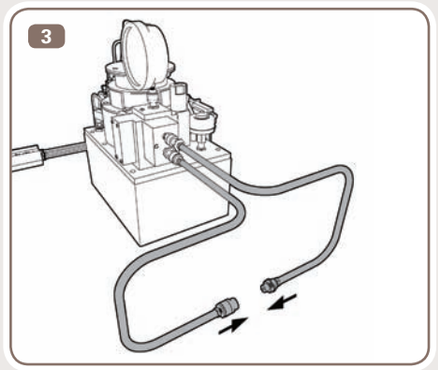
Step 2

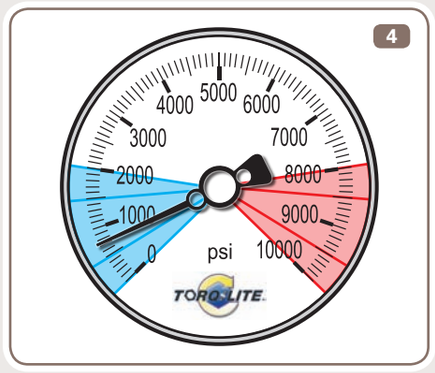
Connect the female and male quick-connects of the hydraulic hose to the pump.



Step 3

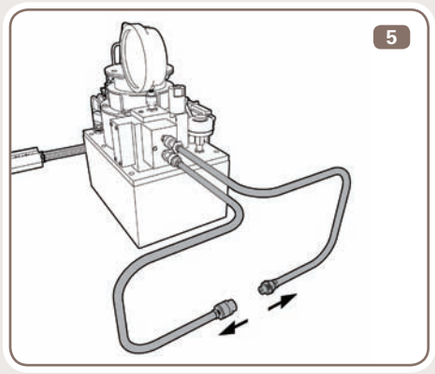
Connect the quick-connects from both hoses to each other.





Step 4

Turn on the pump. Allow the hydraulic oil to circulate through both hoses at low pressure for 1-2 minutes.



Step 5

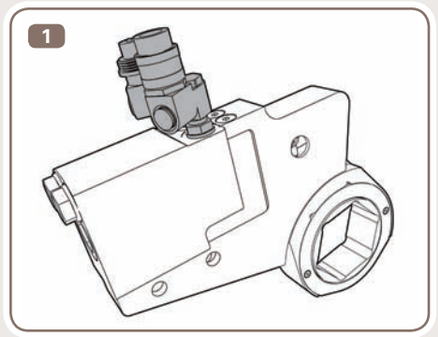
Turn off the pump and disconnect the two hydraulic hoses that are connected to each other. ■

Connecting the Pump to the Wrench

After you bleed the system, you will connect the pump to the Torq/Lite wrench. The pump is the power behind the tool. You will connect the hydraulic hoses to either an electric, air, gas, or handheld pump. Make sure you read the safety warnings for the pump and the Torq/Lite wrench.

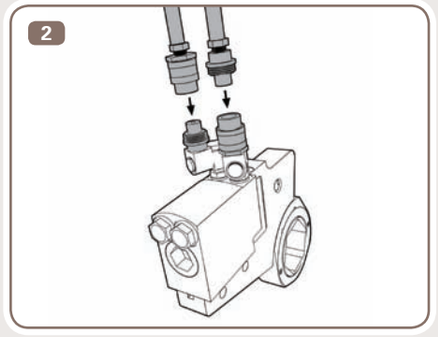
Step 1

Find the quick-connects on the Torq/Lite wrench.



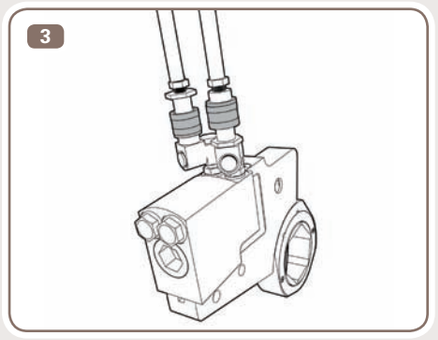
Step 2

Connect the female and male quick-connects of each hydraulic hose to the quick-connects of the Torq/Lite wrench.



Step 3

Make sure the quick-connects are fully connected on the tool and pump. You will know the hoses and quick-connects are connected when the male and female ends are tightly sealed against one another. ■



NOTE

Check your hose connections.
Are the connections tight and secure?

Safety Warnings

WARNING

- Do not handle pressurized hoses. Oil escaping under pressure can penetrate the skin causing serious injury. If oil is injected under the skin, see a doctor immediately.
- Use only equipment rated for the same pressure and torque.
- Use only a hydraulic pump capable of generating 10,000psi (700 bar) maximum pressure with this tool.
- Use only hydraulic hoses rated for 10,000psi (700 bar) pressure with this tool.
- Do not reverse the male and female quick-connects on the tool or the connections on one end of the hose or pump. Reversing quick-connects will reverse the power stroke cycle and may damage the tool.
- Do not use damaged, frayed or deteriorated hoses, or fittings. Check for cracks, splits, or leaks in the hoses.
- Make sure the quick-connects are tight to prevent the connectors from disengaging under pressure.
- When connecting hoses that have not been preloaded with hydraulic oil, make certain the pump reservoir is not drained of oil during start-up.
- Avoid sharp bends and kinks that will cause severe back-up pressure in hoses and lead to early hose failure.
- Do not carry the tool by the hose.

2 Connecting the Low-Profile Ratcheting Head

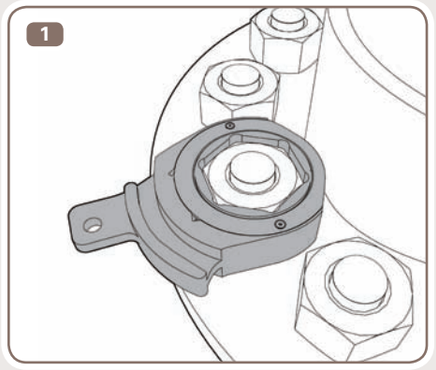
Lubrication
Two sections of the IU-XL wrench must be lubricated before operating the tool and before attaching the low-profile ratcheting head. The tool will not work properly without adequate lubrication of the low-profile ratcheting head and the tool body railing. You should clean the tool body railing and low-profile ratcheting head before each use and make sure you apply lubrication after cleaning.

Remember to use plenty of lubricant. You can never over-lubricate.

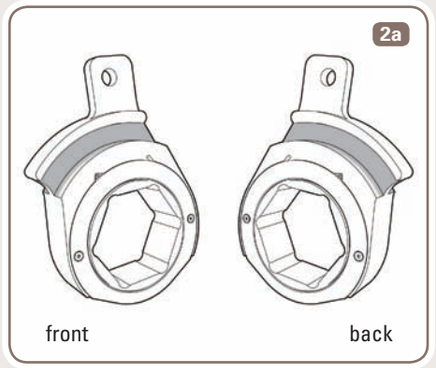
Attaching the Low-Profile Ratcheting Head

Step 1

Find the correct size low-profile ratcheting head for the job. Place the low-profile ratcheting head onto the nut/bolt for proper measurement.



NOTE
Generously lubricate both sides of the tool body railing and the railing on the tool head with a nickel or copper-based anti-seize lubricant.



Step 2

Image A
To prepare the low-profile ratcheting head for attachment to the tool body, always clean and generously lubricate both sides of the head railing.

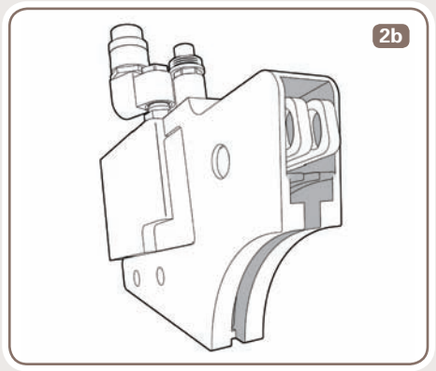
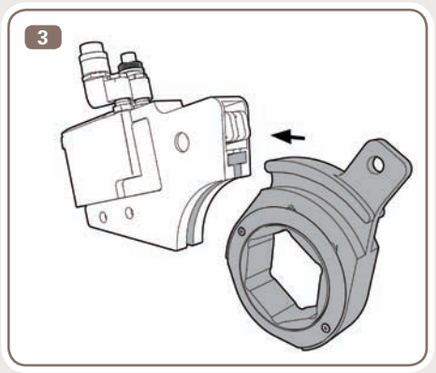


Image B
Clean and lubricate the body railing.

Step 3

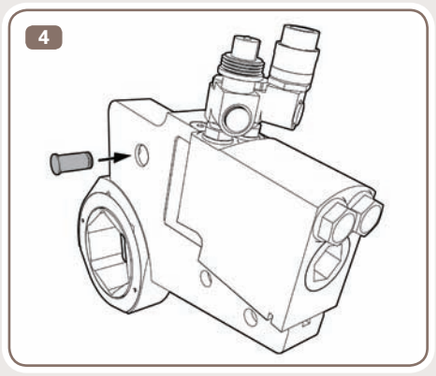
Slide the low-profile ratcheting head into the IU-XL tool body.

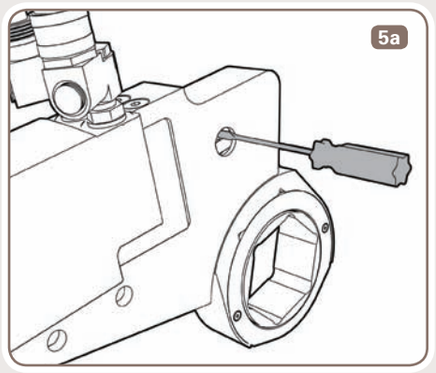
Did you clean and lubricate the tool body railing and the head railing?



Step 4

With the low-profile ratcheting head in place, insert the cylinder drive pin. The cylinder drive pin should go through the low-profile ratcheting head and cylinder piston rod to secure the two pieces together.





Step 5

Image A
While still holding the cylinder drive pin in place, turn the tool over. Using the quick-clip tool (a screwdriver or similar tool will work), pull the quick-clip back.

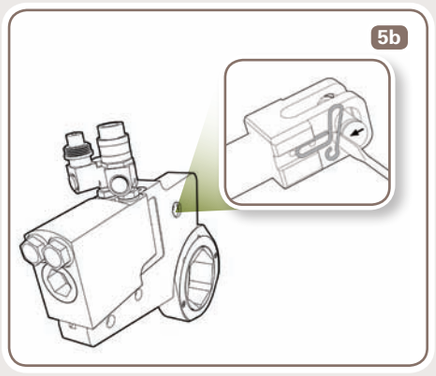
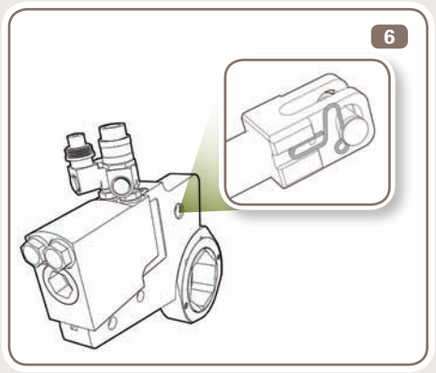


Image B
While pushing the cylinder drive pin through the tool head, pull the quick-clip back and away from the cylinder drive pin.



Step 6

Release the quick-clip and make sure the quick-clip is in the groove on the side of the cylinder drive pin. The cylinder drive pin should be secured under the quick-clip. ■

3 Setting the Torque

Once the wrench quick-connects are tightened and fully connected with the hydraulic pump, it is time to set the torque level. To find the correct torque, go to the manufacturer's specifications or the Certificate of Accuracy (torque conversion chart) located in the pocket at the back of this manual.

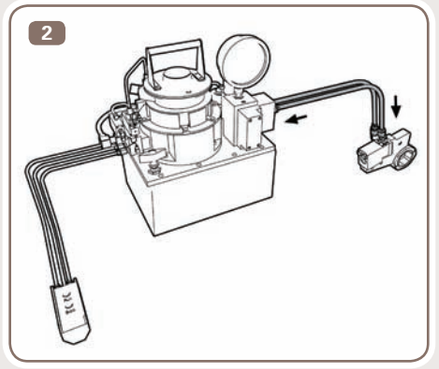
Step 1

Connect the pump to the power supply.

Step 2

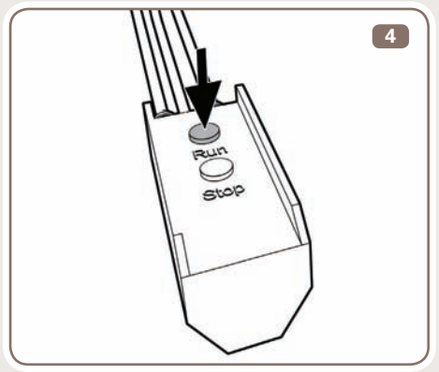
Connect the tool to the pump with the hydraulic hoses.

(Refer to Connecting Hydraulic Hoses and Pump, section 1)



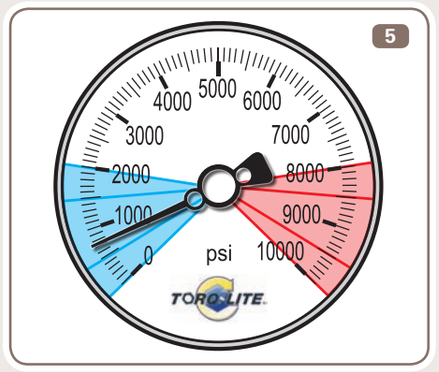
Step 3

Turn the pump on.



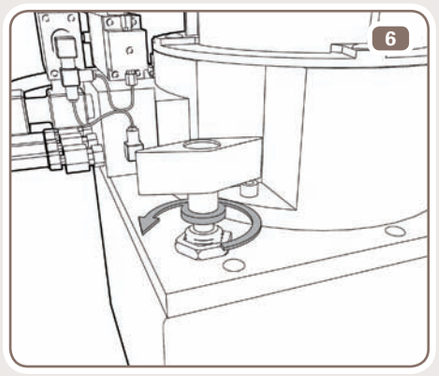
Step 4

Press the remote control advance button and hold down until the tool strokes out completely.



Step 5

Pressure will appear on the gauge. Refer to the torque chart for the correct torque value.

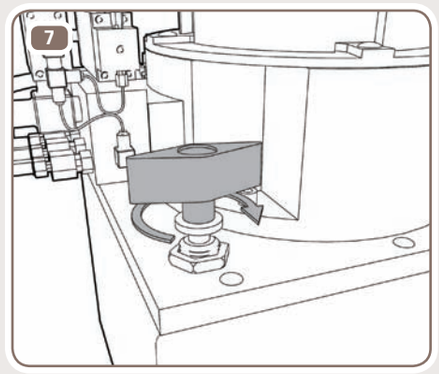


Step 6

To adjust the pressure, loosen the locknut that locks the pressure adjustment.

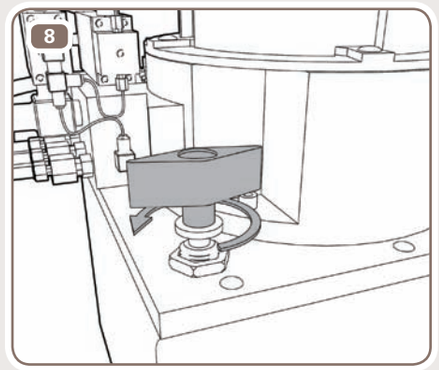
Step 7

Turn the t-handle to the **right** to **increase** pressure.



Step 8

Turn the t-handle to the **left** to **decrease** pressure.

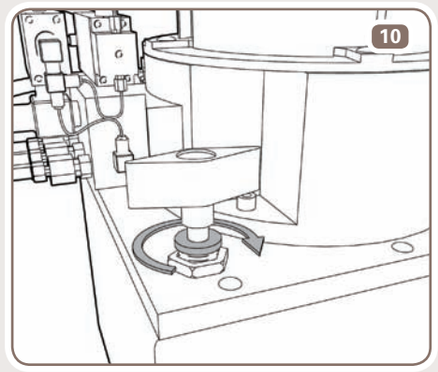


NOTE

When decreasing pressure, always go below the targeted pressure point, lock the pressure with the locknut, and then turn the t-handle to increase back to the correct pressure point.

Step 9

Just before the correct pressure is reached (200psi–400psi under target pressure), the locknut should be tightened. Continue turning the t-handle until the correct pressure point is reached. Cycle the tool several times to set pressure. Repeating the cycle helps remove trapped air and ensures the tool system is working properly.

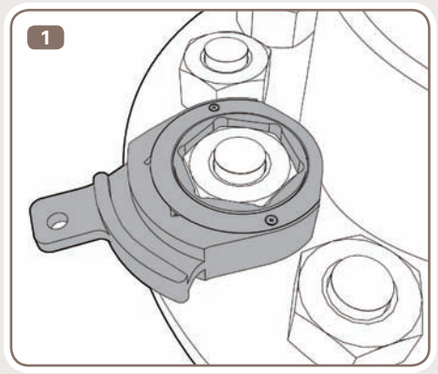


Step 10

Once the correct pressure point is reached, turn the locknut until it stops turning. This locks the pressure. ■

4 Operating the Tool

You are now ready to begin operation of the Torq/Lite IU-XL wrench. During operation, you will either tighten or loosen the nut/bolt.

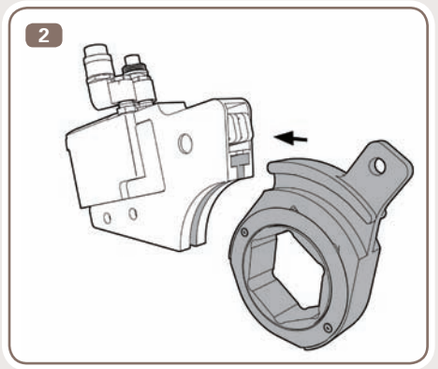


Step 1

Find the correct size low-profile ratcheting head for the job. Place the low-profile ratcheting head onto the nut/ bolt to check for proper fit. The gear in the low-profile ratcheting head should fit closely around the nut/bolt creating a tight fit.

NOTE

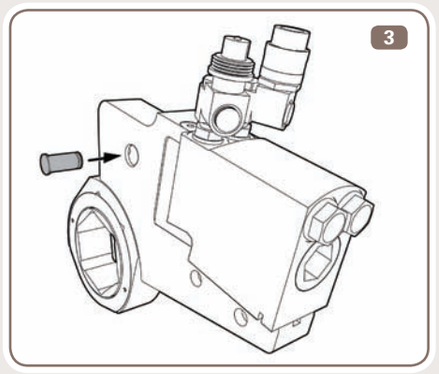
- The low-profile ratcheting head must be pushed completely to the bottom of the nut/bolt for maximum engagement and torque. This prevents overloading the wrench and damaging corners of the nut/bolt.
- Never hammer on a low-profile ratcheting head that is under load.



Step 2

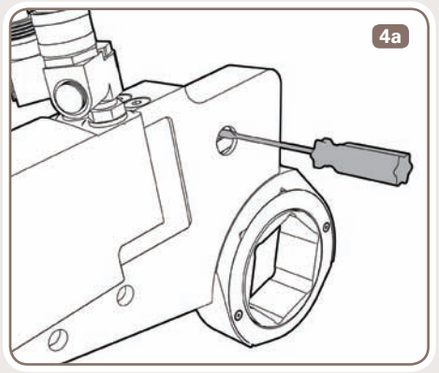
Slide the low-profile ratcheting head into the IU-XL tool body.

Did you clean and lubricate the tool body railing and the railing on the head?



Step 3

With the low-profile ratcheting head in place, insert the cylinder drive pin. The cylinder drive pin should go through the low-profile ratcheting head and cylinder piston rod to secure the two pieces together.



Step 4

Image A
While still holding the cylinder drive pin in place, turn the tool over. Using the quick-clip tool (a screwdriver or similar tool will work), pull the quick-clip back.

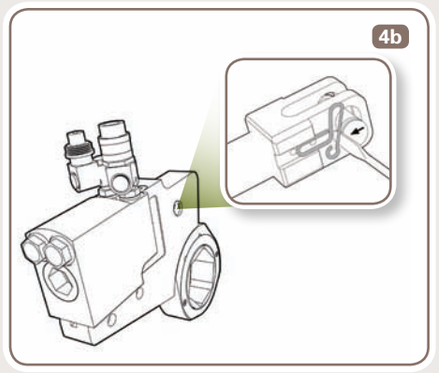
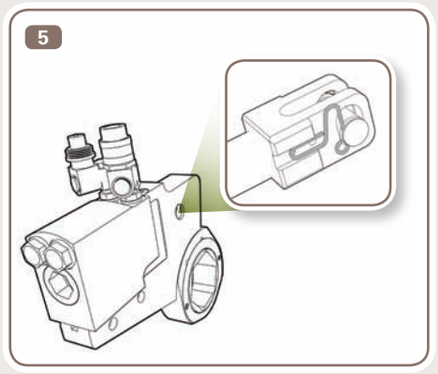


Image B
While pushing the cylinder drive pin through the tool head, pull the quick-clip back and away from the cylinder drive pin.

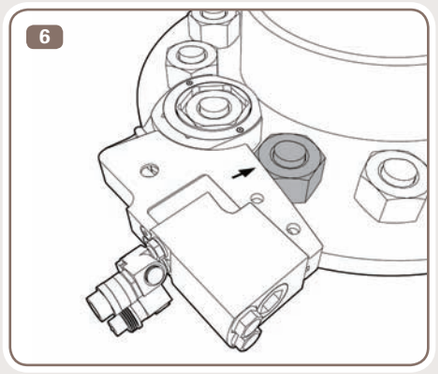
Step 5

Release the quick-clip and make sure the quick-clip is locked into place with the clip securely resting inside the drive pin groove.



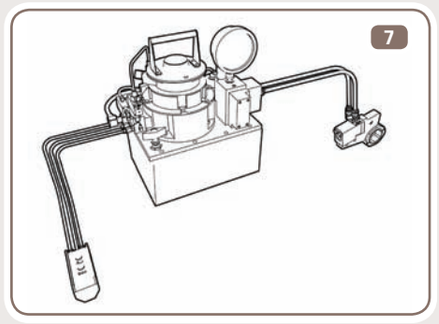
Step 6

Set the tool body reaction pad on a flat surface, against a close nut/bolt, flange, or solid object. The tool should never react on an angled or sloped surface.



⚠ WARNING

The IU-XL tool is designed as one solid unit and has minimal pinch points, but always be aware of hand placement while the tool is in operation.



Step 7

Use the quick-connect system to attach the hoses to the tool and pump. Make sure the ends are fully connected on the tool and pump. The hoses and quick-connects are connected when the male and female ends are tightly sealed.

⚠ WARNING

Make sure there is clearance for the hoses, quick-connects, and end plug. **DO NOT** allow the tool to react against the hoses, quick-connects, or end plugs.

Step 8

Turn the pump on.

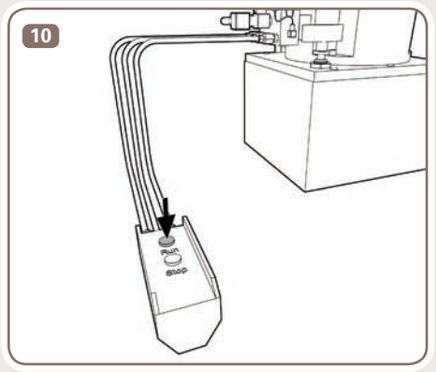
Step 9

Preset the pressure for the correct torque.

(Refer to Setting the Torque, section 3)

Step 10

Activate the remote control that is connected to the pump to advance the piston assembly.



WHEN	THEN
The tool is started…	The nut/bolt will begin to turn.
The nut is no longer turning and the pump gauge is at the correct pressure…	Release the remote control button.
The button is released…	The tool will retract. It is very important to allow the tool to fully retract or you will "short stroke" the tool. *(Refer to "How to Avoid Short Stroking" on page 22)*

Step 11

You will know the IU-XL wrench has completed a full cycle when you see the ratchet head move through this cycle:

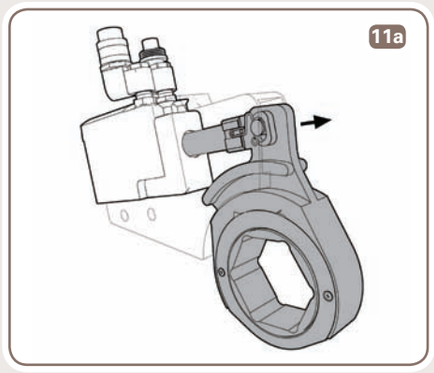


Image A
The cylinder drive pin and head will move forward and come to a stop while under pressure.

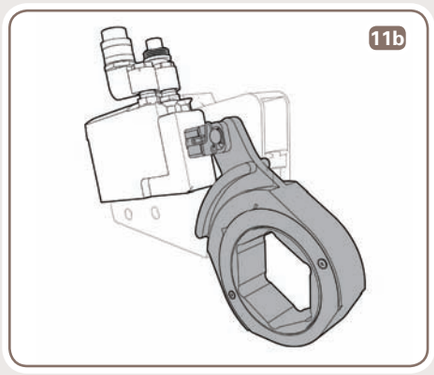


Image B
The cylinder drive pin will then retract back and will stall in the retract position. When the pressure builds to approximately 1500psi, the full cycle is complete.

(A full cycle allows the tool to stroke completely out and retract completely back.)

⚠ WARNING

This tool should not be used with a pump that can exceed 10,000psi of hydraulic pressure.

Step 12

Once the nut/bolt stops rotating, remove the tool from the nut/bolt. ■

How to Avoid Short Stroking

Make sure the tool is fully advanced and fully retracted for every cycle.

- On the **advance stroke**, you will know the tool is fully advanced when the low-profile ratcheting head is extended past the body and the pressure has reached the set pressure.
- On the **retract stroke**, you will know the tool is fully retracted when the cylinder drive pin can be seen moving backwards and into place (you can see the drive pin move through the hole in the tool body) and the pressure returns to approximately 1500psi.

5 Lubrication

Lubrication of your Torq/Lite wrench is a very important final step in operation. You should lubricate after 20 to 40 hours of operation.

Lubricate all parts of the low-profile ratcheting head and the inside walls of the tool with a nickel or copper-based anti-seize lubricant.

Steps for Lubrication

Step	Action
1	Remove the low-profile ratcheting head. *(Refer to Maintenance: Disassembling the Torque Wrench, section 1)*
2	Wash all parts in a cleaning solution made for this type of job. Make sure the cleaning area is ventilated.
3	Dry the parts.
4	Lubricate the parts.
5	To properly reassemble after cleaning, the parts must be completely dry and lubricated.

Remember to use plenty of lubricant. You can never over-lubricate.

Introduction

Maintaining your Torq/Lite wrench is important for tool function and durability. There are four functions to maintenance: **Disassembly, cleaning, lubrication, and assembly.** In this section, you will learn how to perform these functions.

Section	Topic
1	Disassembling the Torque Wrench
2	Assembling the Torque Wrench
3	Disassembling the Dual-Plane Swivels
4	Assembling the Dual-Plane Swivels

There are a few things you must do before beginning maintenance on your Torq/Lite wrench:

- Turn off the power supply
- Relieve pressure from the hose connection
- Disconnect the hoses

1 Disassembling the Torque Wrench

When you disassemble the Torq/Lite wrench, carefully separate the tool into several specific pieces. Once all the pieces are separated you can begin the maintenance process.

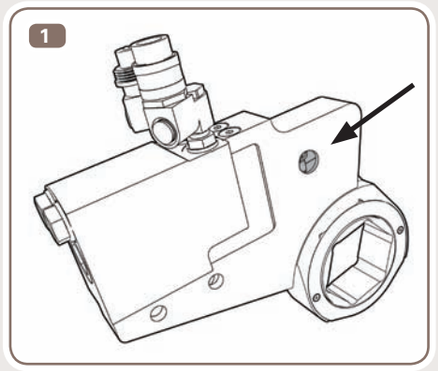
(Refer to "IU-XL Parts List" on page 52)

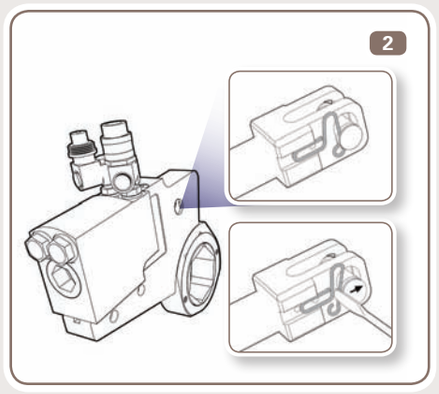
NOTE

- The disassembly instructions must be followed when taking apart the tool. Removing parts outside of these instructions could cause damage.
- Do not scratch or damage any surfaces that contain pressurized hydraulic oil.

Step 1

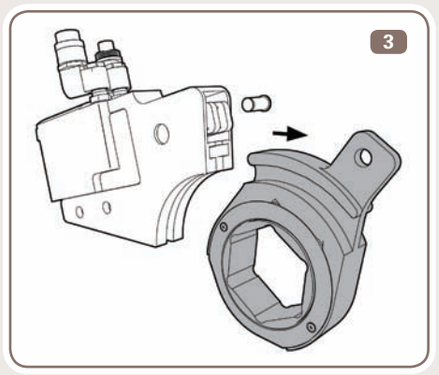
To clean and apply lubricant to the IU-XL, you must first separate the low-profile ratcheting head from the tool body. To remove the low-profile ratcheting head, place the tool on a flat surface and find the cylinder drive pin located inside the cylinder drive pin hole.





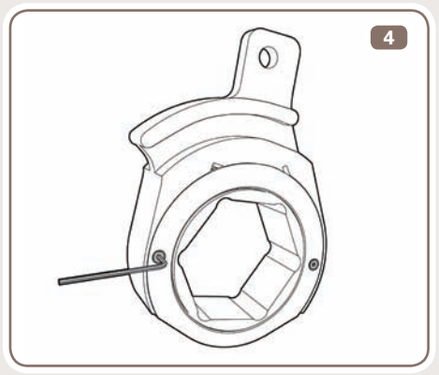
Step 2

Using quick-clip pliers (screw-driver or similar tool will work) pull the quick-clip back and away from the cylinder drive pin. Push the drive pin out through the other side of the tool body.



Step 3

Slide the low-profile ratcheting head off the tool body.

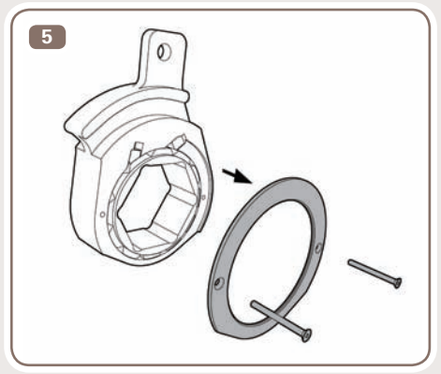


Step 4

Place the low-profile ratcheting head on a flat surface. Using an Allen wrench, loosen the set head shield screws.

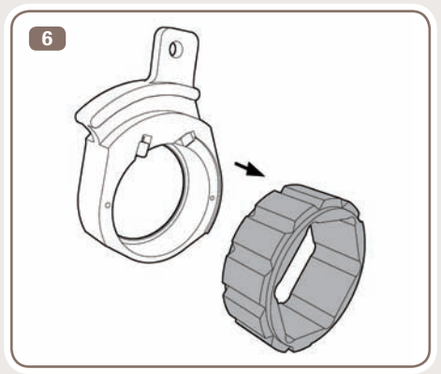
Step 5

Push the set head shields out and place the shields on a flat surface.



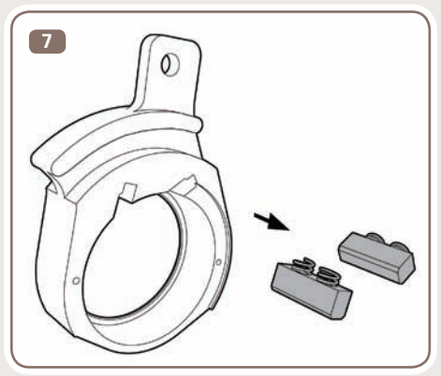
Step 6

Push the drive gear out of the low-profile ratcheting head.



Step 7

Remove the positive drives and springs located inside the low-profile ratcheting head interior rim. The springs are loose and should be removed carefully.

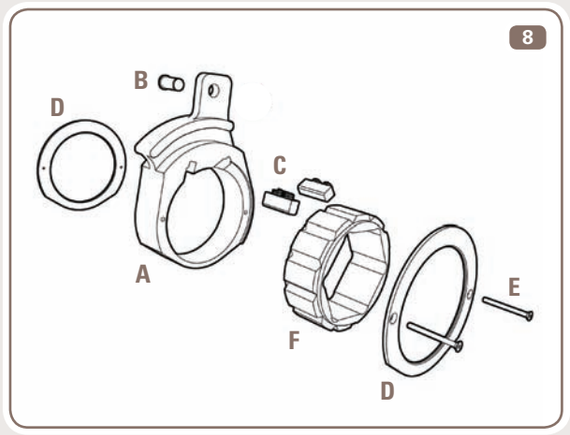


Step 8

Separate all the parts from the drive assembly. ■

These parts should include:

- [A] Positive bore tracking head
- [B] Cylinder drive pin
- [C] Positive drives (2) and springs
- [D] Set head shields (2)
- [E] Set head shield screws (2)
- [F] Drive gear



2 Assembling the Torque Wrench

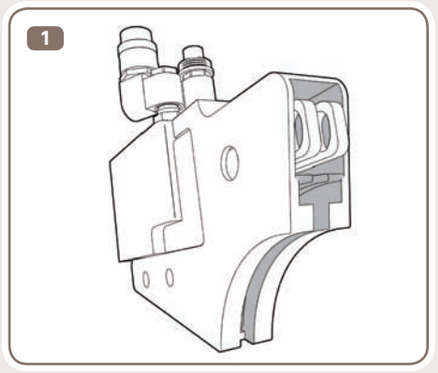
After cleaning and performing maintenance, you can reassemble your Torq/Lite wrench. Assembly of the wrench involves properly lubricating and putting the tool back together in a particular order.

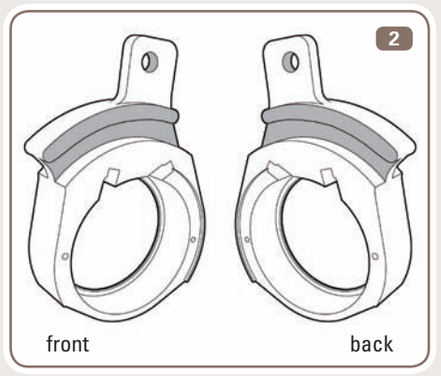
Lubrication
Lubrication is a very important first step in the assembly process. Before you assemble the tool, you will lubricate all parts of the drive assembly and the inside walls of the tool with a nickel or copper-based anti-seize lubricant.
You must lubricate the low-profile ratcheting head and the drive gear of the IU-XL wrench before attaching the low-profile ratcheting head to the IU-XL tool body. The tool will not work properly without adequate lubrication of these areas.

Remember to use plenty of lubricant. You can never over-lubricate.

Step 1

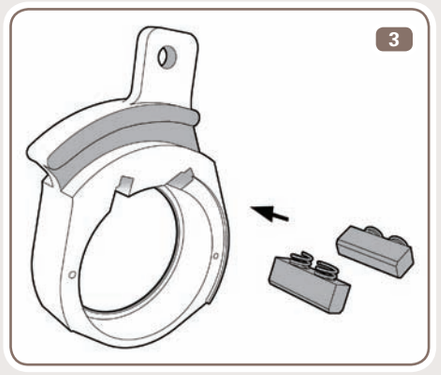
Clean and lubricate the inside walls of the tool and the tool body railing.





Step 2

Generously lubricate both sides of the railing of the low-profile ratcheting head with Never–Seez® lubricant.



Step 3

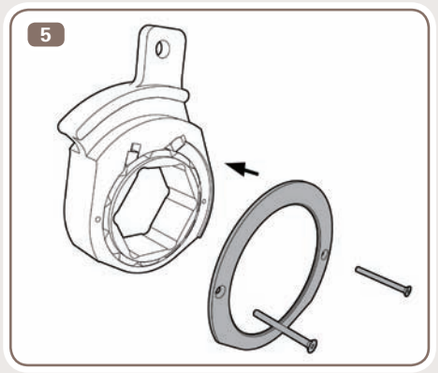
Find the two positive drives with springs and insert each inside the low-profile ratcheting head interior rim. The positive drive slots are located on the base of the interior rim. The springs must be held against the positive drive while inserting the positive drives into the slots.

Step 4

After lubricating the interior rim of the head, insert the drive gear into the circular area of the low-profile ratcheting head.

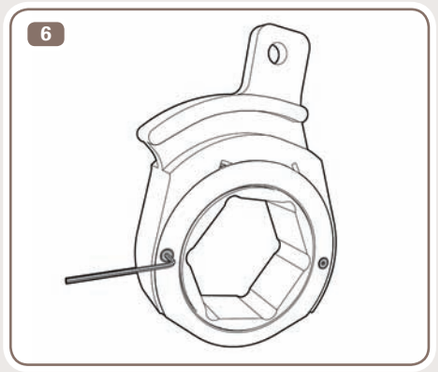
Step 5

Insert the set head shields into position on either side of the tool body and secure the set head shields with the set head screws.



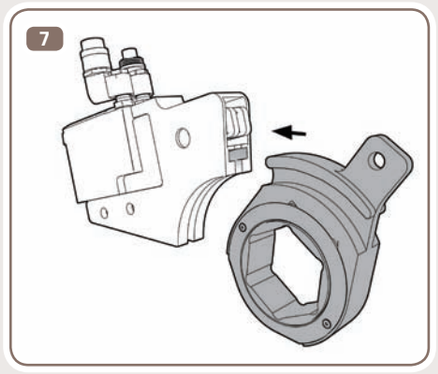
Step 6

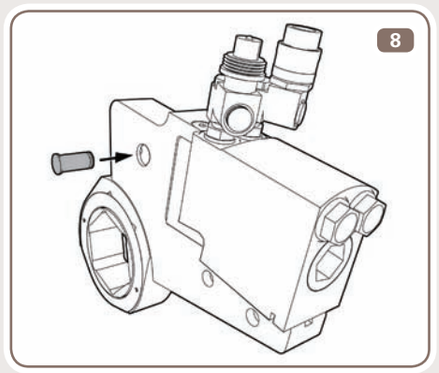
With the set head shields inserted, place the low-profile ratcheting head on a flat surface. Using an Allen wrench, tighten the set head shield screws.



Step 7

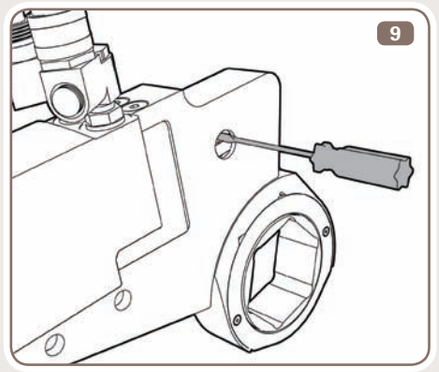
Slide the low-profile ratcheting head into the IU-XL tool body.





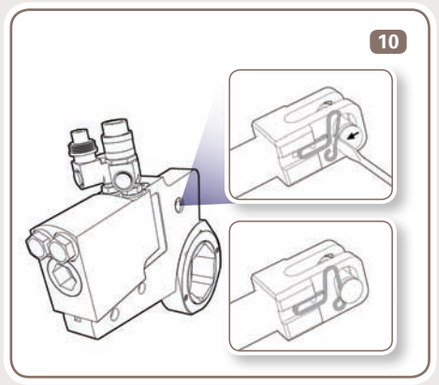
Step 8

With the low-profile ratcheting head in place, insert the cylinder drive pin.



Step 9

Using the quick-clip tool, pull the quick-clip back and away from the cylinder drive pin.



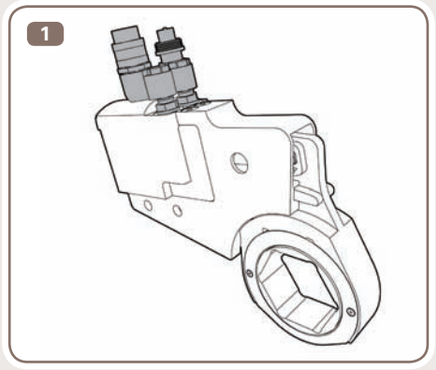
Step 10

The cylinder drive pin should be secured under the quick-clip. ■

3 Disassembling the Dual-Plane Swivels

Step 1

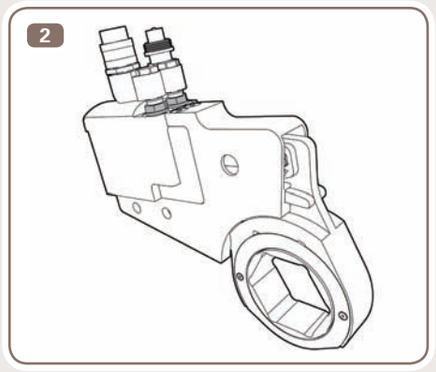
Find the dual-plane swivels on the top of the Torq/Lite wrench.



Step 2

Loosen the dual-plane swivels.

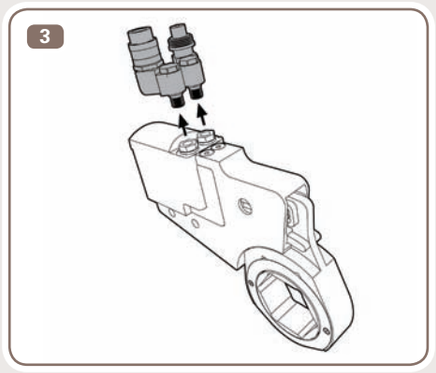
(Use a ¾" wrench at the base of the swivel stem.)

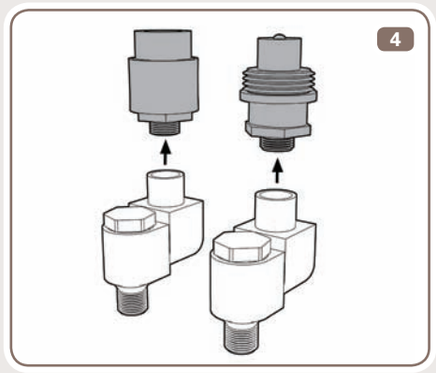


Step 3

Remove the dual-plane swivels from the Torq/Lite wrench.

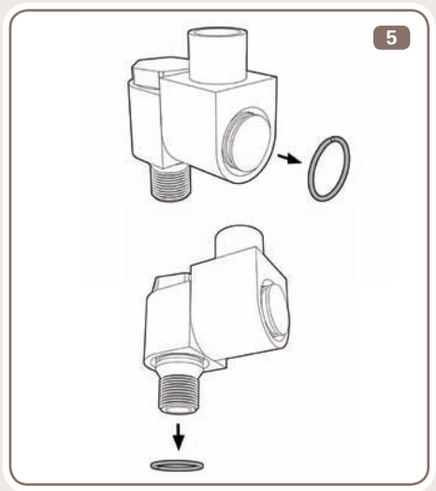
(Use another ¾" wrench at the top of the swivel stem.





Step 4

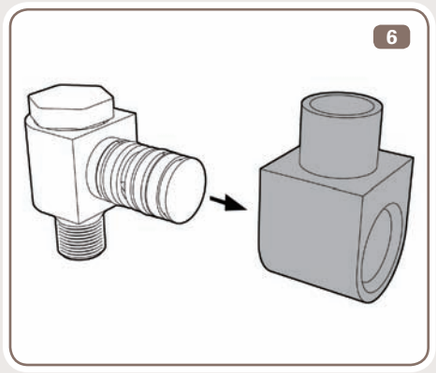
Remove the quick-connect couplings from the dual-plane swivels.



Step 5

Remove the keeper rings from the dual-plane swivel body and the swivel stem.

(Use a screwdriver or similar tool.)

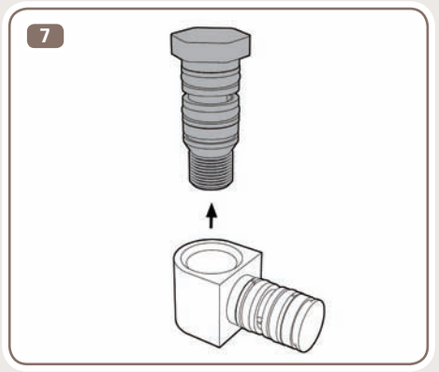


Step 6

Remove the female swivel body from the dual-plane swivel body.

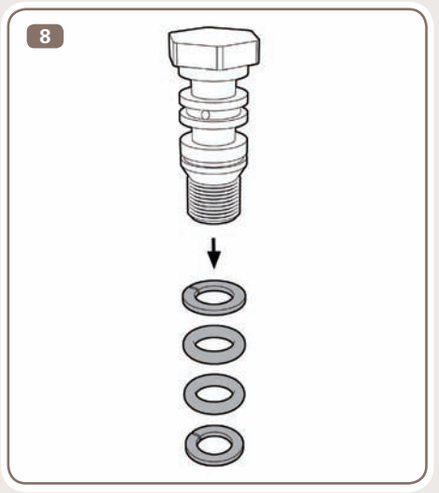
Step 7

Remove the swivel stem from the dual-plane swivel body.



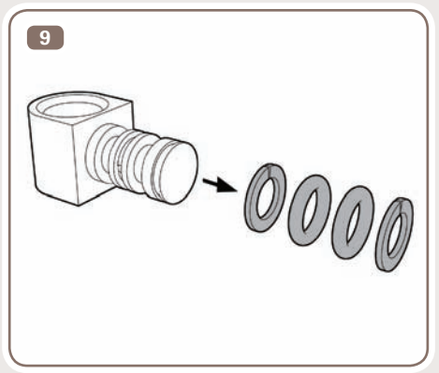
Step 8

Remove the Teflon® backup rings and the swivel stem seals from the swivel stem.

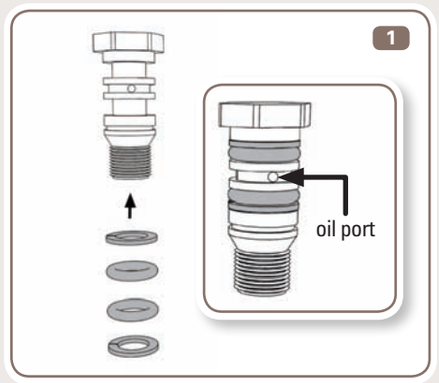


Step 9

Remove the Teflon backup rings and the swivel stem seals from the dual-plane swivel body. ■



4 Assembling the Dual-Plane Swivels



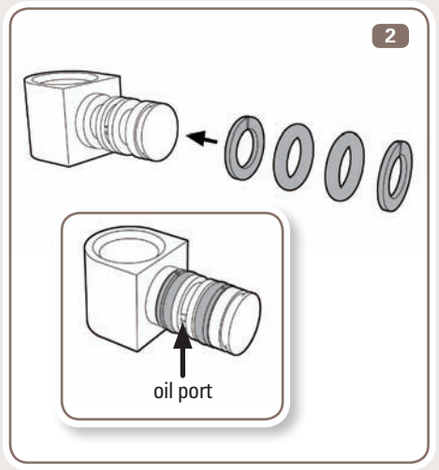
Step 1

Install replacement Teflon backup rings and swivel stem seals on the swivel stem.

(Use a lubricant such as petroleum jelly.)

NOTE

The Teflon backup rings must be positioned behind the swivel stem seals relative to the oil port.



Step 2

Install replacement Teflon backup rings and swivel stem seals on the dual-plane swivel body.

(Use a lubricant such as petroleum jelly.)

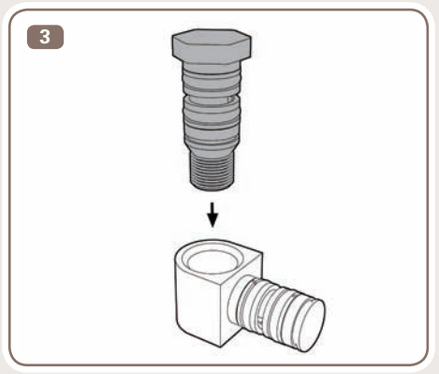
NOTE

The Teflon backup rings must be positioned behind the swivel stem seals relative to the oil port.

Step 3

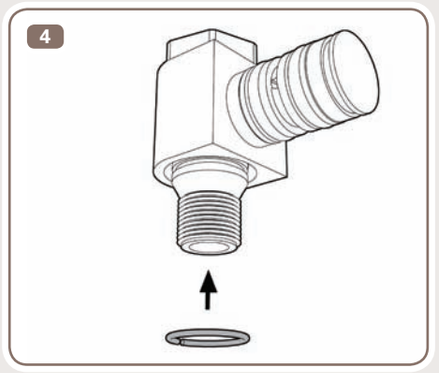
Insert the swivel stem into the female receptor in the dual-plane swivel body.

(Use a lubricant such as petroleum jelly.)



Step 4

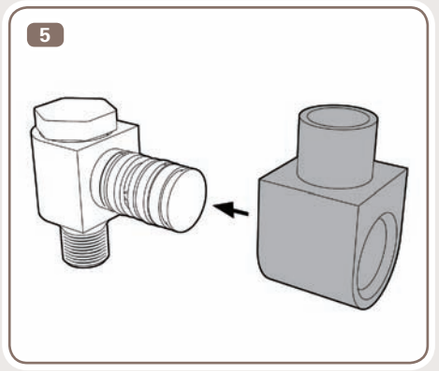
Install the keeper ring at the base of the swivel stem.

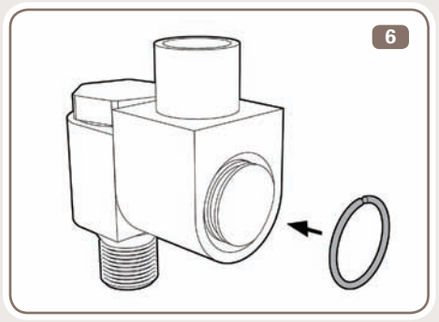


Step 5

Insert the dual-plane swivel body into the female swivel body.

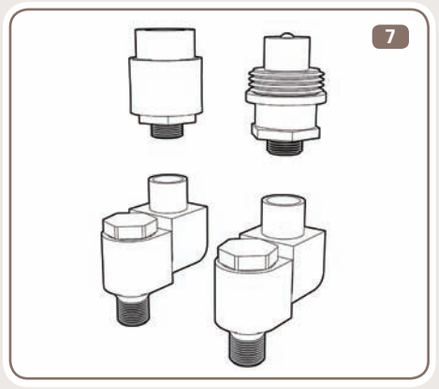
(Use a lubricant such as petroleum jelly.)





Step 6

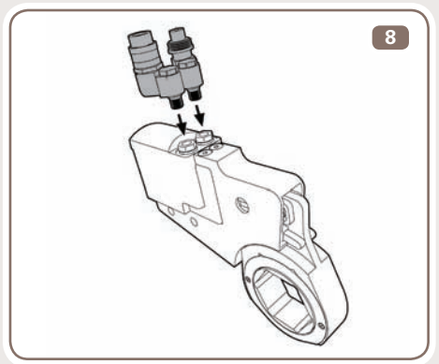
Install the keeper ring on the end of the dual-plane swivel body.



Step 7

Attach the quick-connect couplings to the female swivel body.

> **NOTE**
>
> Always apply Teflon tape to the threads on the base of the quick-connect couplings before attaching to the swivel body.



Step 8

Reattach the swivels to the Torq/Lite wrench. ■

(Use a ¾" wrench.)

Introduction

This Troubleshooting Guide provides information about resolving technical or mechanical issues that you may encounter while using your Torq/Lite wrench. This guide includes a collection of symptoms, with information to further diagnose or solve each problem.

Trouble	Cause	Solution
Piston will not advance	Quick-connects not securely attached to the tool or pump	Check the quick-connects and make sure they are connected.
	Defective quick-connects	Replace defective quick-connects.
	Defective remote control switch	Replace the switch and/or control pendant.
	Dirt in the direction-control valve of the pump unit	Return to manufacturer for repair.
Piston will not retract	Reversed hose connections	Make sure the advance on the pump is connected to the advance on the tool and the retract on the pump is connected to the retract on the tool.
	Retract hose not connected	Connect the retract hose securely to relieve pressure. Pliers may be necessary to tighten the quick-connects.
Cylinder will not build-up pressure	Piston seal and/or end plug seal leaking	Replace defective O-rings.
	Defective quick-connects	Replace defective quick-connects.
Tool locks onto nut	Tool is operating backwards, fittings may be reversed	Check quick-connects on tool, hoses, and pump. Reconfigure correctly.

Trouble	Cause	Solution
Hose or tool fitting is damaged or leaks	Broken or melted plastic outer covering	If underlying Kevlar® or steel is intact, continue operation and inspect frequently.
	Frayed Kevlar or steel strands	Cut the hose in half and discard. Replace the hose.
	Oil leaks through fibers	Cut the hose in half and discard. Replace the hose.
	Broken fittings	Remove old fittings and replace with steel high-pressure fittings only.
Pump will not build-up pressure	Defective relief valve	Inspect, adjust, or replace the relief valve.
	Hydraulic intake screen clogged	Remove the pump assembly from the tank and clean the screen.
	Air supply too low or air hose too small	Make sure the air supply and hose size both comply with the pump manual recommendations.
	Electric power source too low	Make sure the amperage, voltage, and extension cord size comply with the pump manual requirements.
	Defective gauge	Replace the gauge.
	Low oil level	Check and fill the pump reservoir.
	Filter regulation lubricator clogged	Inspect and clean air hoses.
	Defective pump	Return to manufacturer for repair.
	Defective directional valve	Return to manufacturer for repair.
Cylinder/Tool leaks	Blown back cap seal	Replace the back cap seal.
Swivel seal leak	Blown swivel seal	Replace the swivel seal.

Trouble	Cause	Solution
Cylinder seal leaks	Blown O-ring on pressure set screw	Replace the cylinder O-ring plug.
Piston rod seal leaks	Blown piston rod seal	Replace the piston rod seal.
Swivel adapter seal leaks	Blown swivel adapter seal	Replace the swivel adapter seal.
Tool tightens immediately when turned on	Reversed hose connections	Push the advance button to release the tool; shut the pump off in the advance position and reverse the hose connections.
Pressure reading erratic	Defective gauge	Replace the gauge.
	Loss of prime	Check oil level in pump reservoirs. Refill oil to appropriate levels. Turn the pump on and lay the pump on its side for 15-20 seconds. Place the pump back in an upright position.
	Loss of prime: • Power Team® Pump • Enerpac® Pump • Simplex® Pump	Do not turn the pump on its side. Turning one of these pumps could worsen the prime-loss problem. To correct the prime loss, check the oil level, circulate the fluid by connecting the hydraulic hoses, and allow the pressure regulator to move up and down several cycles. If this does not work for this pump series, check the screen and/or oil level.
	Oil level low	Add oil.
Gauge shows pressure build-up but the tool will not cycle	Quick-connects loose or not working	Tighten and/or replace the quick-connects.
	Solenoid not working	Replace parts as necessary.
Head shields are separating from the low-profile ratcheting head	Head shield screws become loose during use	Tighten screws or replace with longer screws and nuts supplied.

IU-1XL

INLINE UNIBODY RATCHETING TOOL

10000 PSI & 700 BAR
+\-3%

	BAR	PSI	FT/LBS	NM	KGF*M
	14	200	27	37	4
	28	400	55	74	8
	41	600	82	111	12
	55	800	110	149	16
	69	1000	137	186	19
	83	1200	163	220	23
	97	1400	188	255	27
	110	1600	214	290	30
	124	1800	239	325	34
	138	2000	265	359	37
	152	2200	291	394	41
	165	2400	316	429	44
	179	2600	342	463	48
	193	2800	367	498	51
	207	3000	393	533	55
	221	3200	419	569	58
	234	3400	446	604	62
	248	3600	472	640	66
	262	3800	499	676	69
	276	4000	525	712	73
	490	4200	552	748	77
	303	4400	579	785	81
	317	4600	606	822	84
A	331	48001	633	858	88
	345	5000	660	895	92

	BAR	PSI	FT/LBS	NM	KGF*M
	359	5200	687	931	95
	372	5400	713	967	99
	386	5600	740	1003	103
	400	5800	766	1039	106
	414	6000	793	1075	110
	427	6200	821	1113	114
	441	6400	849	1151	118
	455	6600	876	1188	122
	469	6800	904	1226	126
	483	7000	932	1264	129
	496	7200	958	1299	133
B	510	7400	984	1334	136
	524	7600	1009	1369	140
	538	7800	1035	1404	144
	552	8000	1061	1439	147
	565	8200	1093	1482	152
C	579	84007	1125	1526	156
	593	8600	1158	1569	161
	607	8800	1190	1613	165
	621	9000	1222	1657	169
	634	9200	1244	1686	172
	648	9400	1265	1715	175
	662	9600	1287	1745	178
	676	9800	1308	1774	181
	700	10000	1330	1803	184

(A) = 1 thru 3 (B) = 4 thru 6 (C) = 7 thru 9

1)	2)	3)	4)	5)	6)	7)	8)	9)	Full Range
3/4"	13/16"	7/8"	15/16"	1"	1-1/16"	1-1/8"	1-3/16"	1-1/4"	1-5/16"
	Full Range	Full Range	Full Range	Full Range	Full Range	Full Range	Full Range	Full Range	Full Range
	1-3/8"	1-7/16"	1-1/2"	1-9/16"	1-5/8"	1-11/16"	1-3/4"	1-13/16"	1-7/8"

Hydraulic Torque wrench was calibrated on TSD 20011-HT Hydraulic Torque Wrench Calibration System having a range of 0 to 20,000 X 2 Lb.Ft. S/N 4041 with an Accuracy 0.1% IV, Uncertainty +/- 2 Lb.Ft. and TSD 10K PSI, 0 to 10,000 X 1 PSI, 0.1% Pressure Standard, Uncertainty +/- 1 PSI. S/N 44818 Systems are traceable to National Institure for Standards and Technology (NIST) through Reference # 822/266926-02.

IU-3XL

INLINE UNIBODY RATCHETING TOOL

10000 PSI & 700 BAR
+\-3%

BAR	PSI	FT/LBS	NM	KGF*M
14	200	59	80	9
28	400	118	159	17
41	600	176	239	25
55	800	235	319	33
69	1000	294	399	41
83	1200	356	483	50
97	1400	418	567	58
110	1600	480	651	67
124	1800	542	735	75
138	2000	604	819	84
152	2200	666	903	93
165	2400	728	986	101
179	2600	789	1070	110
193	2800	851	1154	118
207	3000	913	1238	127
221	3200	976	1324	135
234	3400	1039	1409	144
A 248	3600	1103	1495	153
262	3800	1166	1581	162
276	4000	1229	1666	170
290	4200	1287	1745	178
303	4400	1345	1824	186
317	4600	1403	1902	194
B 331	4800	1461	1981	202
345	5000	1519	2059	211

BAR	PSI	FT/LBS	NM	KGF*M
359	5200	1586	2150	220
372	5400	1653	2241	229
386	5600	1720	2332	238
400	5800	1787	2423	248
414	6000	1854	2514	257
C 427	6200	1915	2596	265
441	6400	1976	2679	274
455	6600	2036	2761	282
469	6800	2097	2843	290
D 483	7000	2158	2926	299
496	7200	2222	3013	308
510	7400	2286	3099	317
524	7600	2292	3108	317
538	7800	2414	3273	334
552	8000	2478	3360	343
565	8200	2541	3445	352
579	8400	2604	3530	360
593	8600	2666	3615	369
607	8800	2729	3700	378
621	9000	2792	3785	387
634	9200	2848	3862	394
648	9400	2905	3938	402
662	9600	2961	4015	410
676	9800	3018	4091	418
690	10000	3074	4168	425

(A) = 1 (B) = 2 (C) = 3 (D) = 4 & 5

1)	2)	3)	4)	Full Range	5)	Full Range	Full Range	Full Range
1-1/4"	1-7/16"	1-5/8"	1-13-16"	1-7/8"	2"	2-3/16"	2-3/8"	2-9/16"

Hydraulic Torque wrench was calibrated on TSD 20011-HT Hydraulic Torque Wrench Calibration System having a range of 0 to 20,000 X 2 Lb.Ft. S/N 4041 with an Accuracy 0.1% IV, Uncertainty +/- 2 Lb.Ft. and TSD 10K PSI, 0 to 10,000 X 1 PSI, 0.1% Pressure Standard, Uncertainty +/- 1 PSI. S/N 44818 Systems are traceable to National Institure for Standards and Technology (NIST) through Reference # 822/266926-02.

IU-7XL

INLINE UNIBODY RATCHETING TOOL

10000 PSI & 700 BAR
+\-3%

BAR	PSI	FT/LBS	NM	KGF*M
14	200	133	181	19
28	400	267	362	37
41	600	400	543	56
55	800	534	723	74
69	1000	667	904	93
83	1200	798	1082	111
97	1400	930	1261	129
110	1600	1061	1439	147
124	1800	1193	1617	165
138	2000	1324	1795	184
152	2200	1463	1983	203
165	2400	1601	2171	222
179	2600	1740	2359	241
193	2800	1878	2547	260
207	3000	2017	2735	279
221	3200	2157	2925	299
234	3400	2297	3115	318
248	3600	2438	3305	338
262	3800	2578	3495	357
276	4000	2718	3685	376
290	4200	2859	3876	396
303	4400	3000	4067	415
317	4600	3141	4259	435
331	4800	3282	4450	454
345	5000	3423	4641	474

BAR	PSI	FT/LBS	NM	KGF*M
359	5200	3567	4836	494
372	5400	3711	5031	514
386	5600	3854	5226	533
400	5800	3998	5421	553
A 414	6000	4142	5616	573
427	6200	4278	5800	592
441	6400	4414	5984	611
455	6600	4549	6168	629
469	6800	4685	6352	648
483	7000	4821	6536	667
496	7200	4969	6737	687
510	7400	5116	6937	708
524	7600	5264	7137	728
B 538	7800	5411	7337	749
552	8000	5559	7537	769
565	8200	5693	7719	788
579	8400	5828	7901	806
593	8600	5962	8084	825
607	8800	6097	8266	843
621	9000	6231	8448	862
634	9200	6365	8629	880
648	9400	6498	8810	899
662	9600	6632	8992	917
676	9800	6765	9173	936
690	10000	6899	9354	954

(A) = 1 & 2 (B) = 3 & 4

1)	2)	3)	4)	Full Range	Full Range	Full Range
2"	2-3/16"	2-3/8"	2-9/16"	2-3/4"	2-15/16"	3-1/8"

Hydraulic Torque wrench was calibrated on TSD 20011-HT Hydraulic Torque Wrench Calibration System having a range of 0 to 20,000 X 2 Lb.Ft. S/N 4041 with an Accuracy 0.1% IV, Uncertainty +/- 2 Lb.Ft. and TSD 10K PSI, 0 to 10,000 X 1 PSI, 0.1% Pressure Standard, Uncertainty +/- 1 PSI. S/N 44818 Systems are traceable to National Institure for Standards and Technology (NIST) through Reference # 822/266926-02.

IU-10XL

INLINE UNIBODY RATCHETING TOOL

10000 PSI & 700 BAR
+\-3%

BAR	PSI	FT/LBS	NM	KGF*M
14	200	198	268	28
28	400	396	537	55
41	600	594	805	83
55	800	792	1074	110
69	1000	990	1342	137
83	1200	1188	1611	165
97	1400	1386	1879	192
110	1600	1584	2148	219
124	1800	1782	2416	247
138	2000	1980	2685	274
152	2200	2178	2953	302
165	2400	2376	3221	329
179	2600	2574	3490	356
193	2800	2772	3758	384
207	3000	2970	4027	411
221	3200	3162	4287	438
234	3400	3354	4547	464
248	3600	3546	4808	491
262	3800	3738	5068	517
276	4000	3930	5328	544
290	4200	4134	5605	572
303	4400	4338	5882	600
317	4600	4542	6158	628
331	4800	4746	6435	657
345	5000	4950	6711	685

BAR	PSI	FT/LBS	NM	KGF*M
359	5200	5148	6980	712
372	5400	5346	7248	740
386	5600	5544	7517	767
400	5800	5742	7785	794
414	6000	5940	8054	822
(A) 427	6200	6138	8322	849
441	6400	6336	8590	876
455	6600	6534	8859	904
469	6800	6732	9127	931
(B) 483	7000	6930	9396	959
496	7200	7128	9664	986
510	7400	7326	9933	1013
524	7600	7524	10201	1041
538	7800	7722	10470	1068
552	8000	7920	10738	1095
565	8200	8118	11007	1123
579	8400	8316	11275	1150
593	8600	8514	11543	1178
607	8800	8712	11812	1205
621	9000	8910	12080	1232
634	9200	9108	12349	1260
648	9400	9306	12617	1287
662	9600	9504	12886	1314
676	9800	9702	13154	1342
690	10000	9900	13423	1369

(A) = 1 (B) = 2

1)	2)	Full Range	Full Range	Full Range	Full Range	Full Range
2-3/8"	2-9/16"	2-3/4"	2-15/16"	3-1/8"	3-1/2"	3-7/8"

Hydraulic Torque wrench was calibrated on TSD 20011-HT Hydraulic Torque Wrench Calibration System having a range of 0 to 20,000 X 2 Lb.Ft. S/N 4041 with an Accuracy 0.1% IV, Uncertainty +/- 2 Lb.Ft. and TSD 10K PSI, 0 to 10,000 X 1 PSI, 0.1% Pressure Standard, Uncertainty +/- 1 PSI. S/N 44818 Systems are traceable to National Institure for Standards and Technology (NIST) through Reference # 822/266926-02.

IU-17XL

INLINE UNIBODY RATCHETING TOOL

10000 PSI & 700 BAR
+\-3%

BAR	PSI	FT/LBS	NM	KGF*M
14	200	303	410	42
28	400	605	821	84
41	600	908	1231	126
55	800	1210	1641	168
69	1000	1513	2051	210
83	1200	1825	2475	253
97	1400	2138	2898	296
110	1600	2450	3322	339
124	1800	2763	3746	382
138	2000	3075	4169	426
152	2200	3396	4604	470
165	2400	3717	5039	514
179	2600	4037	5474	559
193	2800	4358	5909	603
207	3000	4679	6344	647
221	3200	4995	6773	691
234	3400	5311	7201	735
248	3600	5628	7630	779
262	3800	5944	8059	822
276	4000	6260	8487	866
290	4200	6580	8921	910
303	4400	6899	9354	954
317	4600	7219	9787	999
331	4800	7538	10221	1043
345	5000	7858	10654	1087

BAR	PSI	FT/LBS	NM	KGF*M
359	5200	8178	11088	1131
372	5400	8498	11522	1175
386	5600	8818	11956	1220
400	5800	9138	12389	1264
414	6000	9458	12823	1308
427	6200	9784	13266	1353
441	6400	10111	13708	1398
455	6600	10437	14151	1443
469	6800	10764	14594	1489
483	7000	11090	15036	1534
496	7200	11405	15463	1577
510	7400	11719	15889	1621
524	7600	12034	16316	1664
538	7800	12348	16742	1708
552	8000	12663	17169	1751
565	8200	12985	17605	1796
579	8400	13307	18041	1840
593	8600	13628	18478	1885
607	8800	13950	18914	1929
621	9000	14272	19350	1974
634	9200	14608	19806	2020
648	9400	14944	20261	2067
662	9600	15279	20716	2113
676	9800	15615	21171	2159
690	10000	15951	21627	2206

Full Range	Full Range	Full Range	Full Range	Full Range	Full Range	Full Range	Full Range
2-3/4"	2-15/16"	3-1/8"	3-1/2"	3-7/8"	4-1/4"	4-5/8"	5"

Hydraulic Torque wrench was calibrated on TSD 20011-HT Hydraulic Torque Wrench Calibration System having a range of 0 to 20,000 X 2 Lb.Ft. S/N 4041 with an Accuracy 0.1% IV, Uncertainty +/- 2 Lb.Ft. and TSD 10K PSI, 0 to 10,000 X 1 PSI, 0.1% Pressure Standard, Uncertainty +/- 1 PSI. S/N 44818 Systems are traceable to National Institure for Standards and Technology (NIST) through Reference # 822/266926-02.

IU-25XL

INLINE UNIBODY RATCHETING TOOL

10000 PSI & 700 BAR
+\-3%

BAR	PSI	FT/LBS	NM	KGF*M
14	200	452	613	63
28	400	904	1226	125
41	600	1356	1838	188
55	800	1808	2451	250
69	1000	2260	3064	313
83	1200	2720	3688	377
97	1400	3180	4312	440
110	1600	3640	4935	504
124	1800	4100	5559	567
138	2000	4560	6183	631
152	2200	5038	6831	697
165	2400	5517	7480	763
179	2600	5995	8128	829
193	2800	6474	8777	896
207	3000	6952	9426	962
221	3200	7425	10067	1027
234	3400	7898	10708	1092
248	3600	8370	11349	1158
262	3800	8843	11990	1223
276	4000	9316	12631	1288
290	4200	9794	13279	1355
303	4400	10272	13927	1421
317	4600	10750	14575	1487
331	4800	11228	15223	1553
345	5000	11706	15871	1619

BAR	PSI	FT/LBS	NM	KGF*M
359	5200	12181	16516	1685
372	5400	12657	17160	1750
386	5600	13132	17805	1816
400	5800	13608	18449	1882
414	6000	14083	19094	1948
427	6200	14562	19743	2014
441	6400	15041	20393	2080
455	6600	15520	21042	2146
469	6800	15999	21692	2212
483	7000	16478	22341	2279
496	7200	16958	22991	2345
510	7400	17437	23642	2411
524	7600	17917	24292	2478
538	7800	18396	24942	2544
552	8000	18876	25592	2610
565	8200	19349	26233	2676
579	8400	19822	26875	2741
593	8600	20294	27516	2806
607	8800	20767	28157	2872
621	9000	21240	28798	2937
634	9200	21716	29443	3003
648	9400	22192	30088	3069
662	9600	22668	30734	3134
676	9800	23144	31379	3200
690	10000	23620	32024	3266

Full Range	Full Range	Full Range	Full Range	Full Range
3-1/2"	3-7/8"	4-1/4"	4-5/8"	5"

Hydraulic Torque wrench was calibrated on TSD 20011-HT Hydraulic Torque Wrench Calibration System having a range of 0 to 20,000 X 2 Lb.Ft. S/N 4041 with an Accuracy 0.1% IV, Uncertainty +/- 2 Lb.Ft. and TSD 10K PSI, 0 to 10,000 X 1 PSI, 0.1% Pressure Standard, Uncertainty +/- 1 PSI. S/N 44818 Systems are traceable to National Institure for Standards and Technology (NIST) through Reference # 822/266926-02.

IU-50XL

INLINE UNIBODY RATCHETING TOOL

10000 PSI & 700 BAR
+\-3%

BAR	PSI	FT/LBS	NM	KGF*M
14	200	853	1157	118
28	400	1706	2313	236
41	600	2559	3470	354
55	800	3412	4626	472
69	1000	4265	5783	590
83	1200	5167	7005	715
97	1400	6068	8227	839
110	1600	6970	9450	964
124	1800	7871	10672	1089
138	2000	8773	11895	1213
152	2200	9741	13208	1347
165	2400	10710	14521	1481
179	2600	11678	15834	1615
193	2800	12647	17147	1749
207	3000	13615	18459	1883
221	3200	14600	19795	2019
234	3400	15585	21130	2155
248	3600	16570	22466	2291
262	3800	17555	23801	2428
276	4000	18540	25137	2564
290	4200	19534	26485	2701
303	4400	20528	27832	2839
317	4600	21522	29180	2976
331	4800	22516	30528	3113
345	5000	23510	31875	3251

BAR	PSI	FT/LBS	NM	KGF*M
359	5200	24471	33178	3384
372	5400	25432	34481	3517
386	5600	26393	35784	3649
400	5800	27354	37087	3782
414	6000	28315	38390	3915
427	6200	29302	39728	4052
441	6400	30288	41065	4188
455	6600	31275	42403	4324
469	6800	32261	43741	4461
483	7000	33248	45078	4597
496	7200	34151	46303	4722
510	7400	35054	47527	4847
524	7600	35957	48751	4972
538	7800	36860	49976	5097
552	8000	37763	51200	5221
565	8200	39124	53045	5410
579	8400	40484	54889	5598
593	8600	41845	56734	5786
607	8800	43205	58579	5974
621	9000	44566	60423	6162
634	9200	45618	61850	6307
648	9400	46671	63277	6453
662	9600	47723	64704	6598
676	9800	48776	66131	6744
690	10000	49828	67558	6889

1)	2)	3)	4)	5)	6)	7)
4-5/8"	5"	5-3/8"	5-3/4"	6-1/8"	6-1/2"	6-7/8"

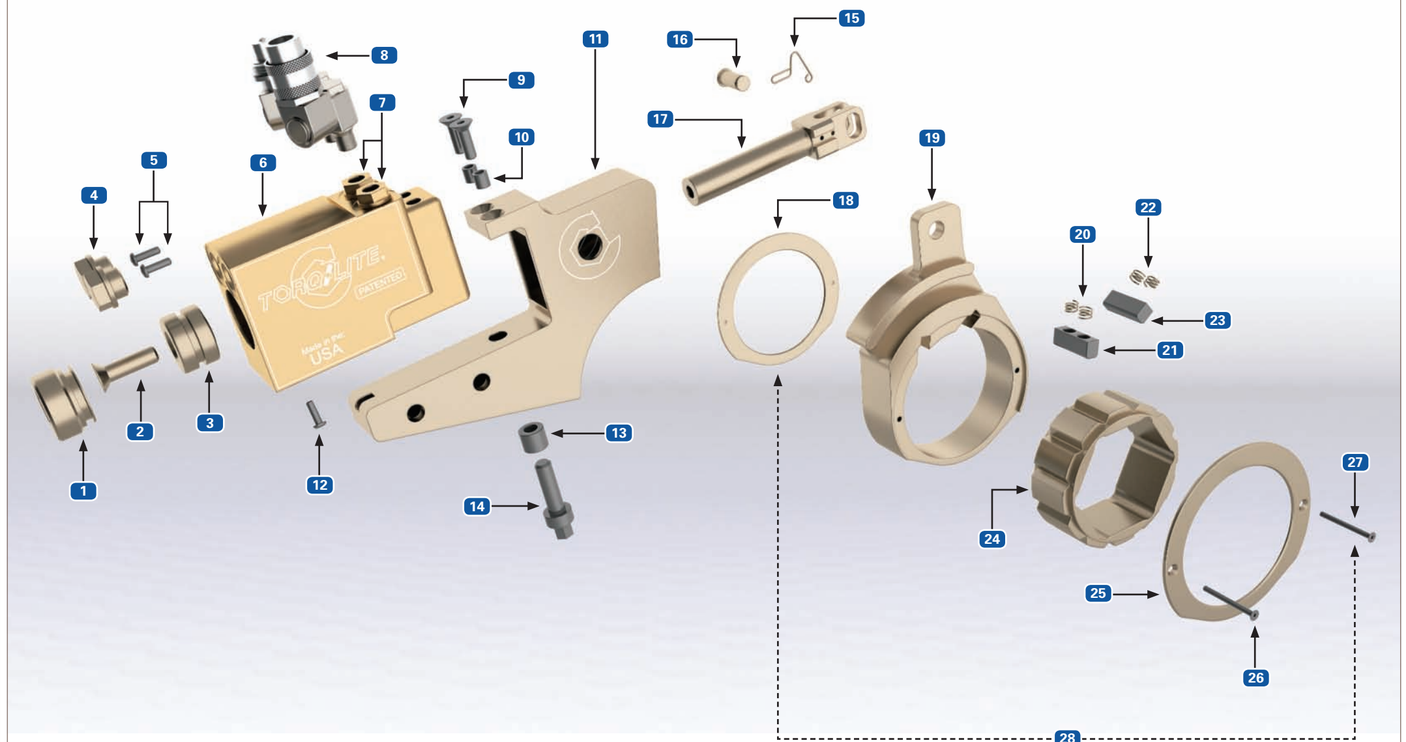
Hydraulic Torque wrench was calibrated on TSD 20011-HT Hydraulic Torque Wrench Calibration System having a range of 0 to 20,000 X 2 Lb.Ft. S/N 4041 with an Accuracy 0.1% IV, Uncertainty +/- 2 Lb.Ft. and TSD 10K PSI, 0 to 10,000 X 1 PSI, 0.1% Pressure Standard, Uncertainty +/- 1 PSI. S/N 44818 Systems are traceable to National Institure for Standards and Technology (NIST) through Reference # 822/266926-02.

IU-XL Parts List

ITEM	PART NAME
1	Backcap
2	Piston Bolt
3	Piston
4	Swivel O-Ring Plugs
5	Cylinder O-Ring Plugs
6	Cylinder
7	Swivel Adapters
8	Dual-Plane Swivels with Quick-Connects
9	Top Body Bolts
10	Top Body Bolt Bushings
11	Body
12	Cylinder O-Ring Plug
13	Bottom Body Bolt Bushing
14	Bottom Body Bolt
15	Cylinder Drive Pin Quick-Clip
16	Cylinder Drive Pin
17	Cylinder Piston Rod
18	Set Head Shield (Tapped)
19	Positive Bore Tracking Head
20	Positive Drive Springs
21	Positive Drives
22	Positive Drive Springs
23	Positive Drives
24	Drive Gear
25	Set Head Shield (Countersink)
26	Set Head Shield Screw
27	Set Head Shield Screw
28	Low-Profile Ratcheting Head (Assembled)

Expanded Parts View

IU-XL Series



(Items 18 – 27 Assembled)

Placeholder Page: **For Position Only**

IU-XL Parts List

ITEM	PART NAME
1	define
2	define
3	define
4	define
5	define
6	define
7	define
8	define
9	define
10	define
11	define
12	define
13	define
14	define
15	define
16	define
17	define
18	define
19	define
20	define
21	define
22	define
23	define
	(PARTS NOT SHOWN)
24	define
25	define
26	define
27	define
28	define

BINDERY/FOLD

PLACEHOLDER

Torq/Lite 3-Year Warranty

First Year Warranty

- Torq/Lite covers 100% of the cost of replacement parts
- Torq/Lite covers 100% of the cost of labor for repairs
- Torq/Lite provides one free tool calibration per warranty year

Free calibration will be determined by tool serial number for the duration of the warranty

Second Year Warranty

- Torq/Lite covers 50% of the cost of replacement parts
- Torq/Lite covers 100% of the cost of labor for repairs
- Torq/Lite provides one free tool calibration per warranty year

Third Year Warranty

- Torq/Lite covers 50% of the cost of replacement parts
- Torq/Lite covers 100% of the cost of labor for repairs
- Torq/Lite provides one free tool calibration per warranty year

Obtaining Service Under Warranty

Advanced authorization prior to the return of a product to Torq/Lite is recommended.

Required Warranty Information

Before contacting Torq/Lite, have the following information available:

- Model number/name
- Serial number of the defective product
- Technical description of the defect
- Shipping and billing addresses

To Obtain Authorization, Call:

Phone 985-785-3075
877-777-4046 Toll Free in U.S.

Fax 985-785-3086
877-777-4048 Toll Free in U.S.

Shipping

Shipment to Torq/Lite shall be at the buyer's expense and repaired or replacement items will be returned by UPS ground or by shipping rates lower than UPS ground. Repaired tools requiring a rush turnaround will be at the buyer's expense. Non-verified problems or defects may be subject to an evaluation charge.

Shipping Address: Torq/Lite
8 Dufresne Loop
Luling, Louisiana
70070
U.S.A.

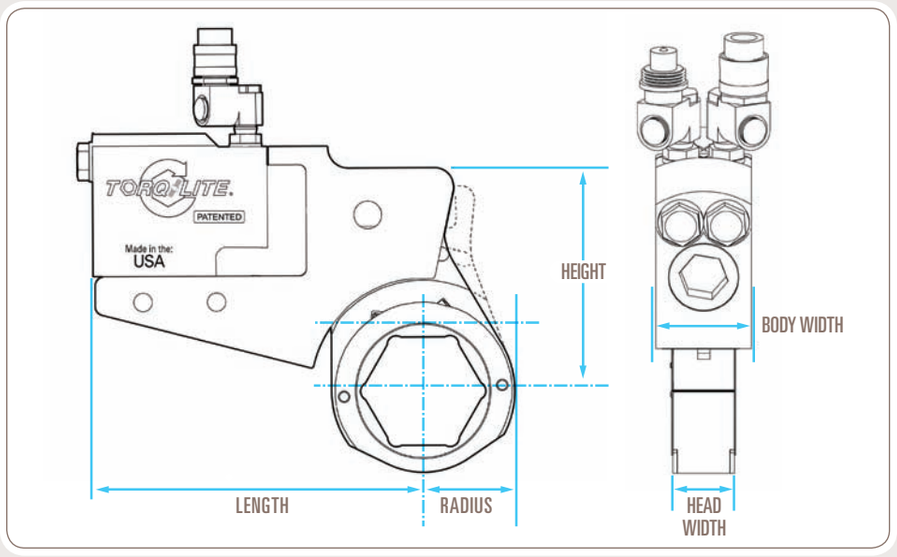
Disclaimer

This manufacturer warranty applies only to those distributors who honor the warranty. If the Torq/Lite tool is purchased outside the United States, refer to your Torq/Lite distributor for specific warranty information.

Providing Tools and Setting Standards

As a leader in the torque bolting industry, Torq/Lite continuously strives to design and manufacture torque wrenches with an unrelenting focus on delivering tools with precision, accuracy, and durability. Our success is driven by our desire to listen to customer needs, respond quickly to rapidly changing technology, and remain knowledgeable of all aspects of torque bolting technology. Torq/Lite President and visionary Dale Francis began his quest for superior quality in 1981. His experience, extensive industry expertise, and drive to provide customers efficiency and value, span three decades and reach customers around the globe. Torq/Lite takes great pride as a company and as a family in providing Torq/Lite customers continued value superior quality, and newer, more efficient torque technology.

IU-XL Measurements



IMPERIAL	IU-1XL	IU-3XL	IU-7XL	IU-10XL	IU-17XL	IU-25XL	IU-50XL §
Min/Max ft/lbs @ 10000psi (+\-3%)	117 / 1294	294 / 3074	667 / 6899	990 / 9900	1513 / 15951	2260 / 23620	3475 / 44785
Min/Max Nm @ 700 bar (+\-3%)	159 / 1754	399 / 4168	904 / 9354	1342 / 13423	2051 / 21627	3064 / 32024	4711 / 60720
Weight	7.25 lbs	9.25 lbs	14.00 lbs	24.50 lbs	42.00 lbs	57.00 lbs	85.00 lbs
Length	6.250″	7.000″	9.250″	9.750″	11.250″	11.250″	15.375″
Height Width	4.000″	5.750″	6.250″	8.000″	9.250″	9.250″	10.500″
Body Width	1.100″	1.450″	1.500″	1.950″	1.950″	2.900″	2.900″
Head Width	.950″	1.075″* or 1.200″†	1.500″	1.950″	2.450″	2.950″	2.950″
Range with head	3/4″ thru 2″	1-1/4″ thru 2-15/16″	2″ thru 3-7/8″	2-3/8″ thru 4-1/4″	2-3/4″ thru 5-3/8″	3-1/2″ thru 5-3/4″	4-5/8″ thru 7-1/4″

*1-1/4″ to 2″ Heads † 2-3/16″ to 2-15/16″ Heads § Steel Cylinders Only - Last Updated 12/20/2009

METRIC	IU-1XL	IU-3XL	IU-7XL	IU-10XL	IU-17XL	IU-25XL	IU-50XL §
Min/Max ft/lbs @ 10000psi (+\-3%)	159 / 1754	399 / 4168	904 / 9354	1342 / 13423	2051 / 21627	3064 / 32024	4711 / 60720
Min/Max Nm @ 700 bar (+\-3%)	117 / 1294	294 / 3074	667 / 6899	990 / 9900	1513 / 15951	2260 / 23620	3475 / 44785
Weight	3.29 kg	4.20 kg	6.35 kg	11.11 kg	19.05 kg	25.85 kg	38.55 kg
Length	159 mm	178 mm	235 mm	248 mm	286 mm	286 mm	391 mm
Height Width	102 mm	146 mm	159 mm	203 mm	235 mm	235 mm	267 mm
Body Width	28 mm	37 mm	38 mm	50 mm	50 mm	74 mm	74 mm
Head Width	24 mm	27mm* or 30mm†	38 mm	50 mm	62 mm	75 mm	75 mm
Range with head	19 mm thru 51 mm	32 mm thru 75 mm	51 mm thru 98 mm	60 mm thru 108 mm	70 mm thru 137 mm	89 mm thru 146 mm	115 mm thru 140 mm

*32 mm to 51 mm Heads † 56 mm to 75 mm Heads § Steel Cylinders Only - Last Updated 12/20/2009

IMPERIAL SPECIFICATIONS (inches)

IU-1XL Heads

ATF	Radius	P/R
3/4	1.07	0.41
1-1/16	1.18	0.34
1-1/4	1.29	0.34
1-7/16	1.40	0.34
1-5/8	1.51	0.34
1-13/16	1.61	0.34
2	1.72	0.34

IU-3XL Heads

ATF	Radius	P/R
1-1/4	1.38	0.35
1-7/16	1.46	0.35
1-5/8	1.57	0.35
1-13/16	1.70	0.40
1-7/8	1.79	0.46
2	1.79	0.40
2-3/16	1.90	0.40
2-3/8	1.97	0.40
2-9/16	2.12	0.46
2-3/4	2.24	0.46
2-15/16	2.36	0.46

IU-7XL Heads

ATF	Radius	P/R
2	1.80	0.47
2-3/16	1.88	0.47
2-3/8	2.02	0.47
2-9/16	2.15	0.47
2-3/4	2.40	0.55
2-15/16	2.55	0.50
3-1/8	2.62	0.55
3-1/2	2.85	0.63
3-7/8	3.04	0.60

IU-10XL Heads

ATF	Radius	P/R
2-3/8	2.02	0.45
2-9/16	2.15	0.47
2-3/4	2.40	0.55
2-15/16	2.55	0.50
3-1/8	2.62	0.55
3-1/2	2.85	0.85
3-7/8	3.07	0.85
4-1/4	3.26	0.85

IU-17XL Heads

ATF	Radius	P/R
2-3/4	2.50	0.90
2-15/16	2.62	0.90
3-1/8	2.70	0.90
3-1/2	2.90	0.90
3-7/8	3.18	0.95
4-1/4	3.35	0.96
4-5/8	3.58	0.96
5	3.90	1.00
5-3/8	4.10	1.00

IU-25XL Heads

ATF	Radius	P/R
3-1/2	2.90	0.87
3-7/8	3.18	0.95
4-1/4	3.35	0.90
4-5/8	3.58	0.90
5	3.85	0.96
5-3/8	4.10	1.00
5-3/4	4.32	1.02

IU-50XL Heads

ATF	Radius	P/R
4-5/8	3.92	1.25
5	4.13	1.25
5-3/8	4.35	1.25
5-3/4	4.57	1.25
6-1/8	4.78	1.25
6-1/2	5.00	1.25
6-7/8	5.22	1.25
7-1/4	5.43	1.25

METRIC SPECIFICATIONS (millimeters)

IU-1XL Heads		
ATF	Radius	P/R
19	27	10
27	30	9
32	33	9
37	36	9
41	38	9
46	41	9
51	44	9

IU-3XL Heads		
ATF	Radius	P/R
32	35	9
37	37	9
41	40	9
46	43	10
48	45	12
51	45	10
56	48	10
60	50	10
65	54	12
70	57	12
75	60	12

IU-7XL Heads		
ATF	Radius	P/R
51	46	12
56	48	12
60	51	12
65	55	12
70	61	14
75	65	13
76	67	16
86	72	16
95	77	16

IU-10XL Heads		
ATF	Radius	P/R
60	51	11
65	55	12
70	61	14
75	65	13
76	67	16
86	72	24
95	78	24
105	83	24

IU-17XL Heads		
ATF	Radius	P/R
70	64	23
75	67	23
76	69	25
86	74	25
95	81	26
105	85	26
115	91	26
125	99	26
135	104	26

IU-25XL Heads		
ATF	Radius	P/R
86	74	24
95	81	26
105	85	25
115	91	25
125	98	25
135	104	26
145	110	28

IU-50XL Heads		
ATF	Radius	P/R
115	100	33
125	105	33
135	110	33
145	116	32
155	121	32
165	127	32
175	133	32
185	138	32