

TXU Series

OPERATION AND MAINTENANCE

MANUAL

TXU Series Uni-Swivel Low Profile
Hydraulic Torque Wrenches

MODELS TXU-2, TXU-4, TXU-8, TXU-16, and TXU-32



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NOTICE

Series TXU-2, TXU-4, TXU-8, TXU-16 and TXU-32 Low Profile Hydraulic Torque Wrenches are designed for installing and removing threaded fasteners having minimal wrench clearance and requiring precise high torque during bolt makeup and maximum torque for bolt breakout.

TorcUP Inc. is not responsible for customer modification of tools for applications on which TorcUP Inc. was not consulted.

WARNING

IMPORTANT SAFETY INFORMATION ENCLOSED.

READ THIS MANUAL BEFORE OPERATING TOOL.

IT IS THE RESPONSIBILITY OF THE EMPLOYER TO PLACE THE INFORMATION IN THIS MANUAL INTO THE HANDS OF THE OPERATOR.

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY.

USING THE TOOL

- Always operate, inspect and maintain this tool in accordance with American National Standards Safety Code for Hydraulic Rams and Jacks (ANSI B30.1).
- This tool will function using an air or electric powered hydraulic pump. Adhere to the pump safety requirements and follow instructions when connecting the pump to the tool.
- Use only equipment rated for the same pressure and torque.
- Use only a hydraulic pump capable of generating 10,000 psi (690 bar) maximum pressure with this tool.
- Use only twin line hydraulic hose rated for 10,000 psi (690 bar) pressure with this tool.
- Do not interchange the male and female swivel inlets on the tool or the connections on one end of the hose. Reversing the inlets will reverse the power stroke cycle and may damage the tool.
- Do not use damaged, frayed or deteriorated hoses and fittings. Make certain there are no cracks, splits or leaks in the hoses.
- Use the quick connect system to attach the hoses to the tool and pump.
- When connecting hoses that have not been preloaded with hydraulic oil, make certain the pump reservoir is not drained of oil during start-up.
- Do not remove any labels. Replace any damaged label.
- Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin, causing serious injury. If oil is injected under the skin, see a doctor immediately.
- Never pressurize uncoupled couplers. Only use hydraulic equipment in a coupled system.
- Always wear eye protection when operating or performing maintenance on this tool.
- Always wear head and hand protection and protective clothing when operating this tool.

The use of other than genuine TorcUP replacement parts may result in safety hazards, decreased tool performance, increased maintenance, and may invalidate all warranties. Repairs should be made only by authorized personnel. Consult your nearest TorcUP Authorized Service Center.

Refer All Communications to the Nearest TorcUP Office or Distributor.

For Technical Support & Information Contact:

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WARNING

FAILURE TO OBSERVE THE FOLLOWING WARNINGS COULD RESULT IN INJURY

Do NOT Exceed Maximum Pressure. See Torque Chart with Tool. Damage May Occur.

Do not use damaged, frayed or deteriorated hydraulic hoses and fittings.



Always wear eye protection when operating or performing maintenance on this tool.



Always wear ear protection when operating this tool.



Do not carry the tool by the hose.



Keep body stance balanced and firm. Do not overreach when operating this tool.



The Torque Reaction Arm must be positioned against a positive stop. Do not use the arm as a dead handle. Take all precautions to make certain the operator's hand cannot be pinched between the arm and a solid object.



USING THE TOOL

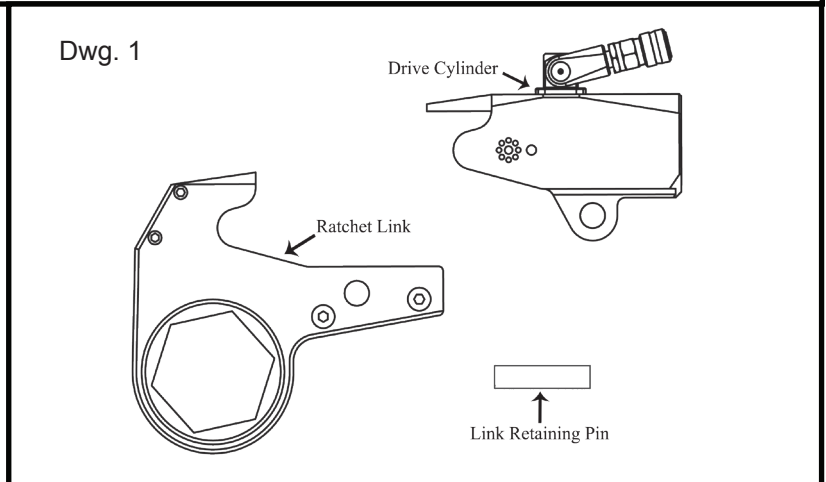
- Keep hands, loose clothing and long hair away from the reaction arm and working area during operation.
- This tool will exert a strong reaction force. Use proper mechanical support and correct reaction arm positioning to control these forces. Do not position the reaction arm so that it tilts the tool off the axis of the bolt and never use the swivel inlets as a reaction stop.
- Avoid sharp bends and kinks that will cause severe back-up pressure in hoses and lead to premature hose failure.
- Use accessories recommended by TorcUP.
- Use only impact sockets and accessories. Do not use hand (chrome) sockets or accessories.
- Use only sockets and accessories that correctly fit the bolt or nut and function without tilting the tool off the axis of the bolt.
- This tool is not insulated against electric shock.
- This equipment must not be operated or serviced unless the operator read the operating instructions and fully understands the purpose, consequences and procedure of each step.
- When operating a larger tool (TXU-16) above waist height, employ a secondary means of support for safety purposes. A tool sling or chains may be used. Consult your safety department for further suggestions.

Depending on the working environment your local health and safety regulations may require you wear protective gear (i.e. safety shoes, hard hat, gloves, coveralls, etc.). In case external forces are exerted on the equipment, non-compliance with these regulations may result in injury. **EAR PROTECTION MUST BE WORN WHEN OPERATING THIS TOOL.**

PLACING THE TOOL IN SERVICE

CONNECTING THE TOOL

1. Attach the twin line hose to the swivel inlets of the low profile drive cylinder using the spring-loaded quick connect ends.
2. Connect the opposite ends of the hose to the pump in the same manner.
3. Push the link retaining pin out of the low profile drive cylinder.
4. Mate the selected ratchet link to the cylinder by inserting the end of the cylinder opposite the swivel inlets between the side plates of the ratchet link. (Refer to Dwg. 1)
5. Align the holes for the link retaining pin and insert the pin through the side plates and cylinder to keep the units joined together.



SETTING THE TORQUE

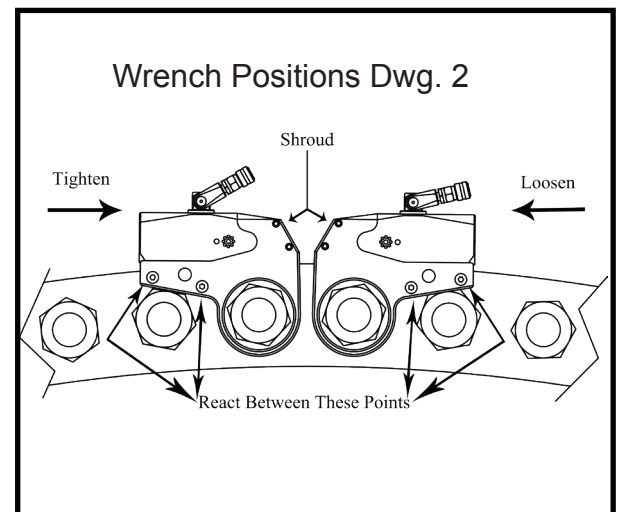
After determining the desired torque, use the torque conversion charts on pages 7 to 16 to determine the pressure that is necessary to achieve that torque.

1. Connect the tool to the power supply and turn the pump on.
2. Depress the remote control button causing the pressure to be shown on the gauge.
3. Adjust the pressure by loosening the wing nut that locks the pressure adjustment thumbscrew. Rotate the thumbscrew clockwise to increase the pressure and counterclockwise to decrease the pressure. When decreasing pressure, always lower the pressure below the desired point and then bring the gauge back up to the desired pressure.
4. When the desired pressure is reached, retighten the wing nut and cycle the tool again to confirm that the desired pressure setting has been obtained.

OPERATING THE WRENCH

The position of the tool relative to the nut determines whether the action will tighten or loosen the nut. (Refer to Dwg. 2 for application examples). The power stroke of the piston assembly will always turn the ratchet hex toward the shroud.

1. Place the ratchet hex on the nut. Make certain it is the correct size for the nut and that it fully engages the nut.
2. Position the reaction surface against an adjacent nut, flange or solid system component. Make certain that there is clearance for the hoses, swivels and inlets. **DO NOT** allow the tool to react against the hoses or swivels.



PLACING THE TOOL IN SERVICE

3. After having turned the pump on and presetting the pressure for the correct torque, depress the remote control button to advance the piston assembly. If the notch in the piston rod did not engage the retract pin in the ratchet link when the link was joined to the housing, it will engage the pin automatically during the first advance stroke.
4. When the link is connected to the cylinder and the wrench is started, the reaction surface of the wrench will move against the contact point and the nut will begin to turn.
5. When the nut is no longer turning and the pump gauge reaches the preset pressure, release the remote control button. The piston rod will retract when the button is released and under normal conditions, an audible “click” will be heard as the tool resets itself.
6. Continue to cycle the tool until it “stalls” and the preset psi/torque has been attained.
7. Cycle the tool one additional time to ensure full torque.

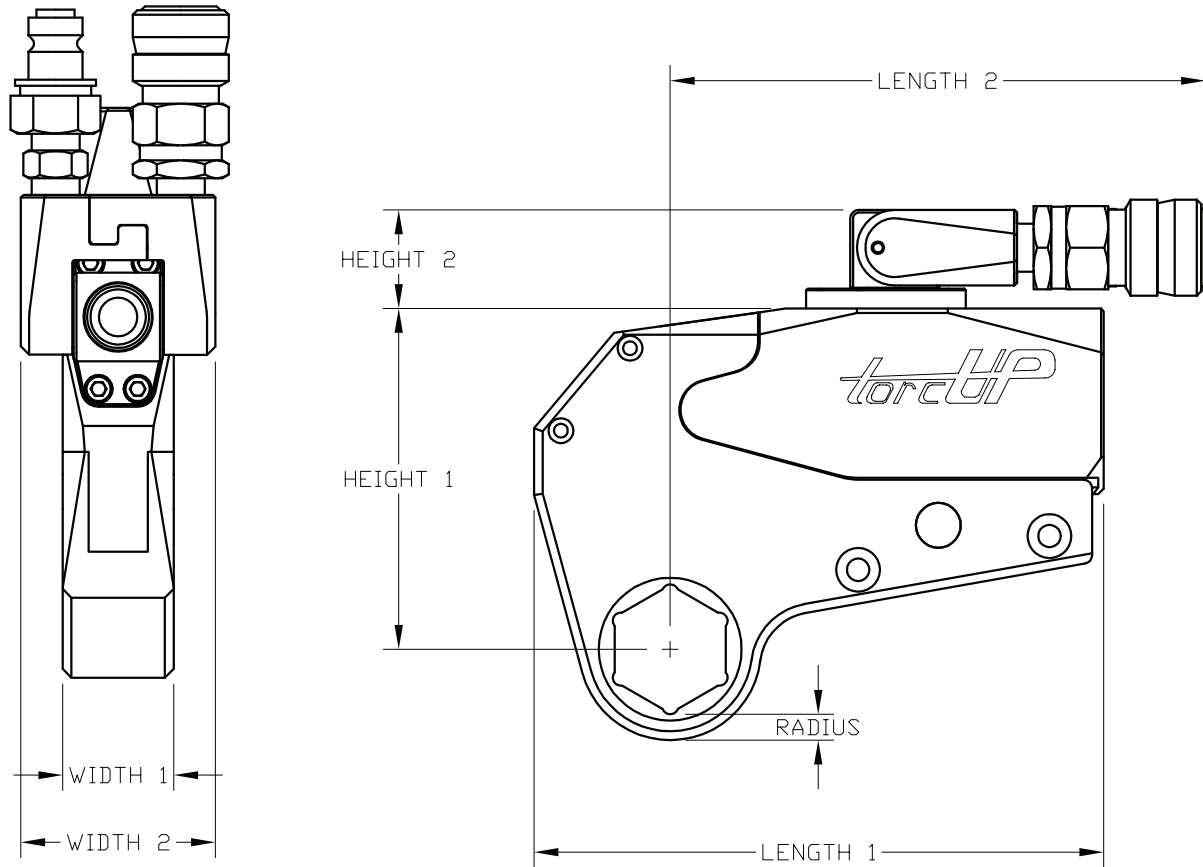
LUBRICATION

MARINE MOLY GREASE

Lubrication frequency is dependent on factors known only to the user. The amount of contaminants in the work area is one factor. Tools used in a clean room environment will obviously require less service than a tool used out-doors and dropped in loose dirt or sand. Marine Moly Grease is formulated not to wash out of the tool in areas where lubrication is critical. Whenever lubrication is required, lubricate as follows:

1. Separate the low profile cylinder from the ratchet link if they are joined.
2. After wiping off the old grease, apply a daub of Marine Moly Grease to the hooking notch in the piston rod, and wipe a film of Marine Moly Grease onto the sides and faces of the two sliders.
3. Disassemble the ratchet link as instructed in the Maintenance Section and wash the components in a suitable cleaning solution in a well ventilated area.
4. Dry the components, then wipe a film of Marine Moly Grease onto the wear surface of both side plate sleeves and the hubs of the ratchet.
5. Spread a light film of Marine Moly Grease onto the inner faces of both side plates, covering the area where the drive plate and drive segment travel. DO NOT pack the teeth of the drive segment or ratchet with lube. It can prevent the teeth from engaging properly.
6. Reassemble the ratchet link as instructed in the Maintenance Section.

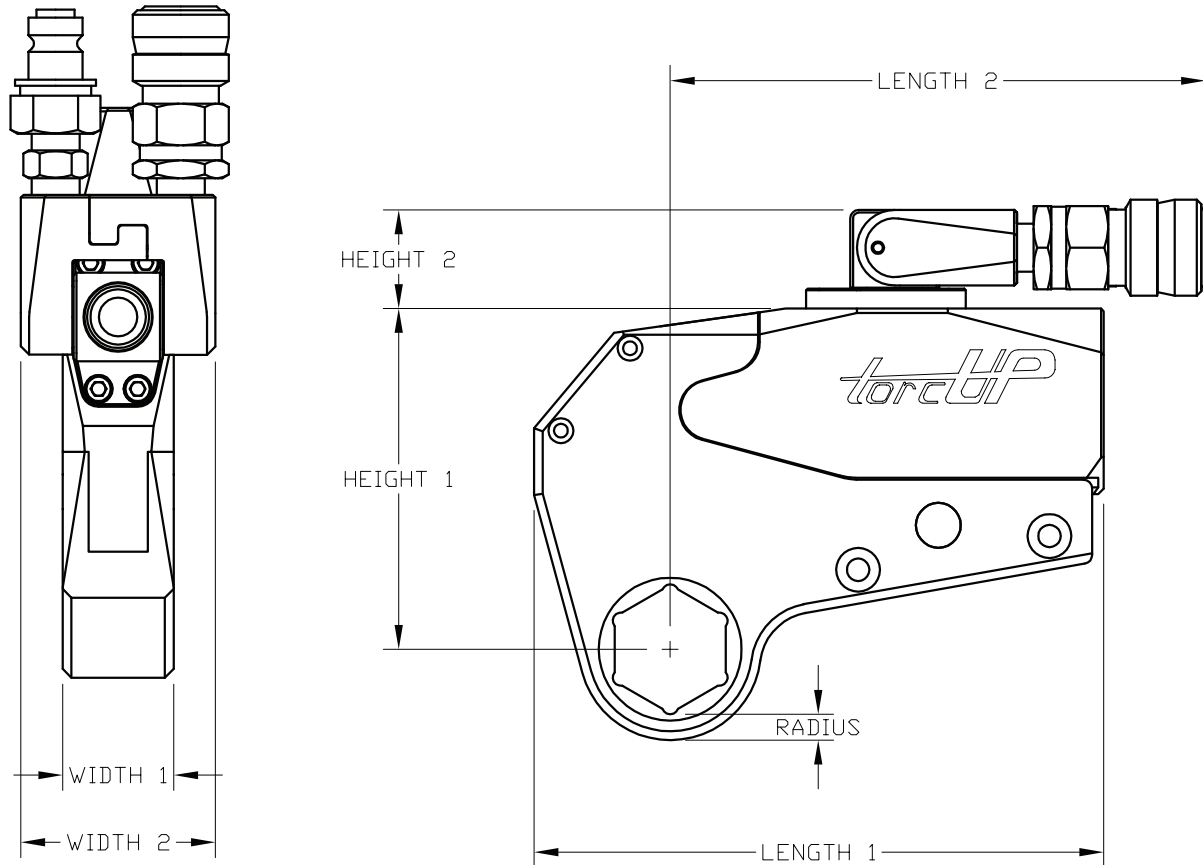
TXU Series Uni-Swivel Wrench Technical & Dimensional Data



Model Number	TXU-2	TXU-4	TXU-8	TXU-16
Min. Torque (ft/lbs)	192	395	830	1560
Max. Torque (ft/lbs)	1928	3950	8630	16600
Min. Torque (nm)	260	535	1125	2115
Max. Torque (nm)	2614	5355	11699	22503
Output Accuracy	+/-3%	+/-3%	+/-3%	+/-3%
Repeatability	100%	100%	100%	100%
Duty Cycle	100%	100%	100%	100%
Cylinder Weight (lbs/kg)	4.0/1.8	6.9/3.1	12.5/5.7	17.1/7.8
Link Weight (lbs)	2.4-3.5	5.4-7.6	11.9-14.5	21.0-28.0
(kg)	1.0-1.5	2.4-3.4	5.5-6.5	9.5-13.0
Length 1 (in/mm)	6.45/163.8	7.87/199.9	10.81/258.6	12.93/328.4
Length 2 (in/mm)	5.99/152.4	6.58/167.1	7.34/186.4	8.20/208.2
Width 1 (in/mm)	1.25/31.8	1.63/41.4	2.05/52.1	2.50/63.5
Width 2 (in/mm)	2.19/55.6	2.26/57.4	2.26/57.4	2.26/57.4
Radius (in/mm)	0.36/9.1	0.46/11.7	0.54/13.7	0.65/16.5
Height 1 (in/mm)	3.39/86.3	4.93/125.2	6.18/157	7.83/198.9
Height 2 (in/mm)	1.11/28.2	1.30/33.0	1.30/33.0	1.30/33.0
Hex Range from	3/4"/19mm	1"/27mm	1 7/8"/49mm	2 3/16"/55mm
Hex Range to	2 9/16"/65mm	3 1/8"/80mm	4 5/8"/120mm	5 5/16"/135mm

*Reference values only. Consult calibration torque chart provided with tool.

TXU Series Uni-Swivel Wrench Technical & Dimensional Data



Model Number	TXU-32
Min. Torque (ft/lbs)	3220
Max. Torque (ft/lbs)	35650
Min. Torque (nm)	4365
Max. Torque (nm)	48327
Output Accuracy	+/-3%
Repeatability	100%
Duty Cycle	100%
Cylinder Weight (lbs/kg)	27.1/12.3
Link Weight (lbs)	29.0-35.5
(kg)	13.0-17.9
Length 1 (in/mm)	15.80/401.3
Length 2 (in/mm)	9.31/236.5
Width 1 (in/mm)	3.24/82.3
Width 2 (in/mm)	2.26/57.4
Radius (in/mm)	0.93/23.6
Height 1 (in/mm)	9.50/241.3
Height 2 (in/mm)	1.30/33.0
Hex Range from	3 1/8"/80mm
Hex Range to	7 7/8"/200mm

*Reference values only. Consult calibration torque chart provided with tool.



TORQUE

TXU-2 Torque Conversion Chart (Imperial)

	Imperial Conversion	
	PSI	Ft-lbs
Hex Range 3/4" - 1 13/16"	1,000	202
	1,200	240
	1,400	278
	1,600	317
	1,800	355
	2,000	393
	2,200	432
	2,400	471
	2,600	511
	2,800	550
	3,000	589
	3,200	629
	3,400	669
	3,600	708
	3,800	748
	4,000	788
	4,200	827
	4,400	867
	4,600	906
	4,800	946
	5,000	985
	5,200	1024
	5,400	1064
	5,600	1103
	5,800	1142
	6,000	1182
	6,200	1222
	6,400	1261
	6,600	1301
	6,800	1341
	7,000	1381
	7,200	1421
7,400	1461	
7,600	1500	
7,800	1540	
8,000	1579	
8,200	1619	
8,400	1658	
8,600	1697	
8,800	1737	
9,000	1776	
9,200	1814	
9,400	1853	
9,600	1892	
9,800	1930	
10,000	1969	

	Imperial Conversion	
	PSI	Ft-lbs
Hex Range 1 7/8" - 2 9/16"	1,000	237
	1,200	282
	1,400	326
	1,600	371
	1,800	415
	2,000	460
	2,200	506
	2,400	552
	2,600	598
	2,800	644
	3,000	690
	3,200	737
	3,400	783
	3,600	830
	3,800	876
	4,000	923
	4,200	969
	4,400	1015
	4,600	1062
	4,800	1108
	5,000	1154
	5,200	1200
	5,400	1246
	5,600	1292
	5,800	1338
	6,000	1384
	6,200	1431
	6,400	1478
	6,600	1524
	6,800	1571
	7,000	1618
	7,200	1664
7,400	1711	
7,600	1757	
7,800	1804	
8,000	1850	
8,200	1896	
8,400	1942	
8,600	1988	
8,800	2034	
9,000	2080	
9,200	2125	
9,400	2170	
9,600	2216	
9,800	2261	
10,000	2306	

*Reference values only. Consult calibration torque chart provided with tool.



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TXU-2 Torque Conversion Chart (Metric)

	Metric Conversion	
	Bar	Nm
Hex Range 19-46mm	69	274
	83	326
	97	378
	110	429
	124	481
	138	532
	152	586
	165	639
	179	692
	193	745
	207	799
	221	853
	234	907
	248	961
	262	1014
	276	1068
	290	1122
	303	1175
	317	1229
	331	1282
	345	1336
	359	1389
	372	1442
	386	1496
	400	1549
	414	1602
	427	1656
	441	1710
	455	1765
	469	1819
	483	1873
	496	1927
	510	1980
	524	2034
	538	2088
	552	2141
565	2195	
579	2248	
593	2301	
607	2354	
621	2408	
634	2460	
648	2512	
662	2565	
676	2617	
689	2669	

	Metric Conversion	
	Bar	Nm
Hex Range 47-65mm	69	321
	83	382
	97	442
	110	503
	124	563
	138	624
	152	686
	165	748
	179	811
	193	873
	207	936
	221	999
	234	1062
	248	1125
	262	1188
	276	1251
	290	1314
	303	1377
	317	1439
	331	1502
	345	1565
	359	1627
	372	1689
	386	1752
	400	1814
	414	1876
	427	1940
	441	2003
	455	2067
	469	2130
	483	2194
	496	2257
	510	2320
	524	2382
	538	2445
	552	2508
565	2571	
579	2633	
593	2695	
607	2758	
621	2820	
634	2881	
648	2943	
662	3004	
676	3065	
689	3127	

*Reference values only. Consult calibration torque chart provided with tool.



TORCUP

TXU-4 Torque Conversion Chart (Imperial)

	Imperial Conversion	
	PSI	Ft-lbs
Hex Range 1" - 2 9/16"	1,000	422
	1,200	502
	1,400	582
	1,600	663
	1,800	743
	2,000	823
	2,200	906
	2,400	989
	2,600	1072
	2,800	1155
	3,000	1238
	3,200	1320
	3,400	1401
	3,600	1483
	3,800	1564
	4,000	1646
	4,200	1726
	4,400	1806
	4,600	1887
	4,800	1967
	5,000	2047
	5,200	2128
	5,400	2209
	5,600	2289
	5,800	2370
	6,000	2451
	6,200	2533
	6,400	2615
	6,600	2698
	6,800	2780
	7,000	2862
	7,200	2942
7,400	3021	
7,600	3101	
7,800	3180	
8,000	3260	
8,200	3343	
8,400	3426	
8,600	3510	
8,800	3593	
9,000	3676	
9,200	3758	
9,400	3840	
9,600	3922	
9,800	4004	
10,000	4086	

	Imperial Conversion	
	PSI	Ft-lbs
Hex Range 2 5/8" - 3 1/8"	1,000	475
	1,200	565
	1,400	655
	1,600	745
	1,800	836
	2,000	926
	2,200	1019
	2,400	1112
	2,600	1206
	2,800	1299
	3,000	1393
	3,200	1484
	3,400	1576
	3,600	1668
	3,800	1760
	4,000	1852
	4,200	1942
	4,400	2032
	4,600	2122
	4,800	2212
	5,000	2303
	5,200	2393
	5,400	2484
	5,600	2575
	5,800	2666
	6,000	2757
	6,200	2849
	6,400	2942
	6,600	3034
	6,800	3127
	7,000	3219
	7,200	3309
7,400	3398	
7,600	3488	
7,800	3577	
8,000	3667	
8,200	3761	
8,400	3854	
8,600	3948	
8,800	4041	
9,000	4135	
9,200	4227	
9,400	4319	
9,600	4412	
9,800	4504	
10,000	4596	

*Reference values only. Consult calibration torque chart provided with tool.



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TXU-4 Torque Conversion Chart (Metric)

	Metric Conversion			Metric Conversion	
	Bar	Nm		Bar	Nm
	Hex Range 27-65mm	69		572	Hex Range 66-80mm
83		681	83	766	
97		790	97	888	
110		898	110	1011	
124		1007	124	1133	
138		1116	138	1255	
152		1228	152	1382	
165		1341	165	1508	
179		1453	179	1635	
193		1566	193	1761	
207		1679	207	1888	
221		1789	221	2013	
234		1900	234	2137	
248		2010	248	2261	
262		2121	262	2386	
276		2232	276	2510	
290		2340	290	2633	
303		2449	303	2755	
317		2558	317	2877	
331		2667	331	3000	
345		2775	345	3122	
359		2885	359	3245	
372		2994	372	3368	
386		3104	386	3492	
400		3214	400	3615	
414		3323	414	3738	
427		3435	427	3863	
441		3546	441	3989	
455		3657	455	4114	
469		3769	469	4239	
483		3880	483	4365	
496		3988	496	4486	
510		4096	510	4608	
524		4204	524	4729	
538		4312	538	4850	
552		4420	552	4972	
565	4533	565	5099		
579	4646	579	5226		
593	4758	593	5352		
607	4871	607	5479		
621	4984	621	5606		
634	5095	634	5731		
648	5206	648	5856		
662	5318	662	5981		
676	5429	676	6107		
689	5540	689	6232		

*Reference values only. Consult calibration torque chart provided with tool.



TORCUP

TXU-8 Torque Conversion Chart (Imperial)

	Imperial Conversion			Imperial Conversion			Imperial Conversion	
	PSI	Ft-lbs		PSI	Ft-lbs		PSI	Ft-lbs
	Hex Range 1 7/8" - 3 1/8"	1,000		797	Hex Range 3 3/16" - 3 9/16"		1,000	842
1,200		957	1,200	1011		1,200	1174	
1,400		1117	1,400	1180		1,400	1370	
1,600		1277	1,600	1350		1,600	1567	
1,800		1437	1,800	1519		1,800	1763	
2,000		1597	2,000	1688		2,000	1960	
2,200		1758	2,200	1858		2,200	2157	
2,400		1918	2,400	2027		2,400	2353	
2,600		2079	2,600	2197		2,600	2550	
2,800		2239	2,800	2366		2,800	2747	
3,000		2400	3,000	2536		3,000	2944	
3,200		2559	3,200	2704		3,200	3140	
3,400		2719	3,400	2873		3,400	3335	
3,600		2878	3,600	3041		3,600	3531	
3,800		3037	3,800	3210		3,800	3726	
4,000		3197	4,000	3378		4,000	3922	
4,200		3354	4,200	3544		4,200	4114	
4,400		3511	4,400	3710		4,400	4307	
4,600		3668	4,600	3876		4,600	4500	
4,800		3825	4,800	4042		4,800	4693	
5,000		3982	5,000	4208		5,000	4885	
5,200		4143	5,200	4377		5,200	5082	
5,400		4303	5,400	4547		5,400	5279	
5,600		4463	5,600	4716		5,600	5475	
5,800		4623	5,800	4886		5,800	5672	
6,000		4784	6,000	5055		6,000	5869	
6,200		4946	6,200	5227		6,200	6068	
6,400		5109	6,400	5399		6,400	6267	
6,600		5272	6,600	5570		6,600	6467	
6,800		5434	6,800	5742		6,800	6666	
7,000		5597	7,000	5914		7,000	6866	
7,200		5756	7,200	6083		7,200	7062	
7,400		5916	7,400	6252		7,400	7258	
7,600	6076	7,600	6420	7,600	7454			
7,800	6236	7,800	6589	7,800	7650			
8,000	6395	8,000	6758	8,000	7846			
8,200	6564	8,200	6936	8,200	8052			
8,400	6732	8,400	7113	8,400	8258			
8,600	6900	8,600	7291	8,600	8464			
8,800	7068	8,800	7468	8,800	8670			
9,000	7236	9,000	7646	9,000	8877			
9,200	7393	9,200	7813	9,200	9070			
9,400	7551	9,400	7979	9,400	9263			
9,600	7709	9,600	8146	9,600	9457			
9,800	7866	9,800	8312	9,800	9650			
10,000	8024	10,000	8479	10,000	9844			

*Reference values only. Consult calibration torque chart provided with tool.



TORCUP

TXU-8 Torque Conversion Chart (Metric)

	Metric Conversion			Metric Conversion			Metric Conversion	
	Bar	Nm		Bar	Nm		Bar	Nm
	Hex Range 49-80mm	69		1080	Hex Range 81-90mm		69	1142
83		1297	83	1371		83	1592	
97		1515	97	1600		97	1858	
110		1732	110	1830		110	2124	
124		1949	124	2059		124	2391	
138		2166	138	2289		138	2657	
152		2383	152	2519		152	2924	
165		2601	165	2749		165	3191	
179		2819	179	2978		179	3458	
193		3036	193	3208		193	3725	
207		3254	207	3438		207	3992	
221		3470	221	3667		221	4257	
234		3686	234	3895		234	4522	
248		3902	248	4123		248	4787	
262		4118	262	4352		262	5052	
276		4334	276	4580		276	5317	
290		4547	290	4805		290	5578	
303		4760	303	5030		303	5840	
317		4973	317	5255		317	6101	
331		5186	331	5480		331	6362	
345		5399	345	5705		345	6624	
359		5617	359	5935		359	6890	
372		5834	372	6165		372	7157	
386		6051	386	6394		386	7423	
400		6269	400	6624		400	7690	
414		6486	414	6854		414	7957	
427		6706	427	7087		427	8227	
441		6927	441	7320		441	8498	
455		7147	455	7552		455	8768	
469		7368	469	7785		469	9038	
483		7588	483	8018		483	9309	
496		7805	496	8247		496	9575	
510		8021	510	8476		510	9840	
524		8238	524	8705		524	10106	
538		8454	538	8934		538	10372	
552		8671	552	9163		552	10637	
565	8899	565	9403	565	10917			
579	9127	579	9644	579	11196			
593	9355	593	9885	593	11476			
607	9583	607	10126	607	11755			
621	9810	621	10367	621	12035			
634	10024	634	10592	634	12297			
648	10238	648	10818	648	12559			
662	10452	662	11044	662	12822			
676	10665	676	11270	676	13084			
689	10879	689	11496	689	13346			

*Reference values only. Consult calibration torque chart provided with tool.



TORQUE

TXU-16 Torque Conversion Chart (Imperial)

Hex Range 2 3/16" - 3 15/16"	Imperial Conversion	
	PSI	Ft-lbs
	1,000	1627
1,200	1931	
1,400	2234	
1,600	2538	
1,800	2842	
2,000	3145	
2,200	3448	
2,400	3752	
2,600	4055	
2,800	4358	
3,000	4661	
3,200	4965	
3,400	5269	
3,600	5573	
3,800	5876	
4,000	6180	
4,200	6483	
4,400	6785	
4,600	7087	
4,800	7389	
5,000	7692	
5,200	8001	
5,400	8311	
5,600	8620	
5,800	8930	
6,000	9239	
6,200	9553	
6,400	9866	
6,600	10180	
6,800	10494	
7,000	10808	
7,200	11111	
7,400	11415	
7,600	11719	
7,800	12023	
8,000	12326	
8,200	12646	
8,400	12966	
8,600	13286	
8,800	13606	
9,000	13926	
9,200	14245	
9,400	14563	
9,600	14881	
9,800	15200	
10,000	15518	

Hex Range 4" - 4 11/16"	Imperial Conversion	
	PSI	Ft-lbs
	1,000	1773
1,200	2104	
1,400	2435	
1,600	2765	
1,800	3096	
2,000	3427	
2,200	3757	
2,400	4088	
2,600	4418	
2,800	4749	
3,000	5079	
3,200	5410	
3,400	5741	
3,600	6072	
3,800	6403	
4,000	6734	
4,200	7063	
4,400	7393	
4,600	7722	
4,800	8052	
5,000	8381	
5,200	8718	
5,400	9055	
5,600	9393	
5,800	9730	
6,000	10067	
6,200	10409	
6,400	10751	
6,600	11092	
6,800	11434	
7,000	11776	
7,200	12107	
7,400	12438	
7,600	12769	
7,800	13100	
8,000	13431	
8,200	13780	
8,400	14128	
8,600	14477	
8,800	14825	
9,000	15174	
9,200	15521	
9,400	15868	
9,600	16215	
9,800	16562	
10,000	16909	

Hex Range 4 3/4" - 5 5/16"	Imperial Conversion	
	PSI	Ft-lbs
	1,000	2075
1,200	2462	
1,400	2849	
1,600	3236	
1,800	3623	
2,000	4011	
2,200	4397	
2,400	4784	
2,600	5170	
2,800	5557	
3,000	5944	
3,200	6331	
3,400	6719	
3,600	7106	
3,800	7493	
4,000	7881	
4,200	8266	
4,400	8652	
4,600	9037	
4,800	9423	
5,000	9808	
5,200	10203	
5,400	10597	
5,600	10992	
5,800	11387	
6,000	11781	
6,200	12181	
6,400	12581	
6,600	12981	
6,800	13381	
7,000	13781	
7,200	14168	
7,400	14556	
7,600	14943	
7,800	15331	
8,000	15718	
8,200	16126	
8,400	16534	
8,600	16942	
8,800	17350	
9,000	17758	
9,200	18164	
9,400	18570	
9,600	18976	
9,800	19382	
10,000	19788	

*Reference values only. Consult calibration torque chart provided with tool.



TORCUP

TXU-16 Torque Conversion Chart (Metric)

	Metric Conversion			Metric Conversion			Metric Conversion	
	Bar	Nm		Bar	Nm		Bar	Nm
Hex Range 55-100mm	69	2206	Hex Range 101-117mm	69	2404	Hex Range 118-135mm	69	2813
	83	2618		83	2852		83	3338
	97	3029		97	3301		97	3863
	110	3441		110	3749		110	4388
	124	3853		124	4198		124	4913
	138	4264		138	4646		138	5438
	152	4675		152	5094		152	5962
	165	5087		165	5542		165	6486
	179	5498		179	5990		179	7010
	193	5909		193	6438		193	7534
	207	6320		207	6886		207	8059
	221	6732		221	7335		221	8584
	234	7144		234	7784		234	9109
	248	7555		248	8233		248	9634
	262	7967		262	8681		262	10159
	276	8379		276	9130		276	10685
	290	8789		290	9577		290	11207
	303	9199		303	10023		303	11730
	317	9609		317	10470		317	12253
	331	10019		331	10917		331	12775
	345	10429		345	11363		345	13298
	359	10848		359	11820		359	13833
	372	11268		372	12277		372	14368
	386	11687		386	12735		386	14903
	400	12107		400	13192		400	15438
	414	12527		414	13649		414	15973
	427	12952		427	14112		427	16515
	441	13377		441	14576		441	17058
	455	13802		455	15039		455	17600
	469	14228		469	15503		469	18142
	483	14653		483	15966		483	18685
	496	15065		496	16415		496	19210
	510	15477		510	16864		510	19735
	524	15889		524	17312		524	20260
	538	16301		538	17761		538	20785
	552	16712		552	18210		552	21311
565	17146	565	18683	565	21864			
579	17580	579	19155	579	22417			
593	18014	593	19628	593	22970			
607	18447	607	20101	607	23523			
621	18881	621	20573	621	24076			
634	19313	634	21044	634	24627			
648	19745	648	21514	648	25177			
662	20177	662	21985	662	25728			
676	20608	676	22455	676	26278			
689	21040	689	22926	689	26829			

*Reference values only. Consult calibration torque chart provided with tool.



TORQUE

TXU-32 Torque Conversion Chart (Imperial)

	Imperial Conversion			Imperial Conversion			Imperial Conversion	
	PSI	Ft-lbs		PSI	Ft-lbs		PSI	Ft-lbs
	Hex Range 3 1/8" - 4 5/8"	1,000		3472	Hex Range 4 11/16" - 6 1/2"		1,000	3844
1,200		4132	1,200	4574		1,200	5165	
1,400		4791	1,400	5305		1,400	5989	
1,600		5451	1,600	6035		1,600	6814	
1,800		6111	1,800	6766		1,800	7639	
2,000		6771	2,000	7496		2,000	8463	
2,200		7422	2,200	8217		2,200	9277	
2,400		8073	2,400	8938		2,400	10091	
2,600		8724	2,600	9658		2,600	10905	
2,800		9375	2,800	10379		2,800	11718	
3,000		10026	3,000	11100		3,000	12532	
3,200		10684	3,200	11829		3,200	13355	
3,400		11342	3,400	12558		3,400	14178	
3,600		12001	3,600	13286		3,600	15001	
3,800		12659	3,800	14015		3,800	15824	
4,000		13317	4,000	14744		4,000	16646	
4,200		13967	4,200	15464		4,200	17459	
4,400		14618	4,400	16184		4,400	18272	
4,600		15268	4,600	16904		4,600	19085	
4,800		15918	4,800	17624		4,800	19898	
5,000		16569	5,000	18344		5,000	20711	
5,200		17222	5,200	19068		5,200	21528	
5,400		17876	5,400	19791		5,400	22345	
5,600		18529	5,600	20515		5,600	23162	
5,800		19183	5,800	21238		5,800	23979	
6,000		19837	6,000	21962		6,000	24796	
6,200		20497	6,200	22693		6,200	25621	
6,400		21157	6,400	23424		6,400	26446	
6,600		21817	6,600	24154		6,600	27271	
6,800		22477	6,800	24885		6,800	28096	
7,000		23137	7,000	25616		7,000	28921	
7,200		23786	7,200	26334		7,200	29732	
7,400		24435	7,400	27053		7,400	30543	
7,600	25084	7,600	27771	7,600	31355			
7,800	25733	7,800	28490	7,800	32166			
8,000	26381	8,000	29208	8,000	32977			
8,200	27032	8,200	29928	8,200	33790			
8,400	27683	8,400	30649	8,400	34603			
8,600	28333	8,600	31369	8,600	35417			
8,800	28984	8,800	32090	8,800	36230			
9,000	29635	9,000	32810	9,000	37044			
9,200	30287	9,200	33532	9,200	37859			
9,400	30940	9,400	34255	9,400	38675			
9,600	31592	9,600	34977	9,600	39490			
9,800	32245	9,800	35700	9,800	40306			
10,000	32897	10,000	36422	10,000	41122			

*Reference values only. Consult calibration torque chart provided with tool.



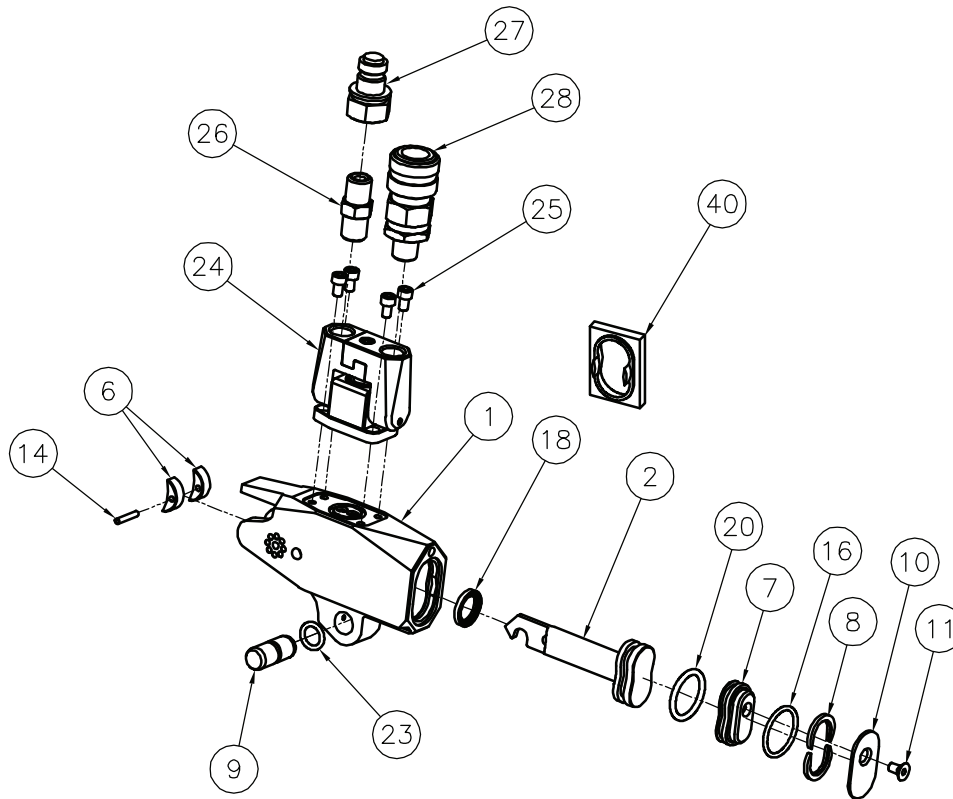
TORCUP

TXU-32 Torque Conversion Chart (Metric)

	Metric Conversion			Metric Conversion			Metric Conversion	
	Bar	Nm		Bar	Nm		Bar	Nm
	Hex Range 80-119mm	69		4707	Hex Range 120-165mm		69	5212
83		5602	83	6202		83	7002	
97		6496	97	7192		97	8120	
110		7391	110	8183		110	9238	
124		8285	124	9173		124	10357	
138		9180	138	10163		138	11475	
152		10062	152	11140		152	12578	
165		10945	165	12118		165	13681	
179		11828	179	13095		179	14785	
193		12710	193	14072		193	15888	
207		13593	207	15050		207	16991	
221		14486	221	16038		221	18107	
234		15378	234	17026		234	19223	
248		16271	248	18014		248	20338	
262		17163	262	19002		262	21454	
276		18056	276	19990		276	22570	
290		18937	290	20966		290	23672	
303		19819	303	21943		303	24774	
317		20701	317	22919		317	25876	
331		21583	331	23895		331	26978	
345		22464	345	24871		345	28080	
359		23350	359	25852		359	29188	
372		24236	372	26833		372	30296	
386		25123	386	27814		386	31403	
400		26009	400	28795		400	32511	
414		26895	414	29776		414	33619	
427		27790	427	30767		427	34737	
441		28685	441	31758		441	35856	
455		29580	455	32749		455	36975	
469		30475	469	33740		469	38093	
483		31370	483	34731		483	39212	
496		32249	496	35705		496	40312	
510		33129	510	36679		510	41411	
524		34009	524	37653		524	42511	
538		34889	538	38627		538	43611	
552		35768	552	39601		552	44711	
565	36651	565	40577	565	45813			
579	37533	579	41554	579	46916			
593	38415	593	42531	593	48019			
607	39297	607	43508	607	49122			
621	40179	621	44484	621	50224			
634	41064	634	45464	634	51330			
648	41949	648	46443	648	52436			
662	42833	662	47423	662	53542			
676	43718	676	48402	676	54648			
689	44603	689	49382	689	55753			

*Reference values only. Consult calibration torque chart provided with tool.

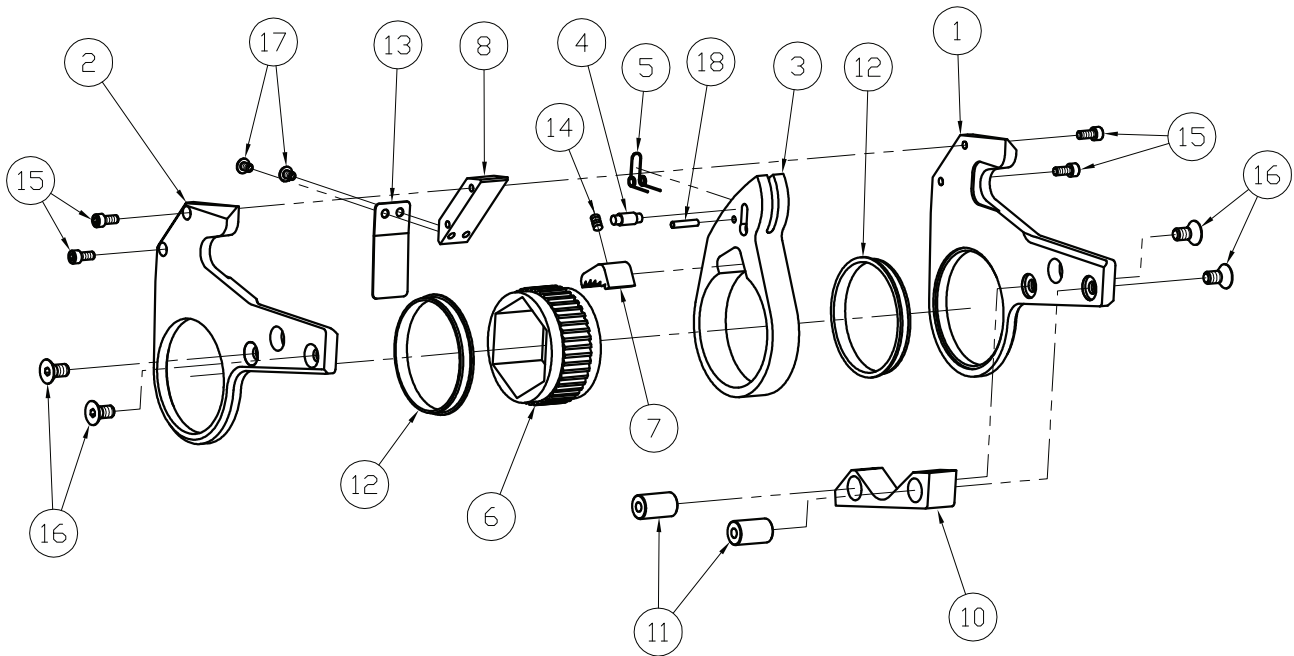
TXU-2 Series Cylinder



Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Housing	TXU-2-C01	1
2	Piston	TX-2-C03	1
6	Slider	TX-2-C09	2
7	End Cap	TXU-2-C11	1
8	Retaining Ring	TX-2-C13	2
9	Link Pin	TX-2-C15	1
10	End Cover	TXU-2-C17	1
11	End Cover Screw	TX-2-C23	1
14	Slider Pin	TX-2-C27	1
16	End Plug Seal	TX-2-C29	1
18	Rod Seal	TX-2-C31	1
20	Piston Seal	TX-2-C33	1
23	Link Retaining Spring	TX-2-C53	1
24	Uni-Swivel Assembly	USS-00	1
25	Uni-Swivel Post Screw	USS-21	4
26	Male 1/4" NPT Nipple	F004004	1
27	Male Coupler	HC-M-100	1
28	Female Coupler	HC-F-400	1
40	Seal Insertion Tool	ATX-2-ST	
	Coupler Set (27 & 28)	HC-S-100	

TXU-2 Series Link

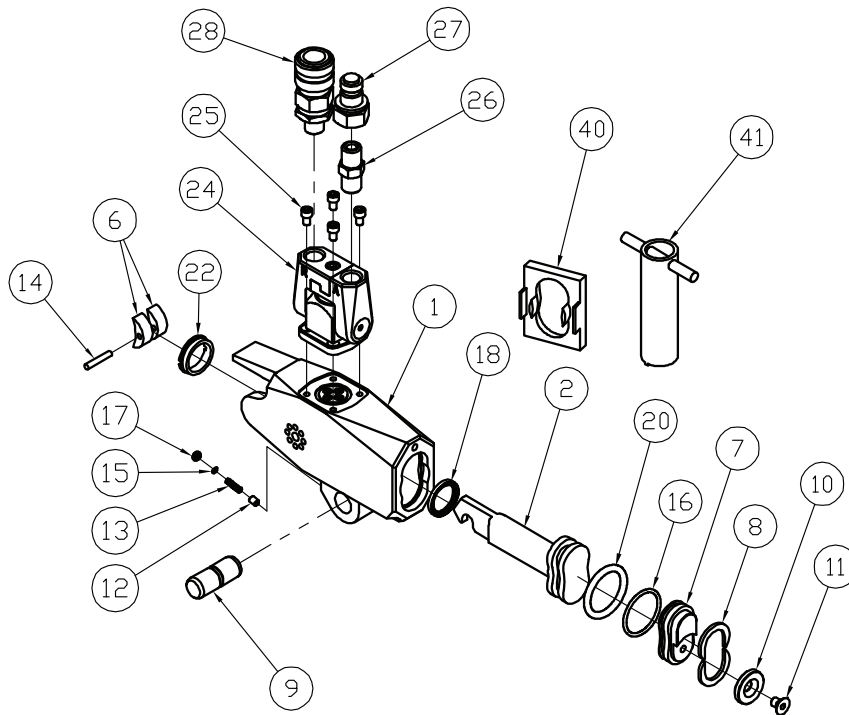


Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Side Plate - Left	TX-2-L01-#*	1
2	Side Plate - Right	TX-2-L02-#*	1
3	Drive Plate	TX-2-L03-#*	1
4	Drive Pin	TX-2-L05	1
5	Drive Pin Spring	TX-2-L07	1
6	Ratchet	TX-2-L09-#*	1
7	Drive Segment	TX-2-L11-#*	1
8	Upper Spacer	TX-2-L13-#*	1
10	Lower Spacer	TX-2-L15-#*	1
11	Spacer Pin	TX-2-L17	2
12	Sideplate Sleeve	TX-2-L19-#*	2
13	Shroud	TX-2-L21	1
14	Segment Spring	TX-2-L25	1
15	Upper Spacer Screw	TX-2-L27	4
16	Lower Spacer Screw	TX-2-L29	4
17	Shroud Screw	TX-2-L31	2
18	Drive Pin Spring Roll Pin	TX-2-L33	1

*part number is dependent upon ratchet link size

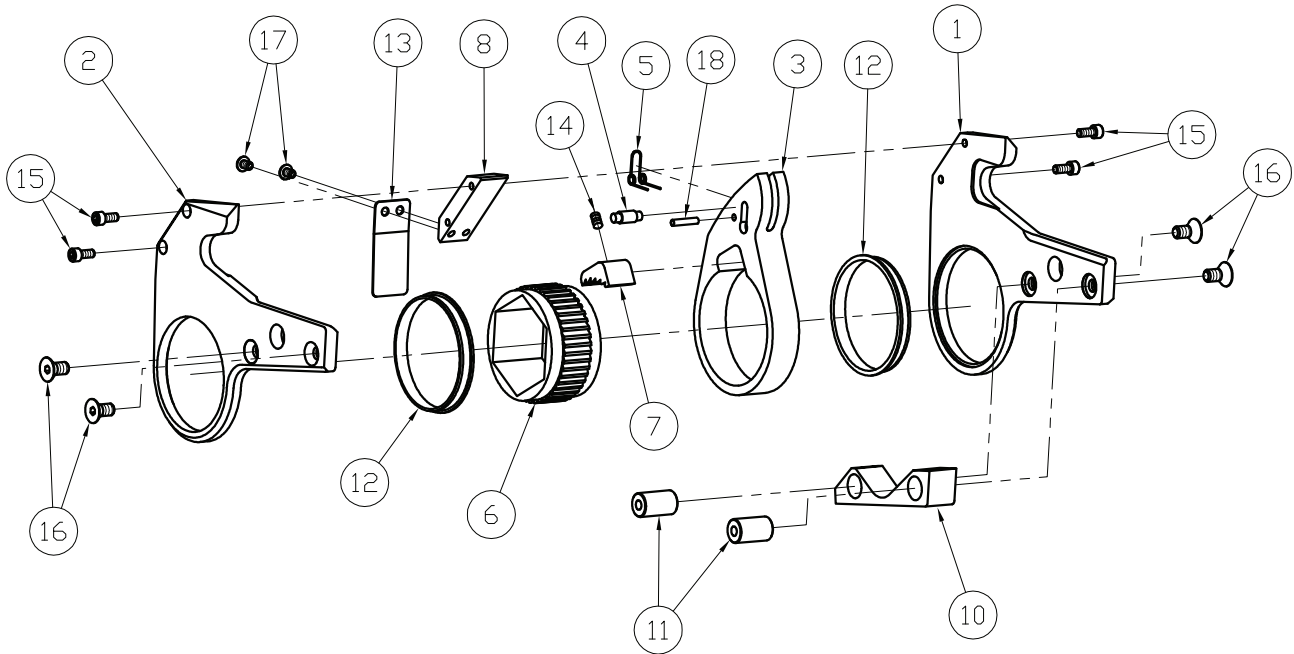
TXU-4 Series Cylinder



Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Housing	TXU-4-C01	1
2	Piston	TX-4-C03	1
6	Slider	TX-4-C09	2
7	End Cap	TXU-4-C11	1
8	Retaining Ring	TX-4-C13	2
9	Link Pin	TX-4-C15	1
10	End Cover	TX-4-C17	1
11	End Cover Screw	TX-4-C23	1
12	Link Pin Retainer	TX-4-C24	1
13	Plunger Spring	TX-4-C26	1
14	Slider Pin	TX-4-C27	1
15	Pin Retainer Washer	TX-4-C28	1
16	End Plug Seal	TX-4-C29	1
17	Pin Retainer Screw	TX-4-C30	1
18	Rod Seal	TX-4-C31	1
20	Piston Seal	TX-4-C33	1
22	Cylinder Gland	TX-4-C51	1
24	Uni-Swivel Assembly	USL-00	1
25	Uni-Swivel Post Screw	USL-23	4
26	Male 1/4" NPT Nipple	F004004	1
27	Male Coupler	HC-M-100	1
28	Female Coupler	HC-F-400	1
40	Seal Insertion Tool	ATX-4-ST	
41	Gland Removal Tool	ATX-4-GW	

TXU-4 Series Link

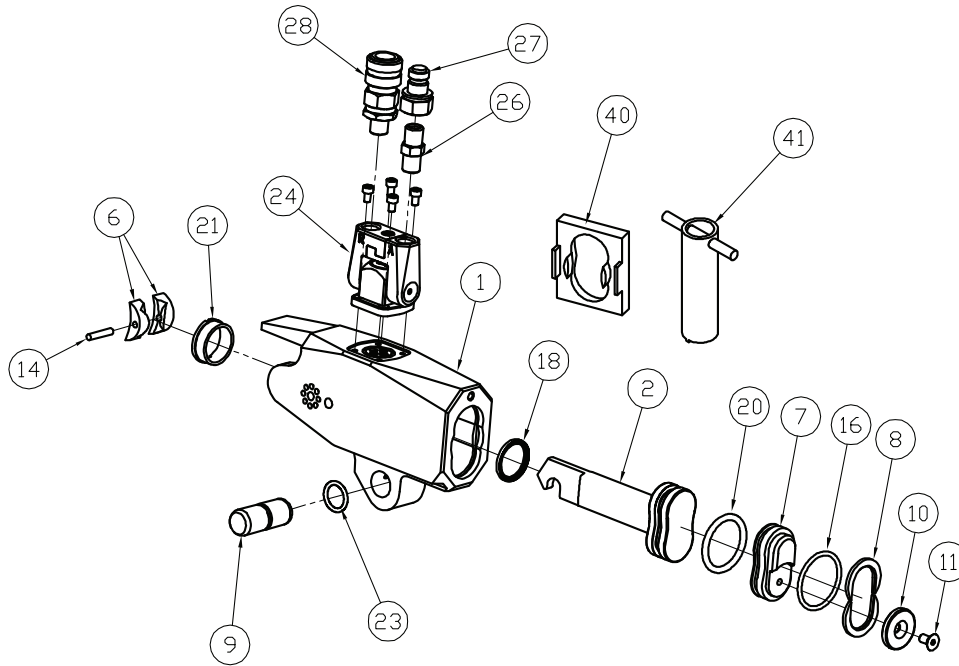


Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Side Plate - Left	TX-4-L01-#*	1
2	Side Plate - Right	TX-4-L02-#*	1
3	Drive Plate	TX-4-L03-#*	1
4	Drive Pin	TX-4-L05	1
5	Drive Pin Spring	TX-4-L07	1
6	Ratchet	TX-4-L09-#*	1
7	Drive Segment	TX-4-L11-#*	1
8	Upper Spacer	TX-4-L13-#*	1
10	Lower Spacer	TX-4-L15-#*	1
11	Spacer Pin	TX-4-L17	2
12	Sideplate Sleeve	TX-4-L19-#*	2
13	Shroud	TX-4-L21	1
14	Segment Spring	TX-4-L25	1
15	Upper Spacer Screw	TX-4-L27	4
16	Lower Spacer Screw	TX-4-L29	4
17	Shroud Screw	TX-4-L31	2
18	Drive Pin Spring Roll Pin	TX-4-L33	1

*part number is dependent upon ratchet link size

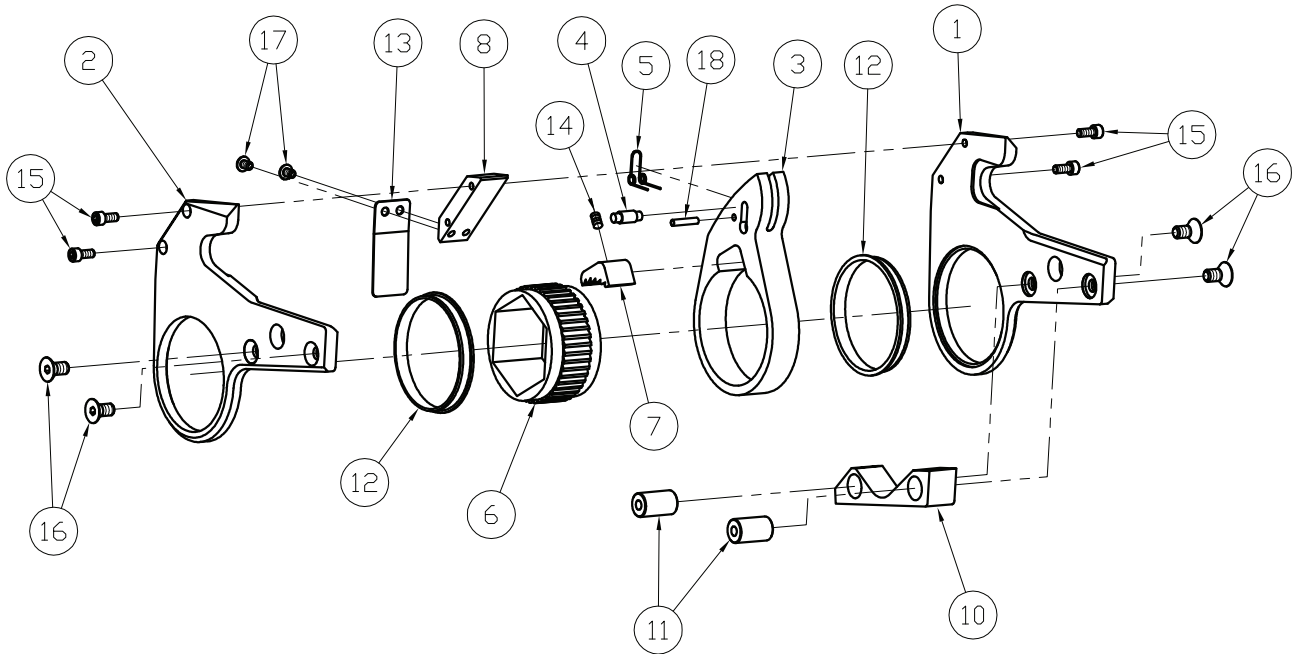
TXU-8 Series Cylinder



Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Housing	TXU-8-C01	1
2	Piston	TX-8-C03	1
6	Slider	TX-8-C09	2
7	End Cap	TXU-8-C11	1
8	Retaining Ring	TX-8-C13	2
9	Link Pin	TX-8-C15	1
10	End Cover	TX-8-C17	1
11	End Cover Screw	TX-8-C23	1
14	Slider Pin	TX-8-C27	1
16	End Plug Seal	TX-8-C29	1
18	Rod Seal	TX-8-C31	1
20	Piston Seal	TX-8-C33	1
22	Cylinder Gland	TX-8-C51	1
23	Link Retaining Spring	TX-8-C53	1
24	Uni-Swivel Assembly	USL-00	1
25	Uni-Swivel Post Screw	USL-23	4
26	Male 1/4" NPT Nipple	F004004	1
27	Male Coupler	HC-M-100	1
28	Female Coupler	HC-F-400	1
40	Seal Insertion Tool	ATX-8-ST	
41	Gland Removal Tool	ATX-8-GW	
	Coupler Set (27 & 28)	HC-S-100	

TXU-8 Series Link

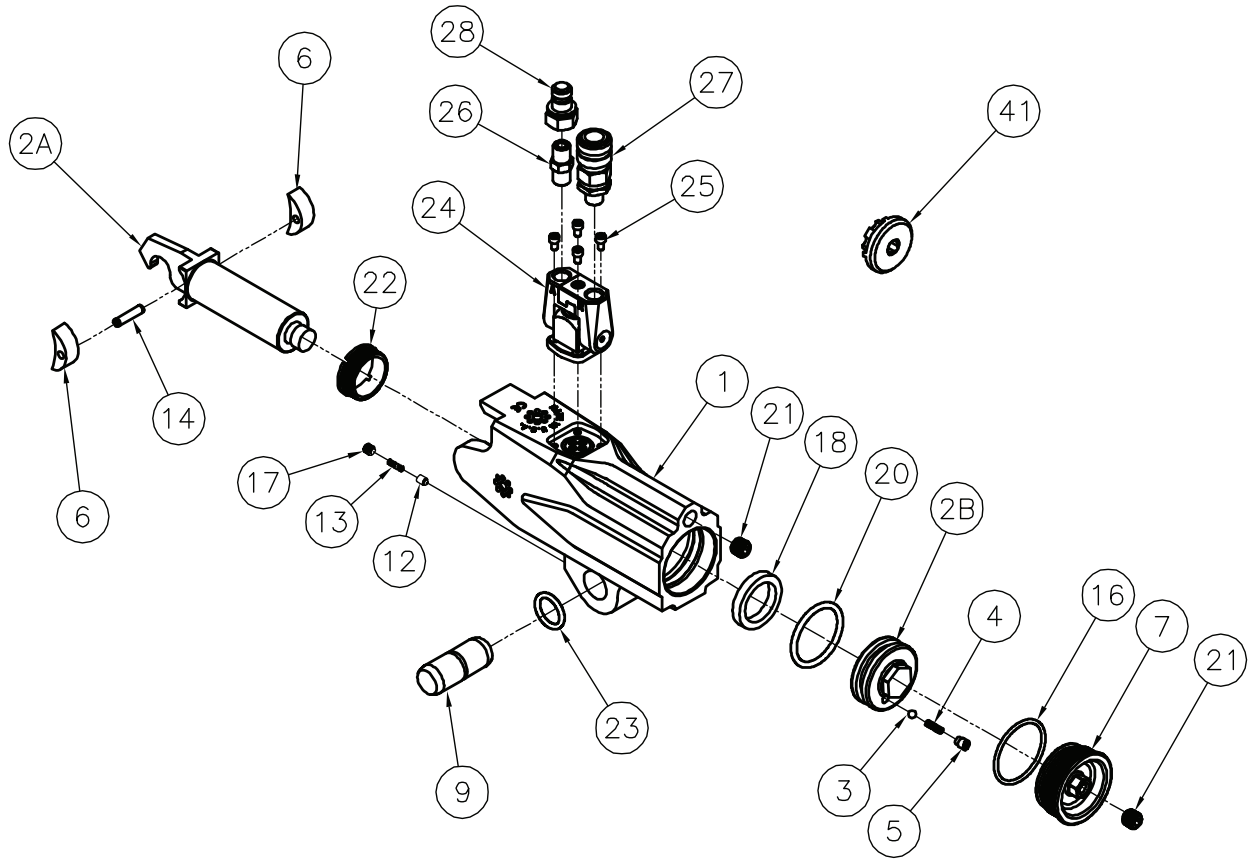


Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Side Plate - Left	TX-8-L01-#*	1
2	Side Plate - Right	TX-8-L02-#*	1
3	Drive Plate	TX-8-L03-#*	1
4	Drive Pin	TX-8-L05	1
5	Drive Pin Spring	TX-8-L07	1
6	Ratchet	TX-8-L09-#*	1
7	Drive Segment	TX-8-L11-#*	1
8	Upper Spacer	TX-8-L13-#*	1
10	Lower Spacer	TX-8-L15-#*	1
11	Spacer Pin	TX-8-L17	2
12	Sideplate Sleeve	TX-8-L19-#*	2
13	Shroud	TX-8-L21	1
14	Segment Spring	TX-8-L25	1
15	Upper Spacer Screw	TX-8-L27	4
16	Lower Spacer Screw	TX-8-L29	4
17	Shroud Screw	TX-8-L31	2
18	Drive Pin Spring Roll Pin	TX-8-L33	1

*part number is dependent upon ratchet link size

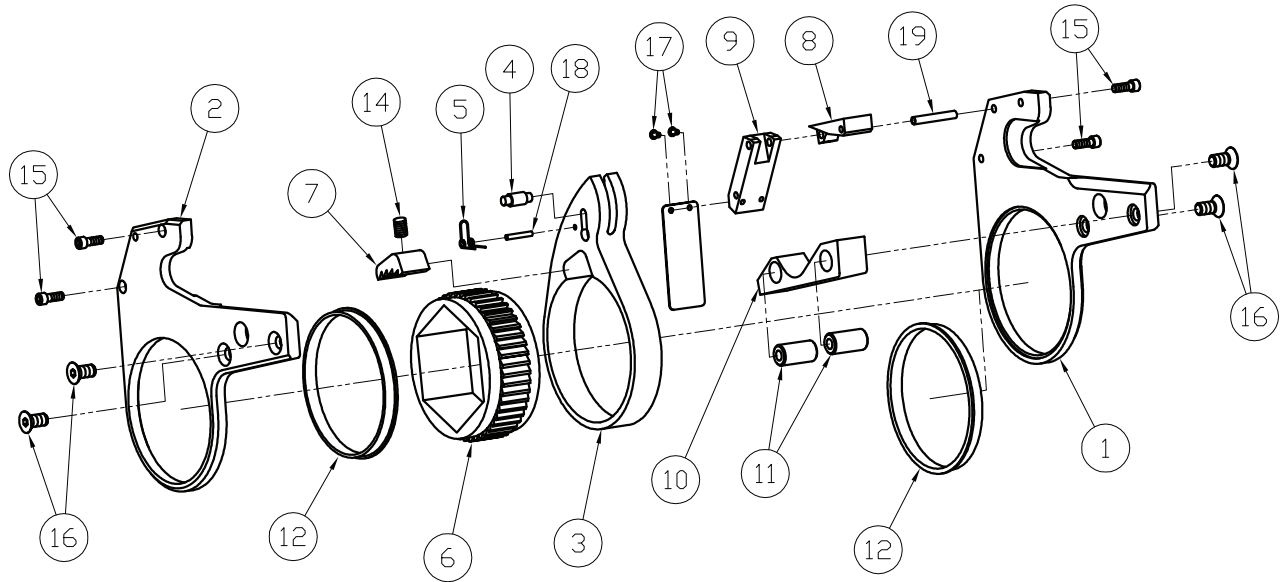
TXU-16 Series Cylinder



Part Numbers for Ordering

ITEM	NAME	PART #	QTY.	ITEM	NAME	PART #	QTY.
1	Housing	TX-16-C01	1	21	Port Plug	TXU-16-C38	1
2a	Piston Rod	TX-16-C03-1	1	22	Cylinder Gland	TX-16-C51	1
2b	Piston Cap	TX-16-C03-2	1	23	Link Retaining Spring	TX-16-C53	1
3	Valve Ball	TX-16-C03-3	1	24	Uni-Swivel Assembly	USL-00	1
4	Valve Spring	TX-16-C03-4	1	25	Uni-Swivel Post Screw	USL-23	4
5	Valve Cup	TX-16-C03-5	1	26	Male 1/4" NPT Nipple	F004004	1
6	Slider	TX-16-C09	2	27	Male Coupler	HC-M-100	1
7	End Cap	TX-16-C11	1	28	Female Coupler	HC-F-400	1
9	Link Pin	TX-16-C15	1	41	Gland Removal Tool	ATX-16-GW	
14	Slider Pin	TX-16-C27	1		Piston Assembly (2A, 2B, 3, 4, 5)	TX-16-C03	
16	End Plug Seal	TX-16-C29	1		Coupler Set (27 & 28)	HC-S-100	
18	Rod Seal	TX-16-C31	1				
20	Piston Seal	TX-16-C33	1				

TXU-16 Series Link

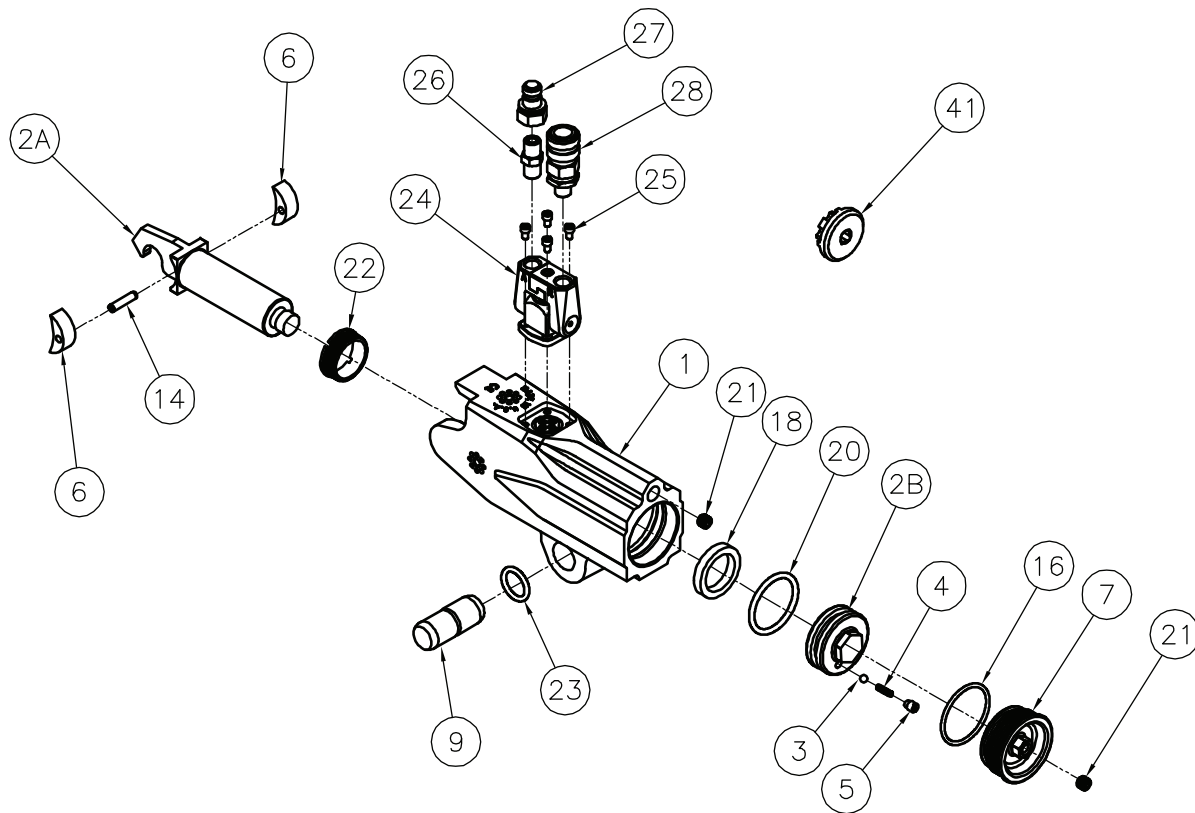


Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Side Plate - Left	TX-16-L01-#*	1
2	Side Plate - Right	TX-16-L02-#*	1
3	Drive Plate	TX-16-L03-#*	1
4	Drive Pin	TX-16-L05	1
5	Drive Pin Spring	TX-16-L07	1
6	Ratchet	TX-16-L09-#*	1
7	Drive Segment	TX-16-L11-#*	1
8	Upper Spacer	TX-16-L13	1
9	Middle Spacer	TX-16-L14-#*	1
10	Lower Spacer	TX-16-L15-#*	1
11	Spacer Pin	TX-16-L17	2
12	Sideplate Sleeve	TX-16-L19-#*	2
13	Shroud	TX-16-L21	1
14	Segment Spring	TX-16-L25	1
15	Upper Spacer Screw	TX-16-L27	4
16	Lower Spacer Screw	TX-16-L29	4
17	Shroud Screw	TX-16-L31	2
18	Drive Pin Spring Roll Pin	TX-16-L33	1
19	Spacer Roll Pin	TX-16-L35	1

*part number is dependent upon ratchet link size

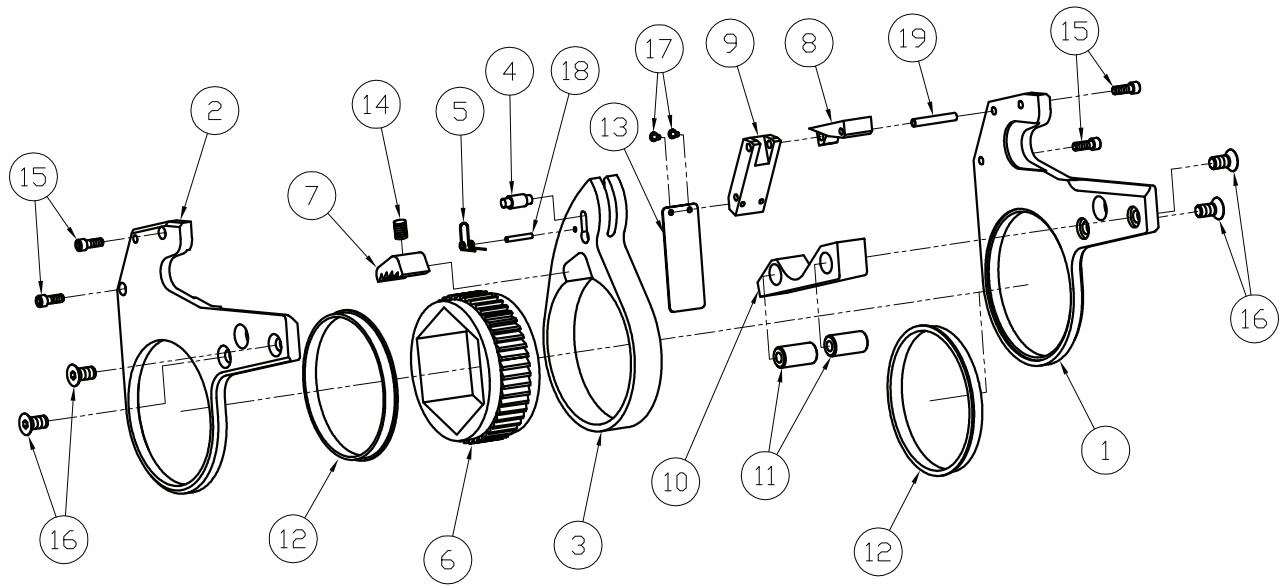
TXU-32 Series Cylinder



Part Numbers for Ordering

ITEM	NAME	PART #	QTY.	ITEM	NAME	PART #	QTY.
1	Housing	TX-32-C01	1	22	Cylinder Gland	TX-32-C51	1
2a	Piston Rod	TX-32-C03-1	1	23	Link Retaining Ring	TX-32-C53	1
2b	Piston Cap	TX-32-C03-2	1	24	Uni-Swivel Assembly	USL-00	1
3	Valve Ball	TX-32-C03-3	1	25	Uni-Swivel Post Screw	USL-23	4
4	Valve Spring	TX-32-C03-4	1	26	Male 1/4" NPT Nipple	F004004	1
5	Valve Cup	TX-32-C03-5	1	27	Male Coupler	HC-M-100	1
6	Slider	TX-32-C09	2	28	Female Coupler	HC-F-400	1
7	End Cap	TX-32-C11	1				
9	Link Pin	TX-32-C15	1	41	Gland Removal Tool	ATX-32-GW	
14	Slider Pin	TX-32-C27	1				
16	End Plug Seal	TX-32-C29	1				
18	Rod Seal	TX-32-C31	1				
20	Piston Seal	TX-32-C33	1				
21	Port Plug	TXU-32-C38	2				
					Piston Assembly (2a, 2b, 3, 4, 5)	TX-32-C03	
					Coupler Set (27 & 28)	HC-S-100	

TXU-32 Series Link

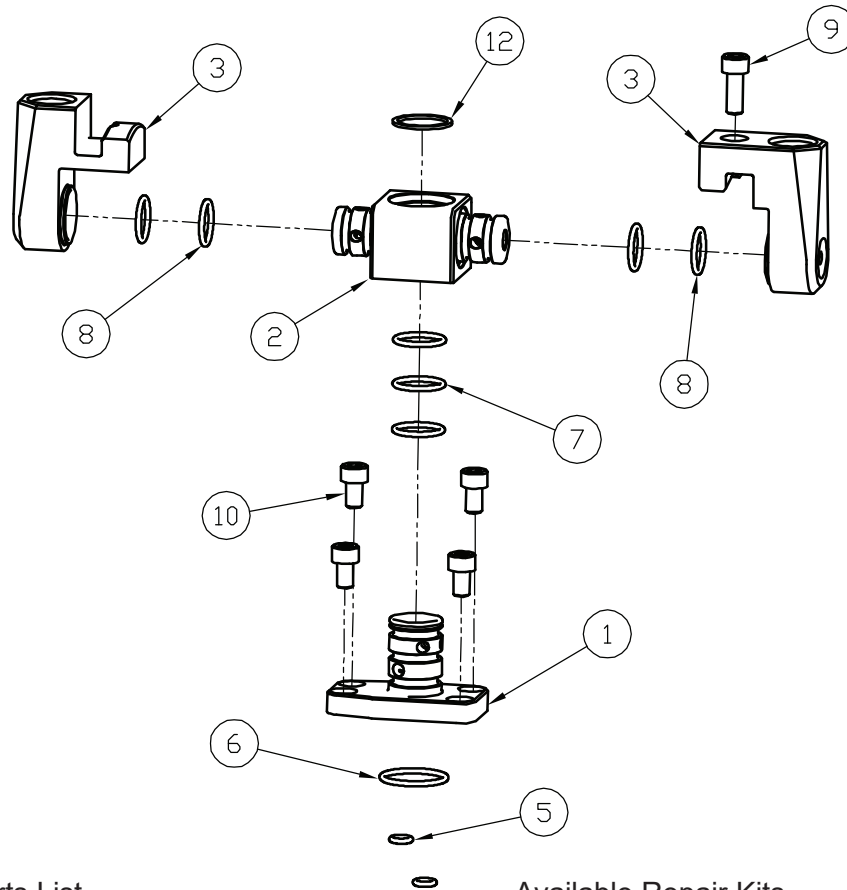


Part Numbers for Ordering

ITEM	NAME	PART #	QTY.
1	Side Plate - Left	TX-32-L01- #*	1
2	Side Plate - Right	TX-32-L02- #*	1
3	Drive Plate	TX-32-L03- #*	1
4	Drive Pin	TX-32-L05	1
5	Drive Pin Spring	TX-32-L07	1
6	Ratchet	TX-32-L09- #*	1
7	Drive Segment	TX-32-L11- #*	1
8	Upper Spacer	TX-32-L13	1
9	Middle Spacer	TX-32-L14- #*	1
10	Lower Spacer	TX-32-L15- #*	1
11	Spacer Pin	TX-32-L17	2
12	Sideplate Sleeve	TX-32-L19- #*	2
13	Shroud	TX-32-L21	1
14	Segment Spring	TX-32-L25	1
15	Upper Spacer Screw	TX-32-L27	4
16	Lower Spacer Screw	TX-32-L29	4
17	Shroud Screw	TX-32-L31	2
18	Dr. Pin Spring Roll Pin	TX-32-L33	1
19	Spacer Roll Pin	TX-32-L35	1

*part number is dependent upon ratchet link size

TXU Series USS Uni-Swivel



USS Uni-Swivel Parts List

ITEM	NAME	PART #
1	Post	USS-01
2	Joint	USS-03
3	Swivel Arm Set	USS-05
5	Swivel O-ring (Small)	USS-09
6	Swivel O-ring (Large)	USS-11
7	Post O-ring	USS-13
8	Joint O-ring	USS-15
9	Swivel Screw	USS-17
10	Swivel Post Screw	USS-21
12	Retaining Ring	USS-19

Available Repair Kits

Post Kit USS-PKIT		
ITEM	NAME	PART #
1	Post	USS-01
5	Swivel O-ring (Small)	USS-09
6	Swivel O-ring (Large)	USS-11
7	Post O-ring	USS-13
10	Swivel Post Screw	USS-21

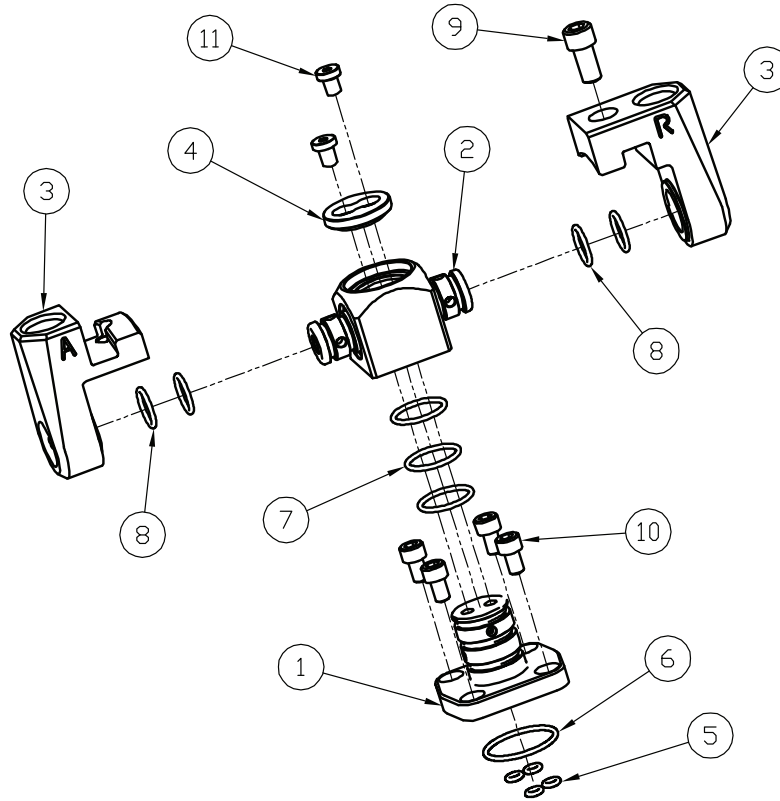
Joint Kit USS-JKIT

ITEM	NAME	PART #
2	Joint	USS-03
3	Swivel Arm Set	USS-05
7	Post O-ring	USS-13
8	Joint O-ring	USS-15
9	Swivel Screw	USS-17
12	Retaining Ring	USS-19

Seal Kit USS-SKIT

ITEM	NAME	PART #
5	Swivel O-ring (Small)	USS-09
6	Swivel O-ring (Large)	USS-11
7	Post O-ring	USS-13
8	Joint O-ring	USS-15
10	Swivel Post Screw	USS-21

TXU Series USL Uni-Swivel



USL Uni-Swivel Parts List

ITEM	NAME	PART #
1	Post	USL-01
2	Joint	USL-03
3	Swivel Arm Set	USL-05
4	Cap	USL-09
5	Swivel O-ring (Small)	USL-11
6	Swivel O-ring (Large)	USL-13
7	Post O-ring	USL-15
8	Joint O-ring	USL-17
9	Swivel Screw	USL-19
10	Swivel Post Screw	USL-23
11	Cap Screw	USL-21

Available Repair Kits

Post Kit USL-PKIT

ITEM	NAME
1	Post
5	Swivel O-ring (Small)
6	Swivel O-ring (Large)
7	Post O-ring
10	Swivel Post Screw

Joint Kit USL-JKIT

ITEM	NAME
2	Joint
3	Swivel Arm Set
4	Cap
7	Post O-ring
8	Joint O-ring
9	Swivel Screw
11	Cap Screw

Seal Kit USL-SKIT

ITEM	NAME
5	Swivel O-ring (Small)
6	Swivel O-ring (Large)
7	Post O-ring
8	Joint O-ring
10	Swivel Post Screw
11	Cap Screw

TXU Series Uni-Swivel Assembly

1. Clamp the post (1) in a copper-covered or leather-covered vice by the base.
2. Slide the post O-rings (7) onto the post starting from the top to the base.
3. Lightly lubricate the post. (Ref. pg. 4)
4. Using hand pressure, press the joint (2) onto the post until it makes contact with the base of the post and until the top of the post is flush with the top of the joint.
5. **For USS uni-swivels:** install the retaining ring (2) into the groove on the top of the post by spreading it open slightly and working it around the post. **For USL uni-swivels:** install the cap (4) and secure with the cap screws (11).
6. Slide the joint O-rings (8) onto the arms of the joint from outside to inside.
7. Lightly lubricate the arms of the joint. (Ref. pg. 4)
8. Using hand pressure, press the swivel arms (3) onto the joint. **Note:** One of the arms of the joint has an 'R' engraved on the end denoting that it is the retract side. Install the retract swivel, the arm engraved with a 'R', onto this arm.
9. Swing the arms together so they interlock and fasten them together with the swivel screw (9).
10. Install the large and small swivel O-rings (5 & 6) into their glands in the cylinder housing.
11. Install the uni-swivel assembly onto the cylinder housing with the swivel post screws (10).

MAINTENANCE SECTION

WARNING

Always turn off the power supply. Bleed off hydraulic fluid from the hose connections on the cylinder assembly and disconnect the hoses before attempting to repair or perform maintenance on this tool. Always wear eye protection when operating or performing maintenance on this tool.

DISASSEMBLY

GENERAL INSTRUCTIONS

1. Do not disassemble the tool any further than necessary to replace or repair damaged parts.
2. Use extra care not to score, nick or damage surfaces that will contain hydraulic oil under pressure.
3. Whenever grasping a tool in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
4. Do not remove any part that is press fit in or on an assembly unless the removal of that part is necessary for repairs or replacement.
5. Do not disassemble the hydraulic cylinder assembly unless you have a complete set of seals and O-rings for replacement.
6. Use only British Standard fractional size tools when disassembling these tools.

DISASSEMBLY OF THE TOOL

1. Push the link pin (9) out of the cylinder housing (1) and link side plates (1 & 2).
2. Lift the housing from between the side plates and separate the two units.

DISASSEMBLY OF THE TXU-2, TXU-4, AND TXU-8 CYLINDER ASSEMBLIES

1. Clamp the housing (1) in copper-covered or leather-covered vise jaws with the uni-swivel upward. Using a hex wrench, unscrew the four uniswivel post screws (24) that clamp the uni-swivel to the housing. Collect the O-rings (three for the TXU-2, five for the TXU-4 and TXU-8).
2. Remove the housing from the vise and turn it over a container to catch any oil remaining inside the cylinder.
3. Place the tool with the slider pin hole over a clearance opening and use a small drift to tap the slider pin (14) out of the sliders (6) and piston (2). Re-clamp the housing in the vise with the end cover (10) end upward.
4. Use a hex wrench to unscrew and remove the end cover screw (11). Remove the end cover (10).
5. Tap the end cap (7) inward approximately 1/2" and remove the two retaining rings (8) by working them out of the groove in the cylinder. **Note:** Covering the oil ports with a cloth will contain any oil that may expel from the housing.

CAUTION

The purpose of the seal insertion tool in the following step is to prevent the end plug seal from expanding into the retaining ring groove. If the tool is not used, place two thin pieces of flat stock at the midpoint of the opening against opposite walls to control the seal expansion.

6. Install the seal insertion tool (40) into the end of the housing (1). **Note:** Lubricating the inside of the insertion tool will ease the removal of the piston (2) and end cap (7). (Ref. pg. 4)
7. Invert the tool above the vice, spreading the vice open enough to catch the end plug and piston. **Note:** Placing a cloth draped between the jaws of the vice will contain the exiting parts.
8. Tap the piston with a brass tap lightly until both the piston and end cap slip through the housing and into the catch cloth.
9. Use the gland removal tool (41) to unscrew and remove the cylinder gland (22) from the housing. **Note: TXU-2 does not have a cylinder gland.**

MAINTENANCE SECTION

NOTICE

During removal and after the piston shaft is removed; **DO NOT** grasp the round portion of the rod with any holding device that will damage the surface. Any nicks or scratches to the surface will allow hydraulic oil to leak from the cylinder when the tool is reassembled.

DISASSEMBLY OF THE TXU-16 & TXU-32 CYLINDER ASSEMBLIES

1. Clamp the housing (1) in copper-covered or leather-covered vise jaws with the uni-swivel upward. Using a hex wrench, unscrew the four uniswivel post screws (25) that clamp the uni-swivel to the housing. Remove the uniswivel and O-rings.
2. Re-clamp the housing (1) in the vise with the end cap (7) upward.
3. Unscrew the end cap (7) from the housing.
4. Using a socket on the hex of the piston cap (2B), unscrew and remove the piston cap from the piston rod (2A).
5. Remove the housing (1) from the vise and turn over a container to empty any remaining oil from the housing.
6. Re-clamp the housing in the vise, end plug end upward.
7. Remove the piston rod (2A) from the housing. If necessary, tap the threaded end of the piston rod with a brass tap being careful not to damage the threads. Place a cloth between the jaws of the vice to contain the exiting parts.
8. Flip the housing in the vice so that the cylinder gland (22) is visible.
9. Use the gland removal tool (41) to unscrew the cyclinder gland (22) from the housing.
10. Place the slider pin in the piston rod over a clearance opening in a soft block, and use a small drift to tap the pin out of the sliders and piston rod.

DISASSEMBLY OF THE RATCHET LINK

1. Lay the ratchet link flat on a workbench with the left side plate (1) downward and using a hex wrench, unscrew and remove the two lower spacer screws (16).
2. Using a hex wrench, unscrew and remove the two upper spacer screws (15).
3. **For series TXU-16 and TXU-32:** Use a roll pin punch to tap the spacer roll pin (19) out of the right side plate (2).
4. While applying thumb pressure to the edge of the ratchet (6), carefully lift the side plate off the assembly.
5. Grasp the ratchet and drive plate (3) and, while maintaining their relationship, lift them both off the left side plate.
6. Push the Ratchet out of the drive plate and remove the drive segment (7) and the segment spring (14) from the drive plate recess.

NOTICE

When the ratchet is removed from the drive plate, the drive segment and segment spring will be free to fall from the drive plate recess. Do not allow the drive segment to fall on a hard surface that might chip the teeth.

7. If the drive pin (4) or drive pin spring (5) must be replaced, use a roll pin punch to push the drive pin spring roll pin (18) out of the drive plate. Once the pin spring is removed, the drive pin (4) will drop down to the large opening at the bottom of the slot for easy removal.
8. Lift the lower spacer (10) off the lower spacer pins (11). If the pins must be replaced, use a hex wrench to remove the two lower spacer screws from the right side plate. Pull the pins out of the holes on the inner face of the right side plate.

MAINTENANCE SECTION

9. **For Series TXU-2, TXU-4, and TXU-8 models:** Unscrew the two spacer screws and remove the upper spacer (8) from the right side plate. **For Series TXU-16 and TXU-32 models:** Use a roll pin punch to remove the spacer roll pin (19) from the right side plate. Unscrew the two spacer screws and remove the middle spacer (9) and upper spacer (8) from the right side plate.
10. If the side plate sleeves (12) must be replaced, press the sleeves out toward the inner face of the side plate.

NOTICE

Inspect all parts prior to assembly. Replace any worn or damaged parts.

ASSEMBLY

ASSEMBLY OF THE TXU-2, TXU-4 & TXU-8 CYLINDER ASSEMBLIES

1. Clamp the housing (1) in copper-covered or leather-covered vise jaws with the end cap end downward.
2. Apply a non-permanent thread-locking compound to the threads of the cylinder gland (22). Use the gland removal tool (41) to thread the bushing into the small central opening in the housing and tighten until flush with the housing (1). **Note: TXU-2 does not have a cylinder gland.**
3. Flip the housing (1) in the vise and install the seal insertion tool (40). **Note:** Lubricating the inside of the insertion tool and the sides of the piston rod assembly and end cap will ease installation. (Ref. pg. 4)
4. Insert the piston (2) into the seal insertion tool (41), notched end leading and toward the link pin hub, and tap into housing approximately 1”.
5. Insert the end cap (7), swivel inlet toward the link pin hub, into the seal insertion tool (40), and tap in until the piston (2) bottoms out against the housing (1).
6. Install retaining rings (8), tapered edge leading into the grooves in the housing.
7. Flip the housing in the vise and drive the piston (2) into the housing with a brass tap until the end cap (7) seats in the retaining rings (8).
8. Install the end cover (10), applying a non-permanent thread-locking compound to the end cover screw (11) threads.
9. Remove the housing from the vice and place on a soft block with the engraved side up.
10. Install sliders (6), one on each side of the piston (2). **For TX-8 models:** Install sliders with the cutout towards the piston. Align the holes in the sliders with the holes in the piston and the housing.
11. Install slider pin (14) until flush with top slider.
12. Apply moly grease to the face of the sliders and the notch in the piston.
13. Apply non-permanent, thread-locking compound to the threads of the cylinder, and install uni-swivel O-rings and uniswivel (USS for TXU-2 or USL for TXU-4 & 8), tightening uniswivel post screws (25) in a cross pattern.

ASSEMBLY OF TXU-16 and TXU-32 CYLINDER ASSEMBLIES

1. Press the slider pin (14) into one of the sliders (6) until flush with one side. Install the pin through the hole in the piston rod (2A) and press the remaining slider into the pin.
2. Clamp the housing (1) in copper-covered or leather-covered vise jaws with the end cap end downward.
3. Apply a non-permanent, thread-locking compound to the threads of the cylinder gland (22). Use the gland removal tool (41) to thread the gland into the small central opening in the housing and tighten until flush with the housing (1).
4. Insert the piston rod (2A), threaded end leading, into the small cylinder gland in the housing. The notch in the trailing end of the rod should be towards the retaining pin hub.
5. Insert the piston cap (2B), hex end trailing, into the bore of the housing and use a socket to thread and tighten the piston cap onto the piston rod.

MAINTENANCE SECTION

6. Using a socket, thread the end cap (7), O-ring leading, into the bore of the housing and tighten.
7. Install uni-swivel O-rings and uni-swivel (USS for TXU-2 or USL for TXU-4 & TXU-8), tightening uni-swivel post screws (25) in a cross pattern. Apply non-permanent, thread-locking compound to the threads.
8. Apply moly grease to the face of the sliders and the notch in the piston.

ASSEMBLY OF THE RATCHET LINK

1. If the side plate sleeves (12) were removed, press new sleeves, shoulder end trailing, into the right and left side plates (1 & 2) from the inner face of the side plates. Make certain the sleeves are square with the side plate faces and the shoulder of the sleeves enters the recesses in the side plates and are pressed flush with the faces.
2. **For Series TXU-2, TXU-4, and TXU-8 models:** Position the upper spacer (8) against the inside face of the right side plate. Apply a non-permanent thread-locking compound to the threads of the two upper spacer screws (15) and secure the spacer with the screws through the side plate. **For Series TXU-16 and TXU-32 models:** Press the spacer roll pin (19) into the right side plate with one end of the pin flush with the external face of the side plate. Insert the tab of the upper spacer (8) into the slot in the middle spacer (9), and after aligning the holes in both pieces, install them on the spacer roll pin (19). When they are correctly positioned, apply a non-permanent thread-locking compound to the threads of the two upper spacer screws (15) and secure the spacers with the screws through the side plate.
3. Insert the two lower spacer pins (11) into the holes in the lower edge of the right side plate. Apply a non-permanent thread-locking compound to the threads of the lower spacer screws (16) and secure the pins with the screws through the side plate.
4. Place the lower spacer (10) over the pins against the side plate. Make certain it is correctly oriented so that no part of the spacer extends beyond the edge of the side plate.
5. Insert the drive pin (4) into the small cross-hole and slot in the drive plate (3). Invert the plate causing the ends of the pin to enter the slot and move the pin to the narrow end.
6. Position the drive pin spring (5) in the drive plate slot with the two non-connected ends between the drive pin and the large hole in the slot. Position the closed end of the spring on the opposite side of the pin. Then, apply pressure on the spring to align the hole through it with the hole in the drive plate for the drive pin spring roll pin (18). Insert the spring roll pin into the drive plate, through the spring and into the far wall of the drive plate.

NOTICE

In the following step, an excessive amount of grease will prevent proper tooth engagement between the ratchet and the drive segment, causing the tool to malfunction.

7. Wipe a thin film of Marine Moly Grease onto the inner face of the large opening in the drive plate.
8. Position the ratchet (6) in the central opening of the drive plate.
9. Insert the drive segment (7) into the opening adjacent to the ratchet. **Make certain the teeth of the ratchet correctly engage the teeth of the drive segment.** Reverse the ratchet if they do not properly engage.
10. Slide the drive segment sideways to expose the spring hole. Install the segment spring (14) into the hole. While compressing the spring, slide the drive segment inward until the drive plate captures the segment spring.
11. Apply a light coat of Marine Moly Grease to both sides of the drive plate and drive segment as well as the inner faces of both side plate sleeves (12).
12. While keeping the assembly together, insert the hub of the ratchet into the side plate sleeve of the assembled side plate.

MAINTENANCE SECTION

13. Place the left side plate sleeve on the hub of the ratchet and align the screw holes for the spacers.
14. After applying a non-permanent, thread-locking compound to the threads. Use hex wrenches to install the two remaining lower spacer screws.

ASSEMBLY OF THE TOOL

1. With the cylinder assembly in one hand and the ratchet link in the other, hook the notch on the shaft of the cylinder piston rod (2) onto the link drive pin (4) and bring the two assemblies together.
2. Insert the link pin (9) into the hole in the link side plate (1 or 2) until the cylinder piston rod (2) snaps into the annular groove around the center of the link pin.

TROUBLESHOOTING GUIDE

Trouble	Probable Cause	Solution
Piston will not advance or retract	Couplers are not securely attached to the tool or pump	Check the coupler connections and make certain that they are connected.
	Coupler is defective	Replace any defective coupler.
	Defective remote control switch	Replace the switch and/or control pendent.
	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	Internal seal leaking/or end plug seal leaking	Replace any defective o-rings.
	Retaining screws sheared	Replace any broken screws.
	Coupler is defective	Replace any defective coupler.
Ratchet will not turn	Grease or dirt build up in the teeth of the ratchet link and drive segment	Disassemble the ratchet and clean the grease or dirt out of the teeth.
	Worn or broken teeth on ratchet and/or drive segment	Replace any worn or damaged parts.
Tool tightens immediately when turned on	Hose connections are reversed	Depress the advance button to release the tool; shut the pump off in the advance position and reverse the hose connection.
Pump will not build up pressure	Defective relief valve	Inspect, adjust or replace the relief valve.
	Air supply too low or air hose too small	Make certain the air supply and hose size comply with the pump manual recommendations.
	Electric power source is too low	Make certain the amperage, voltage and any extension cord 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.
Pressure reading erratic	Defective gauge	Replace the gauge.

