SPX Bolting Systems

Operating Manual for:
TWLC Series

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Original Instructions

Low Clearance Hydraulic Torque Wrench

Form No. 1000529
Rev. 0 February 1, 2012

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Torque Wrench Low Clearance (TWLC)

Description: The TWLC is a hydraulic ratchet-type torque tool for tightening nuts and bolts. It uses interchangeable drive heads to fit a variety of sizes. Reducers are offered with the drive heads to adapt to specific size nuts and bolts. It is powered with a 690 bar (10,000 psi) hydraulic pump unit; the torque output from the TWLC torque wrench is proportional to the pump pressure applied.

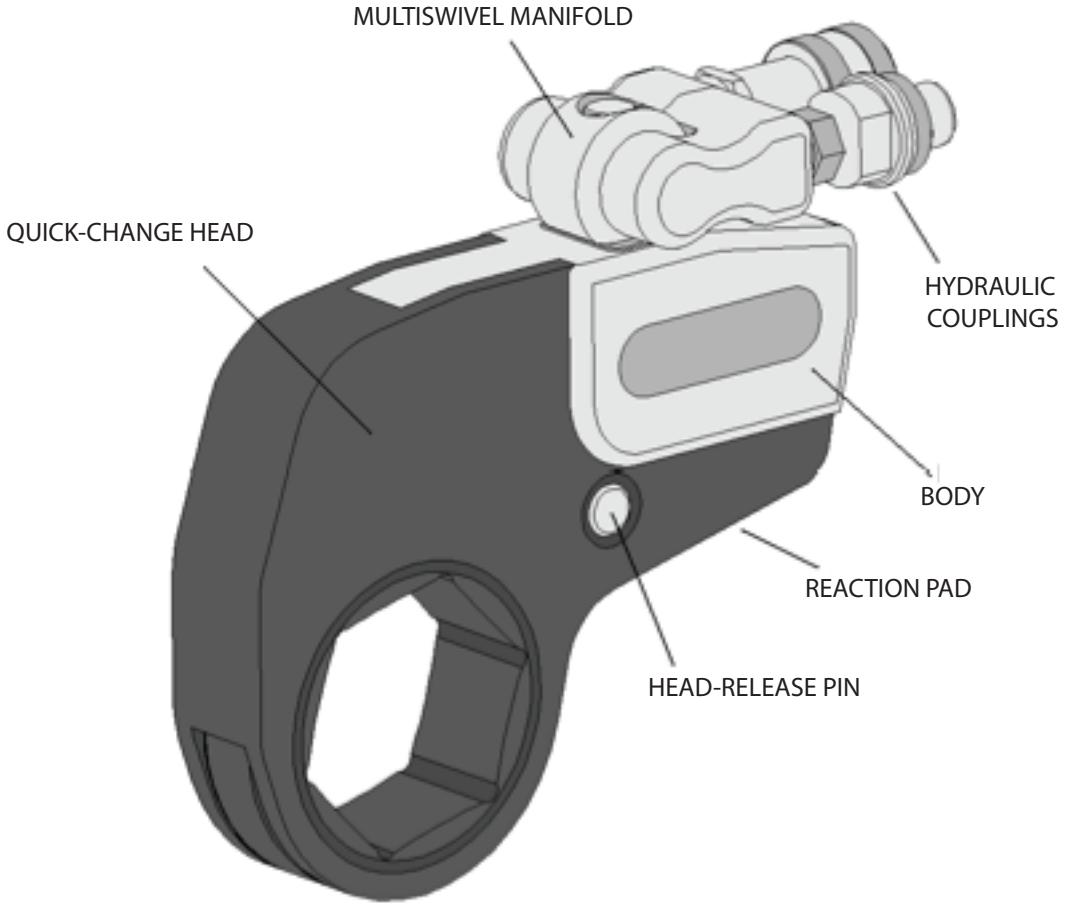

Figure 1. TWLC Hydraulic Torque Wrench

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Safety Symbols and Definitions

The safety signal word designates the degree or level of hazard seriousness.

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

IMPORTANT: Important is used when action or lack of action can cause equipment failure, either immediate or over a long period of time.

Safety Precautions

WARNING: To prevent personal injury,

- **The following procedures must be performed by qualified, trained personnel who are familiar with this equipment. Operators must read and understand all safety precautions and operating instructions included with the device. If the operator cannot read these instructions, operating instructions and safety precautions must be read and discussed in the operator's native language.**
- **These products are designed for general use in normal environments. These products are not designed for use in special work environments such as: explosive, flammable, or corrosive. Only the user can decide the suitability of this product in these conditions or extreme environments. Power Team will supply information necessary to help make these decisions. Consult your nearest Power Team facility.**

- **Safety glasses must be worn at all time by the operator and anyone within sight of the unit. Additional personal protection equipment may include: face shield, goggles, gloves, apron, hard hat, safety shoes, and hearing protection.**
- **The owner of this tool must verify that safety-related decals are installed, maintained, and replaced if they become hard to read.**
- **Shut OFF the motor before opening any connections in the system.**

Pump

WARNING: To prevent personal injury,

- **Do not exceed the hydraulic pressure rating noted on the pump nameplate or tamper with the internal high pressure relief valve. Creating pressure beyond rated capacities can result in personal injury.**
- **Retract the system before adding fluid to prevent overfilling the pump reservoir. An overfill can cause personal injury due to excess reservoir pressure created when cylinders are retracted.**

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Electric Motor

WARNING: To prevent personal injury,

- **Electrical work must be performed and tested by a qualified electrician per local directives and standards.**
- **Disconnect the pump from the power supply and relieve pressure before removing the motor case cover or performing maintenance or repair.**
- **Check the total amperage draw for the electrical circuit you will be using. *For example: Do not connect a pump that may draw 25 amps to a 20 amp fused electrical circuit.***
- **Never use an ungrounded power supply with this unit.**
- **Changing the voltage is an involved and, if incorrectly performed, hazardous procedure. Consult the manufacturer for specific information before attempting rewiring.**
- **Wire pump motors for counterclockwise rotation when viewed from the shaft end of the motor.**

- **Do not attempt to increase the power line capacity by replacing a fuse with another fuse of higher value. Overheating the power line may result in fire.**
- **Exposing electric pumps to rain or water could result in an electrical hazard.**
- **Avoid conditions that can cause damage to the power cord, such as abrasion, crushing, sharp cutting edges, or corrosive environment. Damage to the power cord can cause an electrical hazard.**

Hoses

WARNING: To prevent personal injury,

- **Before operating the pump, tighten all hose connections using the correct tools. Do not overtighten. Connections should be only secure and leak-free. Overtightening can cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.**

- **Should a hydraulic hose rupture, burst, or need to be disconnected, immediately shut off the pump and shift the control valve twice to release pressure. Never attempt to grasp a leaking hose under pressure with your hands. The force of escaping hydraulic fluid could cause serious injury.**

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- **Do not subject the hose to potential hazard, such as fire, sharp surfaces, heavy impact, or extreme heat or cold. Do not allow the hose to kink, twist, curl, or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these conditions can damage the hose and possibly result in personal injury.**
- **Do not use the hose to move attached equipment. Stress can damage the hose and possibly cause personal injury.**
- **Hose material and coupler seals must be compatible with the hydraulic fluid used. Hoses also must not come in contact with corrosive material such as creosote-impregnated objects and some paints. Consult the manufacturer before painting a hose. Never paint the couplers. Hose deterioration due to corrosive materials may result in personal injury.**

Initial Setup

Each hydraulic torque wrench is supplied completely assembled and ready for use. A hydraulic pump is required to provide the speed and pressure that makes the hydraulic wrench system efficient and accurate.

1. Read and understand all instructions before operating the hydraulic torque wrench. It is the operators responsibility to read, understand, and follow all safety instructions.
2. Remove the hydraulic torque wrench from the shipping container and visually inspect all components for any shipping damage. If any damage is found, notify the carrier immediately. **DO NOT USE TOOL.**

Power Requirements

The TWLC hydraulic torque wrench requires a hydraulic pump unit, twin-line connecting hose, and couplings to operate. All components must be capable of operating at the system maximum working pressure of 690 bar (10,000 psi). Note that the system maximum working pressure is dynamic, not static.

Pump unit specification varies between manufacturers; however, for correct torque wrench operation, the pump unit must include the following:

Double Acting—Pump unit must be capable of double acting operation for advancing and retracting the Torque Wrench.

Variable Pressure Output—For torque setting, the pump unit must be able to be easily adjusted by the operator for different pressure outputs.

Retract Pressure—Sometimes termed 'idle' pressure, this is the pressure used for torque wrench retraction and must be fixed at approximately 103 bar (1,500 psi). This pressure must not be operator adjustable.

Remote Handset Controls—The preferred configuration for the handset is such that, upon starting the pump unit, the pump enters retract or idle mode (pressure fixed at 103 bar (1,500 psi)). To advance the torque wrench, the handset advance/pressure button or lever is pressed and held, upon release of the button, retract mode is automatically entered. A separate button or lever is used to stop the pump.

Automatic Pressure Release—The pump must automatically release system pressure when switching between advance and retract modes.

Pump Flow Rate—The speed at which the hydraulic torque wrench operates is proportional to the fluid flow rate. In general, 2-stage pump units are preferred for torque wrench use as this allows rapid nut rotation under low loads, with fast wrench retraction. As a minimum, 250 cm^3/min @ 7 bar (15 ci/min @ 100 psi) to 20 cm^3/min @ 690 bar (1.2 ci/min @ 10,000 psi) should be specified; however, for optimum speed and performance, at least 360 cm^3/min @ 7 bar (22 ci/min @ 100 psi) to 30 cm^3/min @ 690 bar ((1.8 ci/min @ 10,000 psi) is recommended.

Pressure Gauge—Clarity is important for accurate torque setting; therefore, a pressure gauge of at least 100-mm (4-in.) diameter should be fitted.

Hydraulic Couplings—TWLC hydraulic torque wrenches are fitted with CEJN 230 screw-to-connect couplings (1/4-in. NPT) as standard. Verify any couplings that are used are compatible with these couplings and rated to the same working pressure, e.g. Parker 3000 couplings.

SPX Bolting Systems will not be responsible for torque wrench damage, malfunction or operator injury caused by the use of an incorrect pump unit; therefore, check the compatibility of your pump unit before operating the hydraulic torque wrench.

Torque Wrench Usage

To verify reasonable life and performance from the torque wrench and system (pump and hoses), these guidelines should be followed:

- Under normal use, the torque wrench should be limited to 75–80% of its maximum achievable torque output.
- Under breakout conditions, because the bolt can suddenly break free and result in shock loads, jumping/jolting, it is recommended to limit the wrench output torque to 60–70% of maximum achievable torque output. It is also a good idea to have torque in reserve for the odd stubborn bolt/nut.
- Once a corroded bolt has broken free, do not use a torque wrench to wind the nut from the bolt. This can cause the nut to bind and lock onto the bolt and make it impossible to remove. It is preferred that a nut runner or impact wrench be used to remove the nut following initial breakout by hydraulic torque wrench.
- Occasional use of the torque wrench at full pressure/torque is acceptable, but unnecessary continuous use at full pressure will reduce the life of the torque wrench and system.
- In elevated temperature environments, it is advisable to cool the torque wrench as much as practical to maintain the sealing systems in good order. Depending upon the pressure applied to the wrench, repeated use in temperatures in excess of 40°C will affect the life of the hydraulic seals.

  If the temperatures are likely to exceed 40°C, it is advisable to use a larger capacity wrench so that the pressure to achieve the required torque is reduced. This will result in less temperature buildup and less softening of the seals.

  Seals should be replaced regularly because, at elevated temperatures, the extrusion resistance of the seal is reduced.

Connecting the System

The hydraulic wrench head and power pack are connected by a 690 bar (10,000 psi) twin-line hose assembly. Refer to the power-unit manufacturer's operating instructions for proper use.

Hydraulic Connections

- Never connect or disconnect any hydraulic hoses or fittings without first unloading the wrench and the pump.
- Open all hydraulic controls several times to verify the system has been completely depressurized.
- If the system includes a gauge, double check the gauge to verify pressure has been released.
- When making connections with quick-disconnect coupling, verify the couplings are fully engaged. Threaded connections such as fittings, gauges, etc., must be securely tightened and leak-free.

Accessory Operation

Links and reducers are available for each drive body. For more information, contact your SPX Bolting Systems authorized service center.

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Safety

The TWLC hydraulic torque wrench is a high-power hydraulic tool. It is strongly recommended that all users are fully trained and competent in the use of hydraulic torque wrench systems. Incorrect use of the equipment or failure to follow any of the safety precaution included herein could lead to serious injury.

- Never exceed the hydraulic torque wrench maximum working pressure of: Advance 690 bar (10,000 psi) and Retract 103 bar (1,500 psi).
- Keep hands and fingers clear of the hydraulic torque wrench head and reaction pad area, before and during operation.
- Keep other personnel clear of the working area and only allow trained personnel to use the equipment.
- Before operation, verify all hoses and equipment is in proper working order. Verify all hydraulic torque wrench components (i.e. head, body, etc.) are properly attached and secure. Verify the head release pin is properly located.
- Do not strike any of the components, including the socket, to shock the nut free.
- Verify reaction structures are strong and rigid enough to accept the torque tool reaction forces. Do not use wedges, packing pieces, etc. as a temporary reaction.
- If backing wrenches are used, keep hands and limbs well clear of the backing wrench.
- Take care when handling equipment. Quick connect couplings are especially susceptible to knocks and damage and therefore care must be taken. Note that damaged couplings are difficult to connect. Do not force couplings.
- Verify hoses are in good condition and undamaged. Do not bend hoses beyond their safe bend radius limit or kink the hose.
- Do not strike, misuse or abuse any of the equipment. If any abuse or misuse of the equipment is evident, the warranty shall be invalid and the Manufacturer shall not be responsible for any injuries or failures as a result.
- In some instances, it may be necessary for the operator to support the hydraulic torque wrench while it is tightening, i.e. upside-down operations. If the hydraulic torque wrench cannot be strapped into position using ropes, etc., the operator must take care to avoid pinch points.
- If not in use, and when practical, disconnect the wrench and pump from the power supply to prevent accidental starting.
- Do not tighten any equipment while under pressure. Do not move or rotate the multiswivel manifold while under pressure.
- Verify that any inserts that are to be used with the hydraulic torque wrench are of impact quality and capable of withstanding the full torque output of the tool.
- Some hydraulic torque wrenches weigh in excess of 20 Kg (40 lb). If necessary, lifting equipment can be used.
- In some instances, it may be necessary for the operator to support the hydraulic torque wrench while it is tightening, i.e. upside-down operations. If the hydraulic torque wrench cannot be strapped into position using ropes, etc., the operator must take care to avoid pinch points.
- Never use the hydraulic torque wrench with just one hose connected to the Advance port (Port A). This will cause the pressure to intensify within the retract chamber possibly leading to tool damage. Always verify that both hoses are correctly connected.

Preparing the Torque Wrench for Use

IMPORTANT: For a copy of the calibration certificate for a specific hydraulic torque wrench, e-mail info@spxboltingsystems.com with serial number of the hydraulic torque wrench.

CAUTION: For top performance, frequently inspect wrench, pump, and accessories for visual damage. Always follow instructions for proper wrench and pump maintenance. Do not use other equipment to increase the capability (i.e., hammering on socket wrench).

Assembling/Removing the Drive Head

See Figure 2. Before the TWLC hydraulic torque wrench can be used, the correct drive head for the nut must be fitted to the TWLC body. No special tools are needed to change the drive head. If a drive head is already assembled, it can be detached by pushing out the head retainer pin, and simply lifting out the body. The drive assembly will auto-disengage.

NOTE: The hydraulic torque wrench must be fully retracted before the head can be removed or attached.

WARNING: Disconnect from the hydraulic supply before attempting to change the torque wrench head. Operating the wrench without the head attached exposes the moving piston drive mechanism, and can result in trapped fingers or other injury.

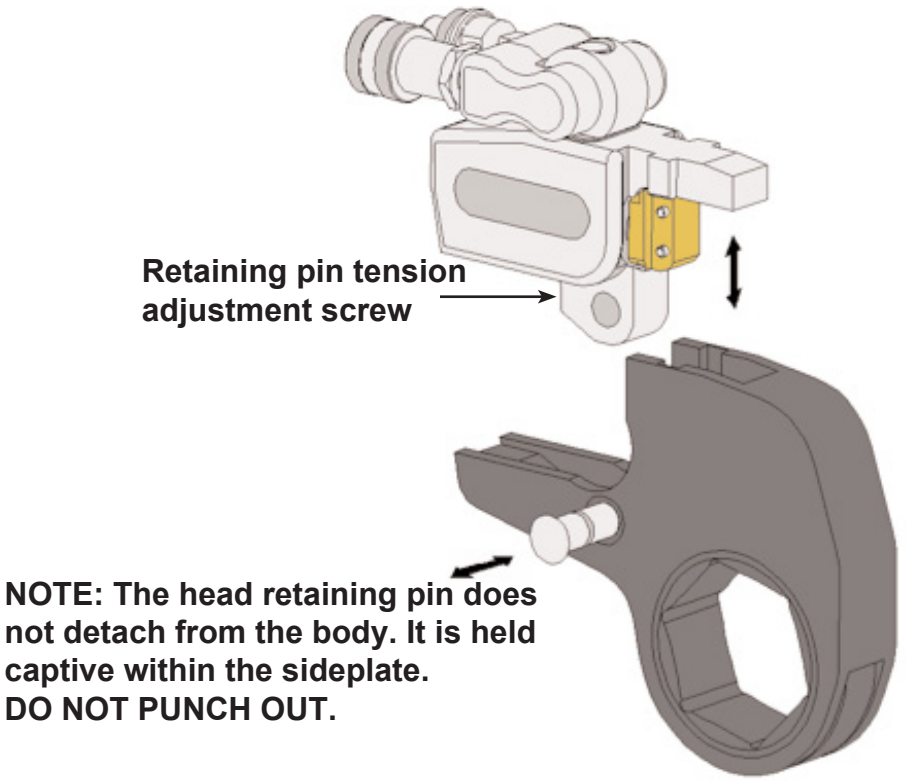

Figure 2. Body and Drive Head Removal and Attachment

See Figure 2. To assemble a drive head, position the drive head onto the body, engaging the keyways on the inner surface of the drive head sideplates with the keys on the body. Slide the drive head fully onto the body and push the head retaining pin back into position.

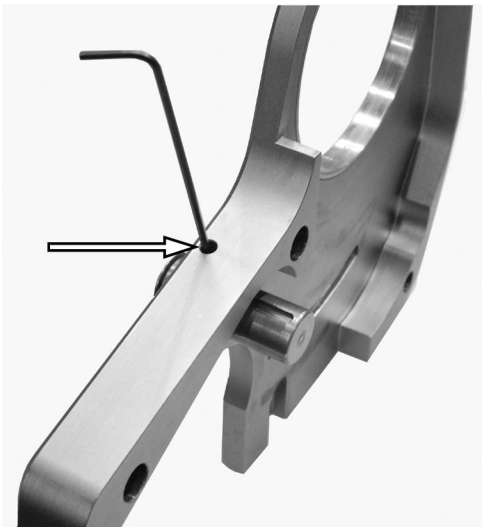

Figure 3. Head Retaining Pin

See Figure 3. Verify the pin is fully engaged. Damage to the body can occur if operated with a partially engaged pin. Regularly check that the pin is fully engaged during operation because handling and movements of the wrench can cause the pin to dislodge. The set screw is in place to keep the pin from coming out completely. However, the pin can come out partially during use.

See Figure 2. If necessary, the retaining tension on the pin can be adjusted by turning the spring plunger located in the wrench body.

Setting Torque

1. Verify the system is fully connected and the proper power supply is available.
2. Refer to the Pressure/Torque Conversion Chart in the Performance Specifications section. Note that this pressure is set on the pump.
3. Turn on the pump.
4. Press and hold the remote control button.
5. Check the pressure on the gauge.
6. Increase or decrease pressure as required. Refer to pump manufacturer's operating instructions.
7. Before tightening a nut, press the remote control button and confirm the correct pressure has been set.
8. Verify that the bolt threads, nut threads, and nut-to-flange contact faces are liberally coated with anti-seize lubricant of the same friction coefficient used to derive the torque value.
9. Make sure the hydraulic torque wrench is suitable to deliver the required torque. Should the torque value exceed 80% of the hydraulic torque wrench output, consider using a higher capacity hydraulic torque wrench.

NOTE: LDF torque wrenches are equipped with a pressure release valve built into the multi-axis swivel manifold to protect against retract pressure intensification should the retract port hydraulic coupling not be fully connected, or become loose during use. If an intensification occurs, the valve will bleed hydraulic fluid externally from the manifold yoke. Fluid bleeding from the swivel manifold is not a sign of seal leakage.

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10. Use the Pressure/Torque Conversion Chart in this manual to obtain the required pump pressure.
11. Verify that the drive head to be used is of the correct type and size. A poor fitting or oversized drive head can damage nuts, induce inaccurate bolt loads, and may result in operator injury.
12. Before applying the hydraulic torque wrench to the application, the pump output pressure must be preset to relieve at the pressure obtained from the Pressure/Torque Conversion Chart. This can be done with the hydraulic torque wrench connected to the pump and resting on the floor or bench. Applying advance pressure to the hydraulic torque wrench will extend the piston until it reaches the end of its stroke whereby the pump pressure will build. Holding the wrench at the end of its stroke will allow the pump pressure to be adjusted. Retract the hydraulic torque wrench piston and advance again making sure that the pump relieves at the desired pressure setting. The pump pressure can also be set by blanking the pump outlets using blank couplings.

NOTE: Allow time for the wrench to retract. If another advance stroke is made before the torque wrench has fully retracted, the ratchet mechanism may not engage correctly, causing it to jump a ratchet tooth, and possibly damaging the ratchet. Before applying another advance stroke, make sure the pump is idling at 103 bar (1,500 psi), which indicates full retraction.

Operating Instructions

Positioning the Hydraulic Torque Wrench on the Nut

The TWLC hydraulic torque wrench fits directly around the nut, with its built-in reaction pad designed to brace against an adjacent nut. Figure 4 indicates correct position of the hydraulic torque wrench (shown in tightening mode). Always verify that the reaction pad braces firmly against an adjacent nut or secure reaction structure.

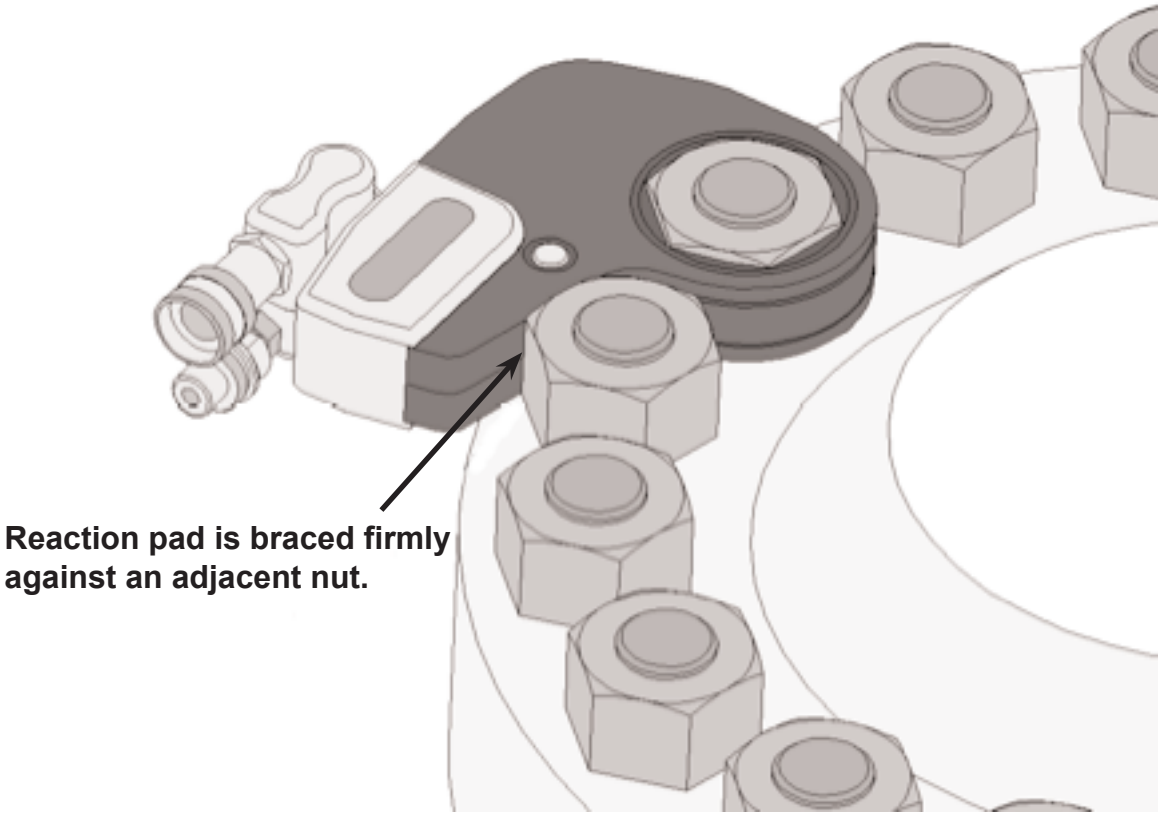

Figure 4. Correct Positioning of the Hydraulic Torque Wrench

Reaction Point Safety

Follow these guidelines when selecting appropriate reaction points:

- The reaction structure must be rigid enough to accommodate the forces from the hydraulic torque wrench. Carefully inspect the reaction points for suitability before applying the torque tool. If in doubt, contact the torque wrench supplier for advice.
- Tapered surfaces are generally unsuitable as the torque wrench tends to 'ride up' the taper, causing adverse tool loads. Flat surfaces are preferred.
- Packing pieces, spacers, etc. must never be used as a makeshift reaction point. Reaction accessories are available to increase the access to reaction points.

Use of Backing Wrenches

Backing wrenches are often used to prevent the non-tightening nut on the opposite side of the joint assembly from turning during the torquing operation. Verify that the backing wrench is the correct size and securely fastened in position (using straps, ropes, etc.). As the torquing operation begins, it is normal for the backing wrench to move/rotate in conjunction with the torqued nut, until the backing wrench contacts an adjacent reaction point. It is important that the operator stand clear of the moving backing wrench to prevent accidental entrapment. The operator must also verify that the reaction point is secure and sufficiently rigid to prevent damage to the structure.

Torque Wrench Selection

To choose the correct capacity Torque Wrench for the application, the estimated break-out torque should be considered, not the tightening torque. Loosening bolts usually requires a higher torque, and if a wrench has been selected on tightening criteria only, it will seldom perform in a break-out situation.

Break-out Considerations

Nuts / Bolts which have been correctly lubricated at the make-up / tightening stage will require approximately 1.5 x tightening torque to loosen following a period of service, PROVIDED THEY HAVE NOT BEEN SUBJECTED TO HEAT.

Corroded / rusted bolts, and bolts without lubrication applied at make-up, will require approximately 2 x tightening torque to loosen. PROVIDED THEY HAVE NOT BEEN SUBJECTED TO HEAT.

Nuts / bolts subjected to heat, seawater corrosion, chemical corrosion, can require 3 to 4 x tightening torque.

Before selecting a torque wrench for the application, ensure that the above has been considered.

Tightening Bolts

1. Apply the hydraulic torque wrench to the nut to be tightened and verify that the reaction pad is braced firmly and squarely against the selected reaction point.
2. Start the pump and advance the hydraulic torque wrench. As the wrench strokes forward, the reaction pad will press against the reaction point and the socket will rotate. When the hydraulic torque wrench reaches the end of its stroke, the pump pressure will build rapidly. Fully retract the hydraulic torque wrench (the wrench ratchet mechanism will be heard clicking as it retracts), and apply another forward stroke.
3. Several forward strokes are made until the nut ceases to rotate during the stroke (known as stalling), but bear in mind that nut rotation will always cease at the end of the wrench stroke and must not be confused with the wrench stalling. When the wrench stalls, apply another forward stroke and observe the pump pressure gauge. The pump pressure gauge should read the desired preset pressure.
4. Retract the hydraulic torque wrench, stop the pump unit, and remove the wrench from the nut.

Tightening a Flanged Joint

This procedure outlines the basic steps to torque-tighten a flanged joint with a TWLC hydraulic torque wrench. It is important that personal protective equipment (gloves, footwear, safety helmet, eye protection, etc.) is worn at all times by the operator and any other personnel in the work area. The torquing procedure uses a single hydraulic torque wrench to accurately achieve a predetermined residual bolt stress.

WARNING: Before bolt torquing, verify that:

- **The procedure and data to be used is authorized by a responsible engineer.**
- **The joints/pipework being worked on are not live. Joints must be at zero pressure and free from hazardous substances.**
- **The torque value selected must be based upon the lubricant applied.**

Procedure

1. Working in a crisscross pattern, number each bolt in order of torque sequence.
2. Square up the flanged joint using hydraulic torque wrenches, if necessary.
3. Set the pump at its lowest possible output, 103 bar (1,500 psi), and following the numbers on the bolts, apply the minimum torque to the bolts.
4. In the same tightening sequence, apply approximately 25% of the torque value specified in the torque data.
5. In the same tightening sequence, apply approximately 50% of the torque value specified in the torque data.
6. In the same tightening sequence, apply the full torque value specified in the torque data.
7. Working in a clockwise (or counter-clockwise) direction, make a final pass around the flange, tightening each bolt to the full torque value specified in the torque data.
8. Using a hammer, “ring” each nut to verify that each bolt has been correctly loaded and that no slack bolts remain.

Loosening Bolts

Loosening bolts using hydraulic torque wrenches can be unpredictable and often unsuccessful, especially if the nuts and bolts are severely corroded. However, some measures can be carried out to increase the success rate of nut breakout:

- In general, loosening mildly rusted bolts requires up to twice the makeup torque to release the nut. Heavily corroded bolts may take up to three times the makeup torque. Verify that the bolt and nut material is strong enough to accept these higher torques.
- Remove surface rust and scale using a wire brush. Apply releasing fluid to the nut, bolt, and bearing face, and allow time for the release fluid to soak in and penetrate.
- Only use the hydraulic torque wrench to break the nut free. Using the torque tool to wind the nut from the bolt can induce high torsion and reaction forces. Therefore, it is better to use an impact wrench to completely remove the nut.
- Never strike the torque wrench or nut/bolt in an attempt to 'shock' the nut free. This can cause damage to the hydraulic torque wrench and operator injury. Evidence of torque wrench abuse will void the Manufacturer's Warranty.

NOTE: Should maximum pump pressure be reached, and the nut has not broken free, use a higher capacity hydraulic torque wrench (if the nut/bolt material will accept the higher torques without damage). Do not, under any circumstances, strike the hydraulic torque wrench or nut/bolt in an attempt to 'shock' the nut free.

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Procedure

1. Connect the hydraulic torque wrench to the pump unit. Verify that the couplings are fully screwed together; they are self-sealing and will restrict fluid flow if not fully connected.
2. Before applying the hydraulic torque wrench to the application, the pump output pressure must be preset to deliver the maximum pressure of 690 bar (10,000 psi). This can be done with the torque wrench connected to the pump and resting on the floor or bench. Applying advance pressure to the hydraulic torque wrench will extend the piston until it reached the end of its stroke whereby the pump pressure will build. Holding the wrench at the end of its stroke will allow the pump pressure to be adjusted. Retract the hydraulic torque wrench piston and advance again making sure that the pump delivered full pressure. The pump pressure can also be set by blanking the pump outlets using blank couplings.
3. Apply the hydraulic torque wrench to the nut to be loosened and verify that the reaction pad is braced firmly and squarely against the selected reaction point.
4. Start the pump and advance the hydraulic torque wrench. As the wrench strokes forward, the reaction pad will press against the reaction point. As the pump pressure builds (and torque is applied to the nut), the nut will break free. Once the nut has been released, remove the nut by hand if loose enough, or alternatively use an impact wrench. Using the hydraulic torque wrench is not recommended.

NOTE: Should maximum pump pressure be reached, and the nut has not broken free, use a higher capacity hydraulic torque wrench (if the nut/bolt material will accept the higher torques without damage). Do not, under any circumstances, strike the hydraulic torque wrench or nut/bolt in an attempt to 'shock' the nut free.

5. Retract the hydraulic torque wrench, stop the pump unit, and remove the wrench from the nut.

Performance Specifications

Technical Specifications

The following technical data is applicable to all TWLC hydraulic torque wrenches:

MAXIMUM PRESSURE: Advance - 690 bar (10,000 psi)
Retract - 103 bar (1,500 psi)

OPERATING TEMPERATURE LIMITS: -20°C to +40°C (-4°F to 104°F)

HYDRAULIC FLUID TYPE: Grade 46 hydraulic fluid

Wrench Ref	Head Size range, mm (in.)	Torque Output, ft-lb		Approximate Weight, kg (lb)
		MIN**	MAX	
TWL2	32–60 (1 1/4–2 3/8)	189	1,575	3.5 (7.7)
TWL4	40–80 (1 1/2–3 1/8)	477	3,975	7.0 (15.4)
TWL8	60–100 (2 1/4–3 7/8)	954	7,950	11.0 (24.3)
TWL15	65–120 (2 9/16–4 5/8)	1,782	14,850	19.0 (41.9)
TWL30	80–155 (3 1/8–6 1/8)	3,456	28,800	38.0 (83.8)
** Note that minimum torque can be lower depending upon pump low-pressure capability				

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Pressure/Torque Conversion Chart

Pump Pressure		Torque Output									
		TWLC2		TWLC4		TWLC8		TWLC15		TWLC30	
bar	*psi*	Nm	*ft-lb*	Nm	*ft-lb*	Nm	*ft-lb*	Nm	*ft-lb*	Nm	*ft-lb*
83	*1,200*	256	*189*	646	*477*	1,293	*954*	2,415	*1,782*	4,683	*3,456*
97	*1,400*	299	*221*	754	*557*	1,508	*1,113*	2,817	*2,079*	5,463	*4,032*
110	*1,600*	341	*252*	862	*636*	1,724	*1,272*	3,220	*2,376*	6,244	*4,608*
124	*1,800*	384	*284*	970	*716*	1,939	*1,431*	3,622	*2,673*	7,024	*5,184*
138	*2,000*	427	*315*	1,077	*795*	2,154	*1,590*	4,024	*2,970*	7,805	*5,760*
152	*2,200*	470	*347*	1,185	*875*	2,370	*1,749*	4,427	*3,267*	8,585	*6,336*
165	*2,400*	512	*378*	1,293	*954*	2,585	*1,908*	4,829	*3,564*	9,366	*6,912*
179	*2,600*	555	*410*	1,400	*1,034*	2,801	*2,067*	5,232	*3,861*	10,146	*7,488*
193	*2,800*	598	*441*	1,508	*1,113*	3,016	*2,226*	5,634	*4,158*	10,927	*8,064*
207	*3,000*	640	*473*	1,616	*1,193*	3,232	*2,385*	6,037	*4,455*	11,707	*8,640*
221	*3,200*	683	*504*	1,724	*1,272*	3,447	*2,544*	6,439	*4,752*	12,488	*9,216*
234	*3,400*	726	*536*	1,831	*1,352*	3,663	*2,703*	6,841	*5,049*	13,268	*9,792*
248	*3,600*	768	*567*	1,939	*1,431*	3,878	*2,862*	7,244	*5,346*	14,049	*10,368*
262	*3,800*	811	*599*	2,047	*1,511*	4,093	*3,021*	7,646	*5,643*	14,829	*10,944*
276	*4,000*	854	*630*	2,154	*1,590*	4,309	*3,180*	8,049	*5,940*	15,610	*11,520*
290	*4,200*	896	*662*	2,262	*1,670*	4,524	*3,339*	8,451	*6,237*	16,390	*12,096*
303	*4,400*	939	*693*	2,370	*1,749*	4,740	*3,498*	8,854	*6,534*	17,171	*12,672*
317	*4,600*	982	*725*	2,478	*1,829*	4,955	*3,657*	9,256	*6,831*	17,951	*13,248*
331	*4,800*	1,024	*756*	2,585	*1,908*	5,171	*3,816*	9,659	*7,128*	18,732	*13,824*
345	*5,000*	1,067	*788*	2,693	*1,988*	5,386	*3,975*	10,061	*7,425*	19,512	*14,400*
359	*5,200*	1,110	*819*	2,801	*2,067*	5,602	*4,134*	10,463	*7,722*	20,293	*14,976*
372	*5,400*	1,152	*851*	2,909	*2,147*	5,817	*4,293*	10,866	*8,019*	21,073	*15,552*
386	*5,600*	1,195	*882*	3,016	*2,226*	6,033	*4,452*	11,268	*8,316*	21,854	*16,128*
400	*5,800*	1,238	*914*	3,124	*2,306*	6,248	*4,611*	11,671	*8,613*	22,634	*16,704*
414	*6,000*	1,280	*945*	3,232	*2,385*	6,463	*4,770*	12,073	*8,910*	23,415	*17,280*
427	*6,200*	1,323	*977*	3,339	*2,465*	6,679	*4,929*	12,476	*9,207*	24,195	*17,856*
441	*6,400*	1,366	*1,008*	3,447	*2,544*	6,894	*5,088*	12,878	*9,504*	24,976	*18,432*
455	*6,600*	1,409	*1,040*	3,555	*2,624*	7,110	*5,247*	13,280	*9,801*	25,756	*19,008*
469	*6,800*	1,451	*1,071*	3,663	*2,703*	7,325	*5,406*	13,683	*10,098*	26,537	*19,584*
483	*7,000*	1,494	*1,103*	3,770	*2,783*	7,541	*5,565*	14,085	*10,395*	27,317	*20,160*
496	*7,200*	1,537	*1,134*	3,878	*2,862*	7,756	*5,724*	14,488	*10,692*	28,098	*20,736*
510	*7,400*	1,579	*1,166*	3,986	*2,942*	7,972	*5,883*	14,890	*10,989*	28,878	*21,312*
524	*7,600*	1,622	*1,197*	4,093	*3,021*	8,187	*6,042*	15,293	*11,286*	29,659	*21,888*
538	*7,800*	1,665	*1,229*	4,201	*3,101*	8,402	*6,201*	15,695	*11,583*	30,439	*22,464*
552	*8,000*	1,707	*1,260*	4,309	*3,180*	8,618	*6,360*	16,098	*11,880*	31,220	*23,040*
565	*8,200*	1,750	*1,292*	4,417	*3,260*	8,833	*6,519*	16,500	*12,177*	32,000	*23,616*
579	*8,400*	1,793	*1,323*	4,524	*3,339*	9,049	*6,678*	16,902	*12,474*	32,780	*24,192*
593	*8,600*	1,835	*1,355*	4,632	*3,419*	9,264	*6,837*	17,305	*12,771*	33,561	*24,768*
607	*8,800*	1,878	*1,386*	4,740	*3,498*	9,480	*6,996*	17,707	*13,068*	34,341	*25,344*
621	*9,000*	1,921	*1,418*	4,848	*3,578*	9,695	*7,155*	18,110	*13,365*	35,122	*25,920*
634	*9,200*	1,963	*1,449*	4,955	*3,657*	9,911	*7,314*	18,512	*13,662*	35,902	*26,496*
648	*9,400*	2,006	*1,481*	5,063	*3,737*	10,126	*7,473*	18,915	*13,959*	36,683	*27,072*
662	*9,600*	2,049	*1,512*	5,171	*3,816*	10,341	*7,632*	19,317	*14,256*	37,463	*27,648*
676	*9,800*	2,091	*1,544*	5,278	*3,896*	10,557	*7,791*	19,720	*14,553*	38,244	*28,224*
690	*10,000*	2,134	*1,575*	5,386	*3,975*	10,772	*7,950*	20,122	*14,850*	39,024	*28,800*

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General Maintenance

Maintenance

Maintenance should follow each period of use to keep the TWLC hydraulic torque wrench in good working condition.

TWLC Hydraulic Torque Wrench

1. Wipe away any debris that may have accumulated, particularly around the swivel manifold and hydraulic couplings.
2. See Figure 5. Remove the drive head from the body. Inspect the following components:
   - Hydraulic couplings for signs of damage.
   - Shuttle pins to verify they are present and spring freely.
   - Head/body pin retainer to verify it is undamaged and operates correctly.
   - Swivel manifold to verify the retaining ring is present and fitted correctly.
3. See Figure 5. Lubricate the areas of the body using Revol R5 Moly Anti Seize. The drive head should be reassembled onto the body for storage to prevent debris from getting into the drive mechanism.

NOTE: The TWLC torque wrench drive components must be lubricated using the specified product only. Using alternative lubricants will affect the torque wrench and might lead to premature component failure.

4. Lightly spray the hydraulic torque wrench with water-repellent spray before placing in storage.

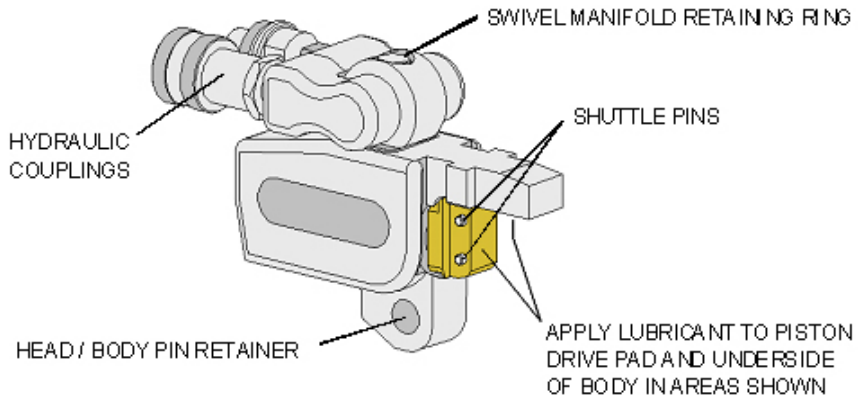

Figure 5. TWLC Hydraulic Torque Wrench Maintenance

Hoses

1. Clean and inspect each hydraulic hose and quick-connect coupling. Check the entire length of the hose for cuts, abrasions, and damage. Replace the entire hose if any evidence of damage is present.
2. Coat each quick-connect coupling with a water repellent spray.

Maintenance, Service, and Warranty

In addition to post-use maintenance, and to ensure that the Product Warranty remains valid, it is recommended that routine maintenance and servicing be carried out by the Manufacturer or Authorized Service Centre.

Maintenance and servicing should be carried out in accordance with the manufacturer's ‘Equipment Maintenance and Servicing Manual’.

All LDF Torque wrenches are supplied under the Manufacturers’ standard terms and conditions.

All components shall be guaranteed for a period of twelve months from the date of purchase against material defects and workmanship. All components shall be guaranteed for a period of twelve months from the date of purchase against defects arising from normal use, with the following exclusions:

- Hydraulic seals and back-up rings
- Bushes and bearings
- O-ring seals
- Quick-disconnect couplings
- Labels and decals
- Springs
- Circlips
- Paints and coatings
- Plastic screws and plugs

End of Life and Disposal

In accordance with our End of Life Policy, should the product be no longer required for use, it should be returned to TTS Ltd where it shall be disposed of in a safe and environmentally friendly manner.

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Troubleshooting

Fault	Possible Cause	Remedy
Cylinder will not advance. Cylinder will not retract.	1. Coupling not fully mated. 2. Cylinder seal leakage. 3. Pump unit. 4. Faulty coupling.	1. Check coupling. 2. Replace seal. 3. Check pump unit. 4. Replace coupling.
Torque wrench operates backwards.	1. Reversed couplings.	1. Check pump, hose, and torque wrench for cross connection.
Pressure will not build.	1. Cylinder seal leakage. 2. Swivel seal leakage. 3. Defective pump unit.	1. Change seals. 2. Change seals. 3. Check pump unit.
Pressure builds, but wrench does not move.	1. Hose restriction. 2. Coupling not fully assembled.	1. Change hose. 2. Fully tighten coupling.
Slow torque wrench operation.	1. Hose restriction. 2. Coupling not fully assembled. 3. Pump flow rate too small.	1. Change hose. 2. Fully tighten coupling. 3. Use higher flow pump.
Erratic or slow retraction speed.	1. Hose restriction. 2. Coupling not fully assembled.	1. Change hose. 2. Fully tighten coupling.
Torque wrench does not ratchet.	1. Broken drive shoe. 2. Jammed drive shoe. 3. Damaged ratchet.	1. Replace drive shoe. 2. Check drive shoe and spring. 3. Check/replace ratchet.
Ratchet jumps while driving.	1. Worn/damaged ratchet. 2. Worn/damaged drive shoe. 3. Wrench incorrectly retracted. 4. Weak/snapped drive shoe spring.	1. Replace ratchet and drive shoe. 2. Replace ratchet and drive shoe. 3. Allow time to fully retract. 4. Replace springs.
Difficulty in hose connection.	1. Pressure within hose. 2. Damaged coupling.	1. Vent hose. 2. Replace coupling.

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Repair Procedures

It is recommended that full servicing is carried out on an annual basis by the manufacturer or approved service agent (other than maintenance, lubrication, and emergency seal replacement). All components shall be inspected and critical components subjected to nondestructive testing. Hydraulic torque wrenches will be pressure tested and issued with test certification.

Although it is possible to disassemble the TWLC hydraulic torque wrench on site, it is recommended that this operation be carried out in a clean workshop environment, as debris can severely affect the performance of the seals and other components. Eye protection should be worn at all times during tool assembly and disassembly.

General servicing/repair can be carried out in three specific areas of the hydraulic torque wrench. This allows servicing and lubricating of specific components without complete stripdown. The three servicing areas are:

- Direct fit head components and lubrication.
- Multiswivel manifold components.
- Hydraulic cylinder/body components.

Full servicing indicates that all three areas are serviced.

Figure 6. Three Off Shoulder Screws

Figure 7. Left-Hand Sideplate

Torque Wrench Head Disassembly

The direct fit head components should be lubricated at regular intervals (typically every six months under normal use). Component lubrication is carried out as follows:

1. If assembled, detach the quick-change head from the drive body.
2. See Figure 6. Remove the three off shoulder screws.
3. See Figure 7. Lift away the LH sideplate.
4. See the Parts List. Remove the crank assembly, and remove the slider.
5. Remove the ratchet, drive shoe, and springs.

Thoroughly clean all components, removing the old lubricant using a mild degreasing agent. Inspect all components for damage and/or excessive wear. Inspect the ratchet and drive shoe teeth for damage, cracks, etc. Any substandard component must be replaced immediately using genuine parts supplied by SPX Bolting Systems.

Torque Wrench Head Assembly

Before assembly, apply a liberal coat of Revol R5 Moly Anti Seize to the following areas:

- Inside surfaces of both LH and RH sideplates.
- Slider component (all surfaces).
- The pocket where the drive shoe is located within the crank (not the crank bore).
- The driving head of the crank that assembles into the slider.
- LH and RH sideplate journals.
- Ratchet journals (not the teeth).

IMPORTANT: Do not apply lubricant to the ratchet and drive shoe teeth.

The hydraulic torque wrench drive components must be lubricated using the specified product only. Using alternative lubricants will affect the output and possibly lead to premature component failures.

1. Lay the LH sideplate on a flat surface. Place the slider into position and verify the pin on the slider face engages with the guide groove in the sideplate.
2. Assemble the ratchet into the LH sideplate. Check that the ratchet teeth are driving in the correct direction.
3. Place the crank over the ratchet, and engage the drive head of the crank into the slider.
4. See parts list. Install the drive shoe and springs. Verify that the ratchet teeth are driving in the correct direction and engaged with the drive shoe teeth.
5. Assemble the RH sideplate. Apply specified lubricant to each of the three shoulder screws and tighten in accordance with the following torque specifications.

Head Size	Front Screw		Rear Screws	
	Nm	in-lb	Nm	in-lb
TWL2	10	89	10	89
TWL4	10	89	12	106
TWL8	12	106	20	177
TWL15	20	177	40	354
TWL30	40	354	80	708

6. Manually rotate the ratchet verifying free movement and correct ratcheting action.

Following stripdown and/or lubrication, the hydraulic torque wrench should be calibrated to verify that the torque output is within specified limits.

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Multiswivel Manifold Disassembly

The multiswivel manifold should only be removed for seal replacement or during full servicing. Removal and stripdown of the multiswivel manifold is done as follows:

1. Disconnect the hydraulic torque wrench from the power supply.
2. See Figure 8. Remove the multiswivel yoke screw.
3. See Figure 9. Disengage the multiswivel yoke by rotating the advance yoke away from the retract yoke, disengaging the keys. Pull each yoke away from the banjo.
4. Unscrew and remove the four off screws that attach the post to the wrench body. The TWL2 body has an integral top plate that will not have the four screws to remove. Refer to Parts List.
5. Lift out the multiswivel post. Remove and discard the port seals and post seals.

Clean and inspect all components including the hydraulic couplings. If the hydraulic couplings are damaged, remove and replace with new (multiswivel yoke threads are 1/4-in. NPT). Inspect the components for scoring, pitting, and damage, which could impair the sealing ability, and replace as necessary.

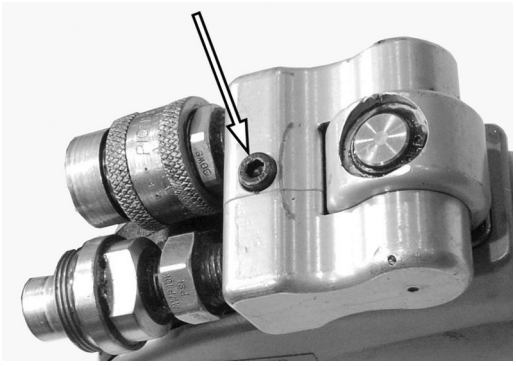


Figure 8. Yoke Screw

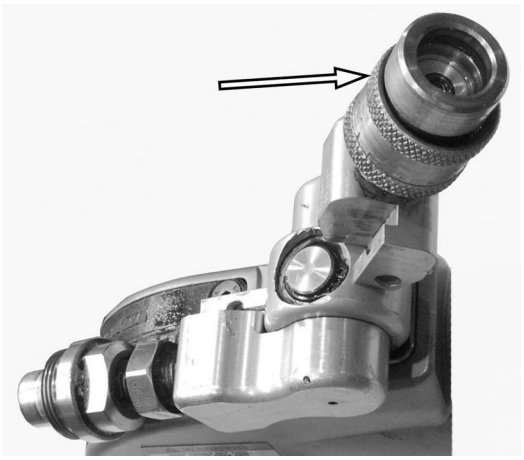


Figure 9. Rotated Yoke

Multiswivel Manifold Assembly

NOTE: All seals should be new and lubricated with clean hydraulic fluid or seal assembly paste before installation.

1. Install the new o-ring seals into the base of the multiswivel post.
2. Attach the multiswivel post to the hydraulic torque wrench body using the four off screws. Apply a drop of low-strength, thread-locking adhesive, and torque the screws to 3.5 Nm (31 in-lb).
3. Assemble three new o-ring seals to the multiswivel post.
4. Assemble four new o-ring seals to the multiswivel banjo.
5. Carefully push the banjo onto the post, ensuring the seals do not get damaged.
6. Attach the banjo circlip to the post.
7. Assemble the advance and retract yokes to the banjo.

IMPORTANT: Be sure to install the advance and retract yokes onto the banjo correctly. The banjo is hard stamped with A (advance) and R (retract) to indicate the correct position of the associated yoke. Reversal of the yokes will cause the torque wrench to malfunction and can lead to damage.

8. Rotate the yokes around the banjo until the yoke keyways engage.
9. Clamp the advance and retract yokes together by installing the yoke screw and torquing to 5 Nm (44 in-lb).
10. Check the operation of the multiswivel manifold by rotating and tilting. Movement should be smooth and free.
11. Test the operation of the hydraulic torque wrench by connecting to the appropriate pump unit. Keeping hands clear of the torque wrench, advance and retract the torque wrench several times, and observe the movement of the shuttle mechanism to check for fee and correct movement. Apply full pressure to the torque wrench (690 bar/10,000 psi advance; 103 bar/1,500 psi retract), and check for leaks.

CAUTION: Operating the hydraulic torque wrench without the head attached exposes the moving piston drive mechanism. Care should be taken to prevent trapped fingers or other injury.

NOTE: If the hydraulic couplings were removed, verify that they are installed into the correct yoke. The male coupling assembles into the advance yoke and the female coupling assembles into the retract yoke. Apply hydraulic thread sealant to the hydraulic coupling thread before assembly. It is not advised to use thread sealing tape as debris from the sealing tape can contaminate the system.

Hydraulic Cylinder/Body Disassembly

It is only necessary to remove the hydraulic cylinder/body components if seal replacement is required. Seal replacement is carried out as follows:

1. Verify body is fully retracted. Disconnect the unit from the power supply. If attached, remove the body from the direct fit head.
2. Attach open ended couplings to the multiswivel manifold.
3. Pull the shuttle forward sufficiently to gain access to the gland. Be prepared to catch fluid spillage vented from the retract coupling.
4. See Figures 10 and 11. Using a pin wrench, unscrew the gland.

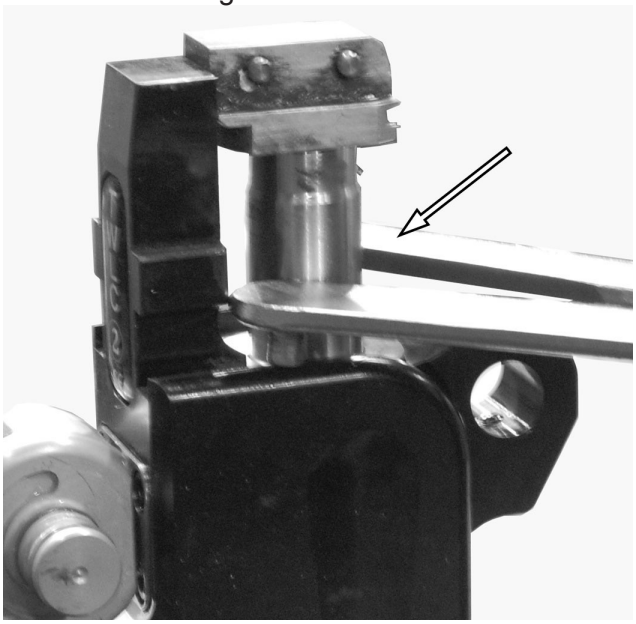
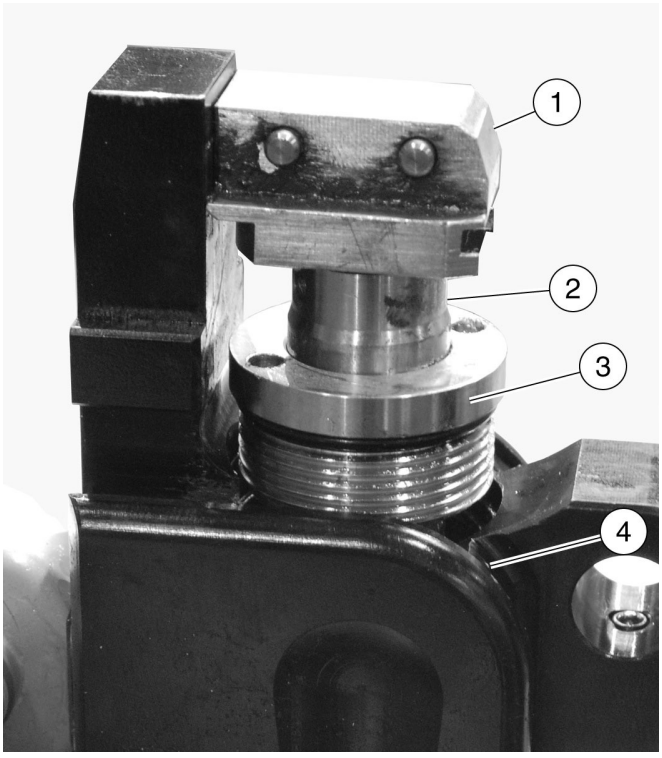


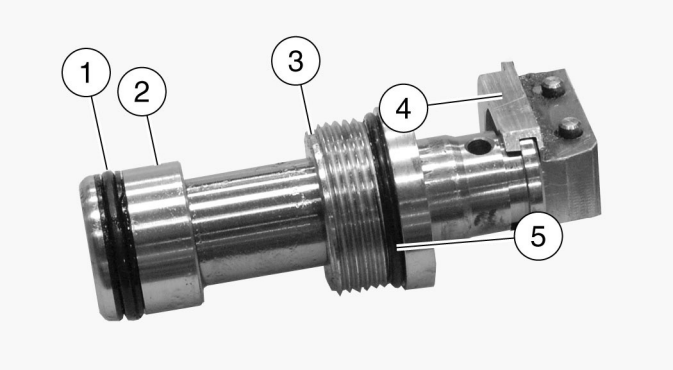
Figure 10. Pin Wrench Unscrewing Gland



Item	Description
1	Shuttle
2	Piston rod
3	Gland
4	Body

Figure 11. Gland Location

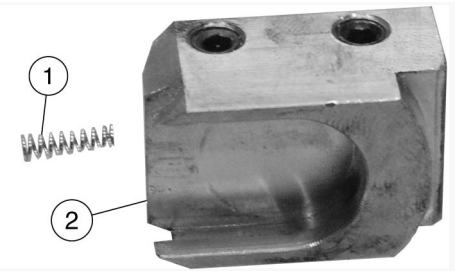
5. See Figure 12. Withdraw the entire piston assembly out of the body.



Item	Description
1	Piston seal
2	Piston
3	Gland
4	Shuttle
5	Gland o-ring seal

Figure 12. Piston Assembly

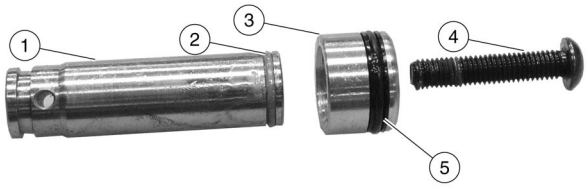
6. See Figure 13. Slide the shuttle from the piston rod. Take care not to lose the shuttle spring located inside the shuttle's T-slot.
7. Slide the gland from the piston rod. Remove and discard the gland rod seal and o-ring seal.



Item	Description
1	Spring
2	Shuttle

Figure 13. Shuttle Assembly

8. See Figure 14. Grip the piston rod in a soft-jawed vice and remove the piston screw. To prevent the piston rod turning, a rod may be inserted through the hole in the end nearest the shuttle.
9. Remove the piston from the piston rod. Remove and discard the piston seal and the piston rod seal.
10. Clean and inspect all components for scoring, pitting, and damage, and replace as necessary. Inspect the bore of the body, piston and rod for defects that could impair the sealing ability.
11. Verify that the spring-loaded shuttle pins move freely, and check the condition of the shuttle pin ends for damage.



Item	Description
1	Piston rod
2	Piston rod o-ring seal
3	Piston
4	Screw
5	Piston seal

Figure 14. Piston Disassembled

Hydraulic Cylinder/Body Assembly

Note: All seals should be new and lubricated with clean hydraulic fluid or seal assembly paste before installation.

1. Assemble a new rod seal and a new o-ring seal onto the gland. Assemble a new piston seal onto the piston, and verify that the seal backup rings' joints are rotated 180° apart.
2. Assemble the piston onto the piston rod, taking care not to damage the seal. Grip the piston rod in a soft-jawed vice. To prevent the piston rod turning, a rod may be inserted through the hole in the end nearest the shuttle (some have flats that allow a wrench to be used). Apply a small amount of low-strength thread-locking adhesive (1 drop) to the piston screw threads, and tighten in accordance with the torque specifications.

Body Size	Torque, Nm (in-lb)
TWL2	20 (177)
TWL4	20 (177)
TWL8	40 (354)
TWL15	60 (531)
TWL30	60 (531)

3. Lubricate the piston rod with clean hydraulic fluid, and slide the gland onto the piston rod (threads first).
4. Assemble the shuttle on the piston rod, ensuring that the shuttle spring remains in position.
5. The piston assembly (piston, piston rod, gland, and shuttle) is intended to be inserted into the body as one complete unit. Note that the shuttle is designed to be spring-loaded up against the underside of the body/top plate, and therefore, needs to be pressed down toward the piston rod as the assembly is installed.
6. With the seals and bores coated in clean hydraulic fluid, insert the piston assembly into the body cylinder bore. Take care not to damage the seals or dislodge the backup rings as the piston enters the bore. Screw in the gland and tighten using a pin wrench.

CAUTION: Operating the hydraulic torque wrench without the head attached exposes the moving piston drive mechanism. Care should be take to prevent trapped fingers or other injury.

7. Test the operation of the hydraulic torque wrench by connecting to the appropriate pump unit. Keeping hands clear of the torque wrench, advance and retract the torque wrench several times, and observe the movement of the shuttle mechanism to check for free and correct movement. Apply full pressure to the torque wrench (690 bar/10,000 psi advance; 103 bar/1,500 psi retract), and check for leaks.

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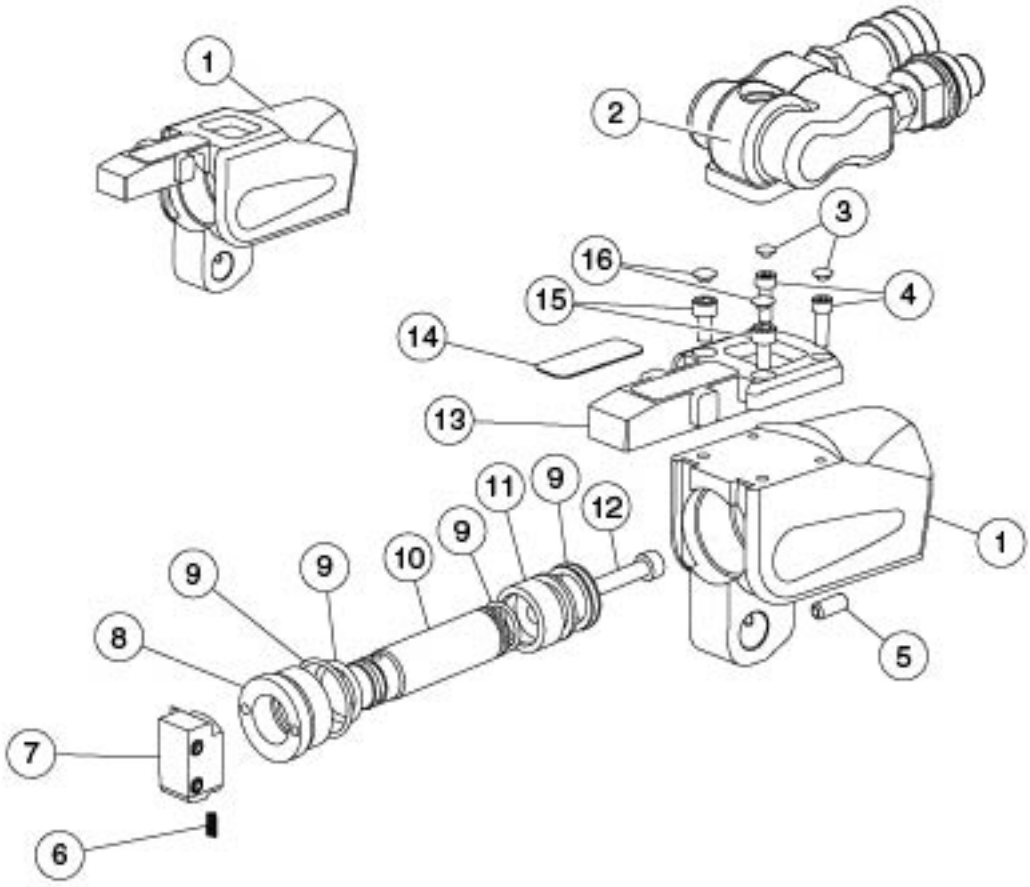
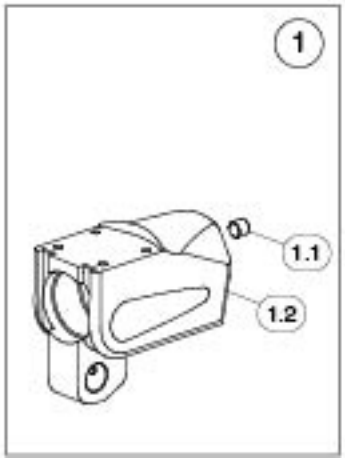
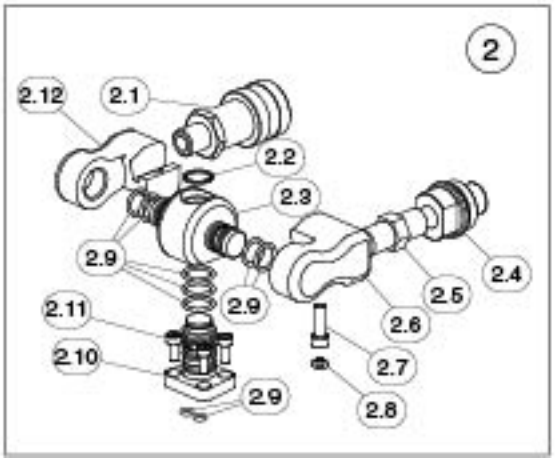
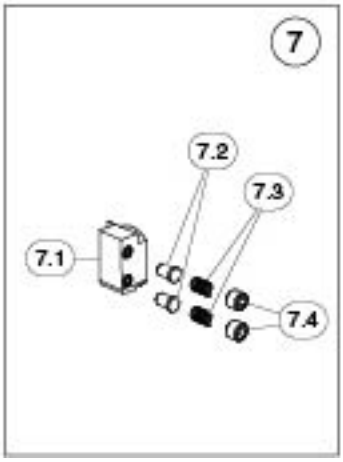
Parts Lists









TWLC2/4 Torque Wrench Parts List

Item No.	Part No.		Qty	Description
	TWLC2	TWLC4		
1	**LDFAS020002**	**LDFAS040002**	1	**TWLC body assembly**
1.1	**STDFA000070**	**STDFA000070**	1	–Plug
1.2	**LDFBD020001**	**LDFBD040001**	1	–TWLC body

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Item No.	Part No.		Qty	Description
	TWLC2	TWLC4		
2	**DFTAS010001**	**DFTAS010001**	1	**Multiswivel manifold assembly**
2.1	**STDHC000005**	**STDHC000005**	1	–Female coupling
2.2	**STDRC000041**	**STDRC000041**	1	–Clip
2.3	**DFTSB010001**	**DFTSB010001**	1	–Multiswivel banjo
2.4	**STDHC000004**	**STDHC000004**	1	–Male coupling
2.5	**INTHC000002**	**INTHC000002**	1	–Adaptor
2.6	**DFTAY010001**	**DFTAY010001**	1	–Multiswivel advance yoke
2.7	**STDFA000027**	**STDFA000027**	1	–Screw
2.8	**STDST000078**	**STDST000078**	1	–Cap
2.9	**Multiswivel Seal Kit DFTAS010004**	**Multiswivel Seal Kit DFTAS010004**	4	–Seal
			2	–Seal
			3	–Seal
2.10	**DFTSP010001**	**DFTSP010001**	1	–Multiswivel post
2.11	**STDFA000025**	**STDFA000025**	4	–Screw
2.12	**DFTAS010003**	**DFTAS010003**	1	–Multiswivel retract yoke
3	**—**	**STDST000078**	2	Cap
4	**—**	**STDFA000026**	2	Screw
5	**STDST000040**	**STDST000040**	1	Spring plunger
6	**STDST000021**	**STDST000021**	1	Spring
7	**DFTAS020003**	**DFTAS040003**	1	**TWLC shuttle assembly**
7.1	**DFTSH020001**	**DFTSH040001**	1	–TWLC shuttle
7.2	**DFTSP020001**	**DFTSP040001**	2	–TWLC shuttle pin
7.3	**STDST000017**	**STDST000018**	2	–Spring
7.4	**STDFA000056**	**STDFA00058**	2	–Screw
8	**DFTGL020001**	**DFTGL040001**	1	TWLC gland
9	**Body Seal Kit DFTAS020005**	**Body Seal Kit DFTAS040005**	1	Seal
			1	Seal
			1	Seal
			1	Seal
10	**DFTRD020001**	**DFTRD040001**	1	TWLC piston rod
11	**DFTPI020001**	**DFTPI040001**	1	TWLC piston
12	**STDFA000024**	**STDFA000033**	1	Screw
13	**—**	**LDFTP040001**	1	TWLC top plate
14	**LDFLA020001**	**LDFLA040001**	1	TWLC decal
15	**—**	**STDFA000029**	2	Screw
16	**—**	**STDST000079**	2	Cap

*TWLC body has integral top plate.

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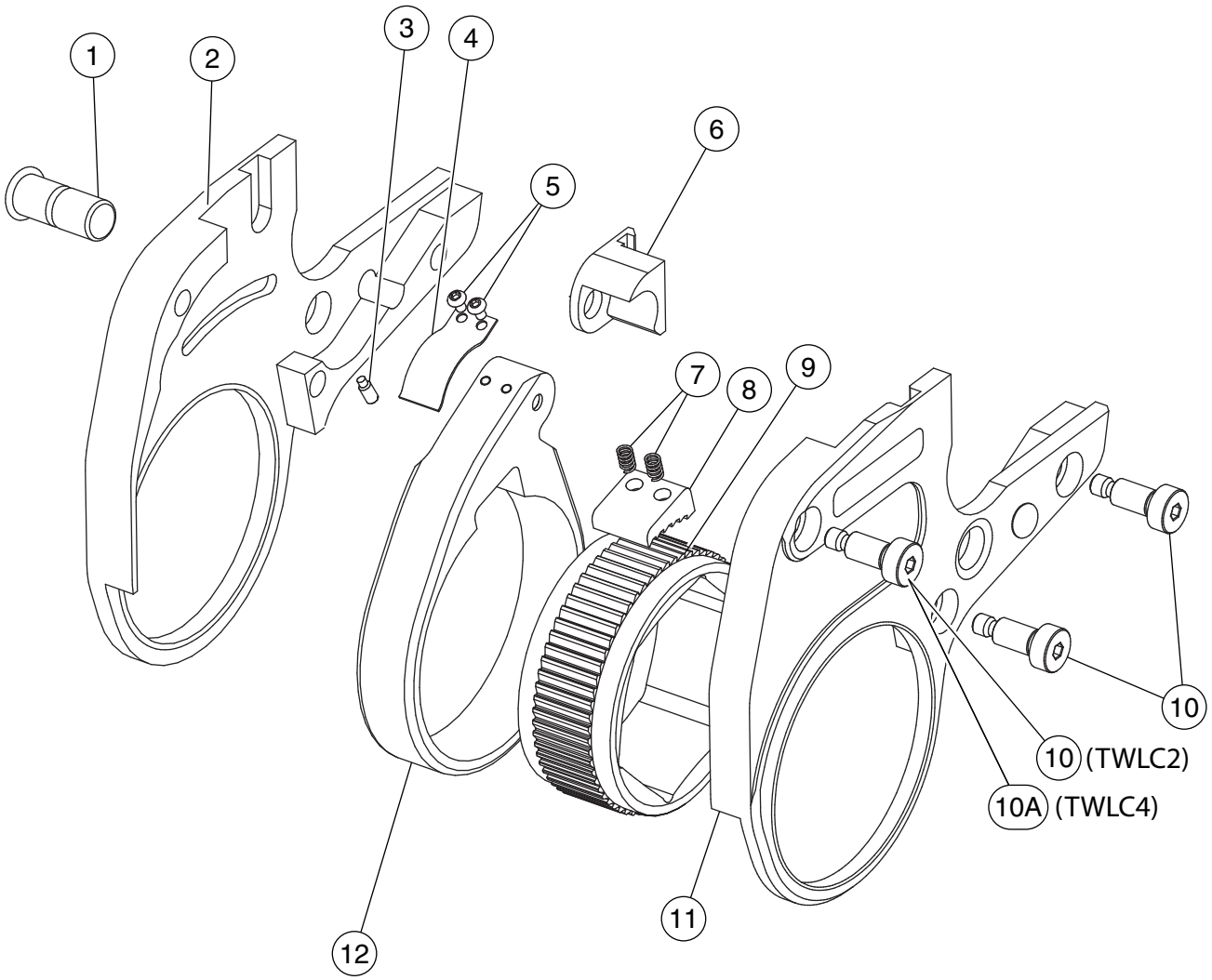
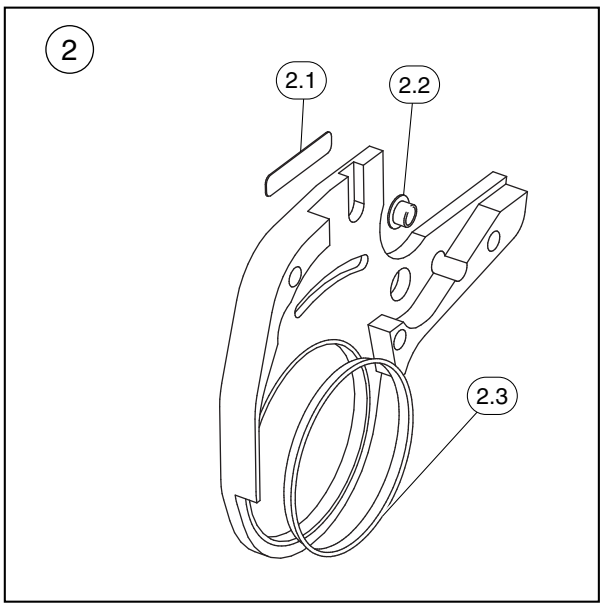
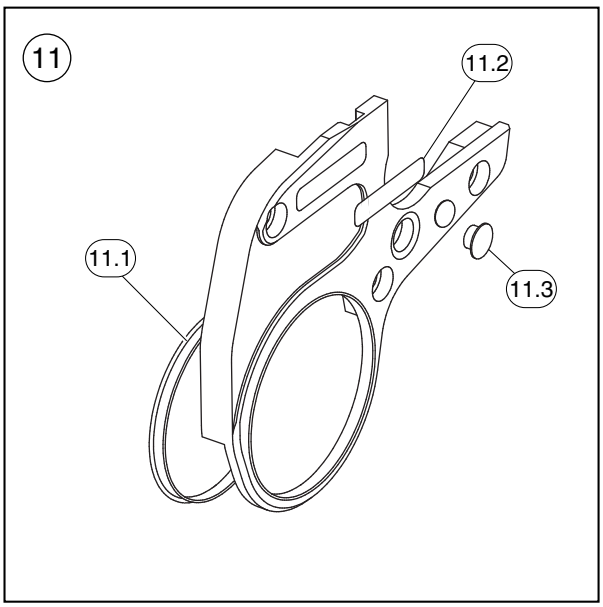
Parts Lists continued







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TWLC2 Torque Wrench: Head Parts List

Head Ref: TWL2-1

Item No.	Part No.	Qty	Description
1	**DFTHP020001**	1	TWL2 head pin
2	**DFTAS020011**	1	**TWL2 left sideplate (head 1) assembly**
2.1	**DFTLA020004**	1	-TWL2 decal
2.2	**STDST000073**	1	-Dome plug
2.3	**DFTSJ020001**	1	-TWL2 sideplate bush (head 1)
3	**STDFA000062**	1	Screw
4	**DFTLS020001**	1	TWL2 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL020001**	1	TWL2 slider
7	**STDST000012**	2	Spring
**8	**DFTDS020001**	1	TWL2 drive shoe (head 1)
**9	**—**	1	TWL2 ratchet (head 1)
—	**DFTRT020001C**	—	1 1/4 in./32 mm A/F (head 1)
	DFTRT020001H	—	1 7/16 in./36 mm A/F (head 1)
10	**STDFA000042**	3	Screw
11	**DFTAS020012**	1	**TWL2 right sideplate (head 1) assembly**
11.1	**DFTSJ020001**	1	-TWL2 sideplate bush (head 1)
11.2	**STDST000073**	1	-Dome plug
11.3	**DFTLA020004**	1	-TWL2 decal
12	**DFTCR020001**	1	TWL2 crank (head 1)

**Replace as a pair.

Head Ref: TWL2-2

Item No.	Part No.	Qty	Description
1	**DFTHP020001**	1	TWL2 head pin
2	**DFTAS020014**	1	**TWL2 left sideplate (head 2) assembly**
2.1	**DFTLA020004**	1	-TWL2 decal
2.2	**STDST000073**	1	-Dome plug
2.3	**DFTSJ020002**	1	-TWL2 sideplate bush (head 2)
3	**STDFA000062**	1	Screw
4	**DFTLS020001**	1	TWL2 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL020001**	1	TWL2 slider
7	**STDST000012**	2	Spring
**8	**DFTDS020002**	1	TWL2 drive shoe (head 2)
**9	**—**	1	TWL2 ratchet (head 2)
—	**DFTRT020002E**	—	1 5/8 in./41 mm A/F (head 2)
10	**STDFA000042**	3	Screw

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Item No.	Part No.	Qty	Description
11	**DFTAS020015**	1	**TWL2 right sideplate (head 2) assembly**
11.1	**DFTSJ020002**	1	-TWL2 sideplate bush (head 2)
11.2	**STDST000073**	1	-Dome plug
11.3	**DFTLA020004**	1	-TWL2 decal
12	**DFTCR020002**	1	TWL2 crank (head 2)

**Replace as a pair.

Head Ref: TWL2-3

Item No.	Part No.	Qty	Description
1	**DFTHP020001**	1	TWL2 head pin
2	**DFTAS020017**	1	**TWL2 left sideplate (head 3) assembly**
2.1	**DFTLA020004**	1	-TWL2 decal
2.2	**STDST000073**	1	-Dome plug
2.3	**DFTSJ020003**	1	-TWL2 sideplate bush (head 3)
3	**STDFA000062**	1	Screw
4	**DFTLS020001**	1	TWL2 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL020001**	1	TWL2 slider
7	**STDST000012**	2	Spring
**8	**DFTDS020003**	1	TWL2 drive shoe (head 3)
**9	**—**	1	TWL2 ratchet (head 3)
—	**DFTRT020003D**	—	1 13/16 in./46 mm A/F (head 3)
10	**STDFA000042**	3	Screw
11	**DFTAS020018**	1	**TWL2 right sideplate (head 3) assembly**
11.1	**DFTSJ020003**	1	-TWL2 sideplate bush (head 3)
11.2	**STDST000073**	1	-Dome plug
11.3	**DFTLA020004**	1	-TWL2 decal
12	**DFTCR020003**	1	TWL2 crank (head 3)

**Replace as a pair.

Head Ref: TWL2-4

Item No.	Part No.	Qty	Description
1	**DFTHP020001**	1	TWL2 head pin
2	**DFTAS020020**	1	**TWL2 left sideplate (head 4) assembly**
2.3	**DFTSJ020004**	1	-TWL2 sideplate bush (head 4)
2.1	**DFTLA020004**	1	-TWL2 decal
2.2	**STDST000073**	1	-Dome plug
3	**STDFA000062**	1	Screw
4	**DFTLS020001**	1	TWL2 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL020001**	1	TWL2 slider

Item No.	Part No.	Qty	Description
7	**STDST000012**	2	Spring
**8	**DFTDS020004**	1	TWL2 drive shoe (head 4)
**9	**—**	1	TWL2 ratchet (head 4)
—	**DFTRT020004D**	—	2 in./50 mm A/F (head 4)
10	**STDFA000042**	3	Screw
11	**DFTAS020021**	1	**TWL2 right sideplate (head 4) assembly**
11.1	**DFTSJ020004**	1	-TWL2 sideplate bush (head 4)
11.2	**STDST000073**	1	-Dome plug
11.3	**DFTLA020004**	1	-TWL2 decal
12	**DFTCR020004**	1	TWL2 crank (head 4)

**Replace as a pair.

Head Ref: TWL2-5

Item No.	Part No.	Qty	Description
1	**DFTHP020001**	1	TWL2 head pin
2	**DFTAS020023**	1	**TWL2 left sideplate (head 5) assembly**
2.1	**DFTLA020004**	1	-TWL2 decal
2.2	**STDST000073**	1	-Dome plug
2.3	**DFTSJ020005**	1	-TWL2 sideplate bush (head 5)
3	**STDFA000062**	1	Screw
4	**DFTLS020001**	1	TWL2 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL020001**	1	TWL2 slider
7	**STDST000012**	2	Spring
**8	**DFTDS020005**	1	TWL2 drive shoe (head 5)
**9	**—**	1	TWL2 ratchet (head 5)
—	**DFTRT020005D**	—	2 3/16 in./55 mm A/F (head 5)
10	**STDFA000042**	3	Screw
11	**DFTAS020024**	1	**TWL2 right sideplate (head 5) assembly**
11.1	**DFTSJ020005**	1	-TWL2 sideplate bush (head 5)
11.2	**STDST000073**	1	-Dome plug
11.3	**DFTLA020004**	1	-TWL2 decal
12	**DFTCR020005**	1	TWL2 crank (head 5)

**Replace as a pair.

Head Ref: TWL2-6

Item No.	Part No.	Qty	Description
1	**DFTHP020001**	1	TWL2 head pin
2	**DFTAS020026**	1	**TWL2 left sideplate (head 6) assembly**
2.1	**DFTLA020004**	1	-TWL2 decal

Item No.	Part No.	Qty	Description
2.2	**STDST000073**	1	-Dome plug
2.3	**DFTSJ020006**	1	-TWL2 sideplate bush (head 6)
3	**STDFA000062**	1	Screw
4	**DFTLS020001**	1	TWL2 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL020001**	1	TWL2 slider
7	**STDST000012**	2	Spring
**8	**DFTDS020006**	1	TWL2 drive shoe (head 6)
**9	**—**	1	TWL2 ratchet (head 6)
—	**DFTRT020006C**	—	2 3/8 in./60 mm A/F (head 6)
10	**STDFA000042**	3	Screw
11	**DFTAS020027**	1	**TWL2 right sideplate (head 6) assembly**
11.1	**DFTSJ020006**	1	-TWL2 sideplate bush (head 6)
11.2	**STDST000073**	1	-Dome plug
11.3	**DFTLA020004**	1	-TWL2 decal
12	**DFTCR020006**	1	TWL2 crank (head 6)

**Replace as a pair.

TWLC4 Torque Wrench: Head Parts List

Head Ref: TWL4-1

Item No.	Part No.	Qty	Description
1	**DFTHP040001**	1	TWL4 head pin
2	**DFTAS040007**	1	**TWL4 left sideplate (head 1) assembly**
2.1	**DFTLA040004**	1	-TWL4 decal
2.2	**STDST000074**	1	-Dome plug
2.3	**DFTSJ040001**	1	-TWL4 sideplate bush (head 1)
3	**STDFA000062**	1	Screw
4	**DFTLS040001**	1	TWL4 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL040001**	1	TWL4 slider
7	**STDST000013**	2	Spring
**8	**DFTDS040001**	1	TWL4 drive shoe (head 1)
**9	**—**	1	TWL4 ratchet (head 1)
**—	**DFTRT040001D**	—	1 5/8 in./41 mm A/F (head 1)
10	**STDFA000045**	2	Screw
10A	**STDFA000043**	1	Screw
11	**DFTAS040008**	1	**TWL4 right sideplate (head 1) assembly**
11.1	**DFTSJ040001**	1	-TWL4 sideplate bush (head 1)
11.2	**STDST000074**	1	-Dome plug
11.3	**DFTLA040004**	1	-TWL4 decal

Item No.	Part No.	Qty	Description
12	**DFTCR040001**	1	TWL4 crank (head 1)

**Replace as a pair.

Head Ref: TWL4-2

Item No.	Part No.	Qty	Description
1	**DFTHP040001**	1	TWL4 head pin
2	**DFTAS040010**	1	**TWL4 left sideplate (head 2) assembly**
2.1	**DFTLA040004**	1	-TWL4 decal
2.2	**STDST000074**	1	-Dome plug
2.3	**DFTSJ040002**	1	-TWL4 sideplate bush (head 2)
3	**STDFA000062**	1	Screw
4	**DFTLS040001**	1	TWL4 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL040001**	1	TWL4 slider
7	**STDST000013**	2	Spring
**8	**DFTDS040002**	1	TWL4 drive shoe (head 2)
**9	**—**	1	TWL4 ratchet (head 2)
—	**DFTRT040002D**	—	1 13/16 in./46 mm A/F (head 2)
10	**STDFA000045**	2	Screw
10A	**STDFA000043**	1	Screw
11	**DFTAS040011**	1	**TWL4 right sideplate (head 2) assembly**
11.1	**DFTSJ040002**	1	-TWL4 sideplate bush (head 2)
11.2	**STDST000074**	1	-Dome plug
11.3	**DFTLA040004**	1	-TWL4 decal
12	**DFTCR040002**	1	TWL4 crank (head 2)

**Replace as a pair.

Head Ref: TWL4-3

Item No.	Part No.	Qty	Description
1	**DFTHP040001**	1	TWL4 head pin
2	**DFTAS040013**	1	**TWL4 left sideplate (head 3) assembly**
2.1	**DFTLA040004**	1	-TWL4 decal
2.2	**STDST000074**	1	-Dome plug
2.3	**DFTSJ040003**	1	-TWL4 sideplate bush (head 3)
3	**STDFA000062**	1	Screw
4	**DFTLS040001**	1	TWL4 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL040001**	1	TWL4 slider
7	**STDST000013**	2	Spring
**8	**DFTDS040003**	1	TWL4 drive shoe (head 3)
**9	**—**	1	TWL4 ratchet (head 3)

Item No.	Part No.	Qty	Description
—	**DFTRT040003D**	—	2 in./50 mm A/F (head 3)
10	**STDFA000045**	2	Screw
10A	**STDFA000043**	1	Screw
11	**DFTAS040014**	1	**TWL4 right sideplate (head 3) assembly**
11.1	**DFTSJ040003**	1	-TWL4 sideplate bush (head 3)
11.2	**STDST000074**	1	-Dome plug
11.3	**DFTLA040004**	1	-TWL4 decal
12	**DFTCR040003**	1	TWL4 crank (head 3)

**Replace as a pair.

Head Ref: TWL4-4

Item No.	Part No.	Qty	Description
1	**DFTHP040001**	1	TWL4 head pin
2	**DFTAS040016**	1	**TWL4 left sideplate (head 4) assembly**
2.1	**DFTLA040004**	1	-TWL4 decal
2.2	**STDST000074**	1	-Dome plug
2.3	**DFTSJ040004**	1	-TWL4 sideplate bush (head 4)
3	**STDFA000062**	1	Screw
4	**DFTLS040001**	1	TWL4 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL040001**	1	TWL4 slider
7	**STDST000013**	2	Spring
**8	**DFTDS040004**	1	TWL4 drive shoe (head 4)
**9	**—**	1	TWL4 ratchet (head 4)
—	**DFTRT040004D**	—	2 3/16 in./55 mm A/F (head 4)
10	**STDFA000045**	2	Screw
10A	**STDFA000043**	1	Screw
11	**DFTAS040017**	1	**TWL4 right sideplate (head 4) assembly**
11.1	**DFTSJ040004**	1	-TWL4 sideplate bush (head 4)
11.2	**STDST000074**	1	-Dome plug
11.3	**DFTLA040004**	1	-TWL4 decal
12	**DFTCR040004**	1	TWL4 crank (head 4)

**Replace as a pair.

Head Ref: TWL4-5

Item No.	Part No.	Qty	Description
1	**DFTHP040001**	1	TWL4 head pin
2	**DFTAS040019**	1	**TWL4 left sideplate (head 5) assembly**
2.1	**DFTLA040004**	1	-TWL4 decal
2.2	**STDST000074**	1	-Dome plug
2.3	**DFTSJ040005**	1	-TWL4 sideplate bush (head 5)

Item No.	Part No.	Qty	Description
3	**STDFA000062**	1	Screw
4	**DFTLS040001**	1	TWL4 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL040001**	1	TWL4 slider
7	**STDST000013**	2	Spring
**8	**DFTDS040005**	1	TWL4 drive shoe (head 5)
**9	**—**	1	TWL4 ratchet (head 5)
**—	**DFTRT040005C**	—	2 3/8 in./60 mm A/F (head 5)
10	**STDFA000045**	2	Screw
10A	**STDFA000043**	1	Screw
11	**DFTAS040020**	1	**TWL4 right sideplate (head 5) assembly**
11.1	**DFTSJ040005**	1	-TWL4 sideplate bush (head 5)
11.2	**STDST000074**	1	-Dome plug
11.3	**DFTLA040004**	1	-TWL4 decal
12	**DFTCR040005**	1	TWL4 crank (head 5)

**Replace as a pair.

Head Ref: TWL4-6

Item No.	Part No.	Qty	Description
1	**DFTHP040001**	1	TWL4 head pin
2	**DFTAS040022**	1	**TWL4 left sideplate (head 6) assembly**
2.1	**DFTLA040004**	1	-TWL4 decal
2.2	**STDST000074**	1	-Dome plug
2.3	**DFTSJ040006**	1	-TWL4 sideplate bush (head 6)
3	**STDFA000062**	1	Screw
4	**DFTLS040001**	1	TWL4 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL040001**	1	TWL4 slider
7	**STDST000013**	2	Spring
**8	**DFTDS040006**	1	TWL4 drive shoe (head 6)
**9	**—**	1	TWL4 ratchet (head 6)
**—	**DFTRT040006C**	—	2 9/16 in./ 65 mm A/F (head 6)
10	**STDFA000045**	2	Screw
10A	**STDFA000043**	1	Screw
11	**DFTAS040023**	1	**TWL4 right sideplate (head 6) assembly**
11.1	**DFTSJ040006**	1	-TWL4 sideplate bush (head 6)
11.2	**STDST000074**	1	-Dome plug
11.3	**DFTLA040004**	1	-TWL4 decal
12	**DFTCR040006**	1	TWL4 crank (head 6)

**Replace as a pair.

Head Ref: TWL4-7

Item No.	Part No.	Qty	Description
1	**DFTHP040001**	1	TWL4 head pin
2	**DFTAS040025**	1	**TWL4 left sideplate (head 7) assembly**
2.1	**DFTLA040004**	1	-TWL4 decal
2.2	**STDST000074**	1	-Dome plug
2.3	**DFTSJ040007**	1	-TWL4 sideplate bush (head 7)
3	**STDFA000062**	1	Screw
4	**DFTLS040001**	1	TWL4 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL040001**	1	TWL4 slider
7	**STDST000013**	2	Spring
**8	**DFTDS040007**	1	TWL4 drive shoe (head 7)
**9	**—**	1	TWL4 ratchet (head 7)
**—	**DFTRT040007C**	—	2 3/4 in./ 70 mm A/F (head 7)
10	**STDFA000045**	2	Screw
10A	**STDFA000043**	1	Screw
11	**DFTAS040026**	1	**TWL4 right sideplate (head 7) assembly**
11.1	**DFTSJ040007**	1	-TWL4 sideplate bush (head 7)
11.2	**STDST000074**	1	-Dome plug
11.3	**DFTLA040004**	1	-TWL4 decal
12	**DFTCR040007**	1	TWL4 crank (head 7)

**Replace as a pair.

Head Ref: TWL4-8

Item No.	Part No.	Qty	Description
1	**DFTHP040001**	1	TWL4 head pin
2	**DFTAS040028**	1	**TWL4 left sideplate (head 8) assembly**
2.1	**DFTLA040004**	1	-TWL4 decal
2.2	**STDST000074**	1	-Dome plug
2.3	**DFTSJ040008**	1	-TWL4 sideplate bush (head 8)
3	**STDFA000062**	1	Screw
4	**DFTLS040001**	1	TWL4 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL040001**	1	TWL4 slider
7	**STDST000013**	2	Spring
**8	**DFTDS040008**	1	TWL4 drive shoe (head 8)
**9	**—**	1	TWL4 ratchet (head 8)
**—	**DFTRT040008C**	—	2 15/16 in./75 mm A/F (head 8)
10	**STDFA000045**	2	Screw
10A	**STDFA000043**	1	Screw
11	**DFTAS040029**	1	**TWL4 right sideplate (head 8) assembly**

Item No.	Part No.	Qty	Description
11.1	**DFTSJ040008**	1	-TWL4 sideplate bush (head 8)
11.2	**STDST000074**	1	-Dome plug
11.3	**DFTLA040004**	1	-TWL4 decal
12	**DFTCR040008**	1	TWL4 crank (head 8)

**Replace as a pair.

Head Ref: TWL4-9

Item No.	Part No.	Qty	Description
1	**DFTHP040001**	1	TWL4 head pin
2	**DFTAS040031**	1	**TWL4 left sideplate (head 9) assembly**
2.1	**DFTLA040004**	1	-TWL4 decal
2.2	**STDST000074**	1	-Dome plug
2.3	**DFTSJ040009**	1	-TWL4 sideplate bush (head 9)
3	**STDFA000062**	1	Screw
4	**DFTLS040001**	1	TWL4 leaf spring
5	**STDFA000088**	2	Screw
6	**DFTSL040001**	1	TWL4 slider
7	**STDST000013**	2	Spring
**8	**DFTDS040009**	1	TWL4 drive shoe (head 9)
**9	**—**	1	TWL4 ratchet (head 9)
—	**DFTRT040009C**	—	3 1/8 in./80 mm A/F (head 9)
10	**STDFA000045**	2	Screw
10A	**STDFA000043**	1	Screw
11	**DFTAS040032**	1	**TWL4 right sideplate (head 9) assembly**
11.1	**DFTSJ040009**	1	-TWL4 sideplate bush (head 9)
11.2	**STDST000074**	1	-Dome plug
11.3	**DFTLA040004**	1	-TWL4 decal
12	**DFTCR040009**	1	TWL4 crank (head 9)

**Replace as a pair.

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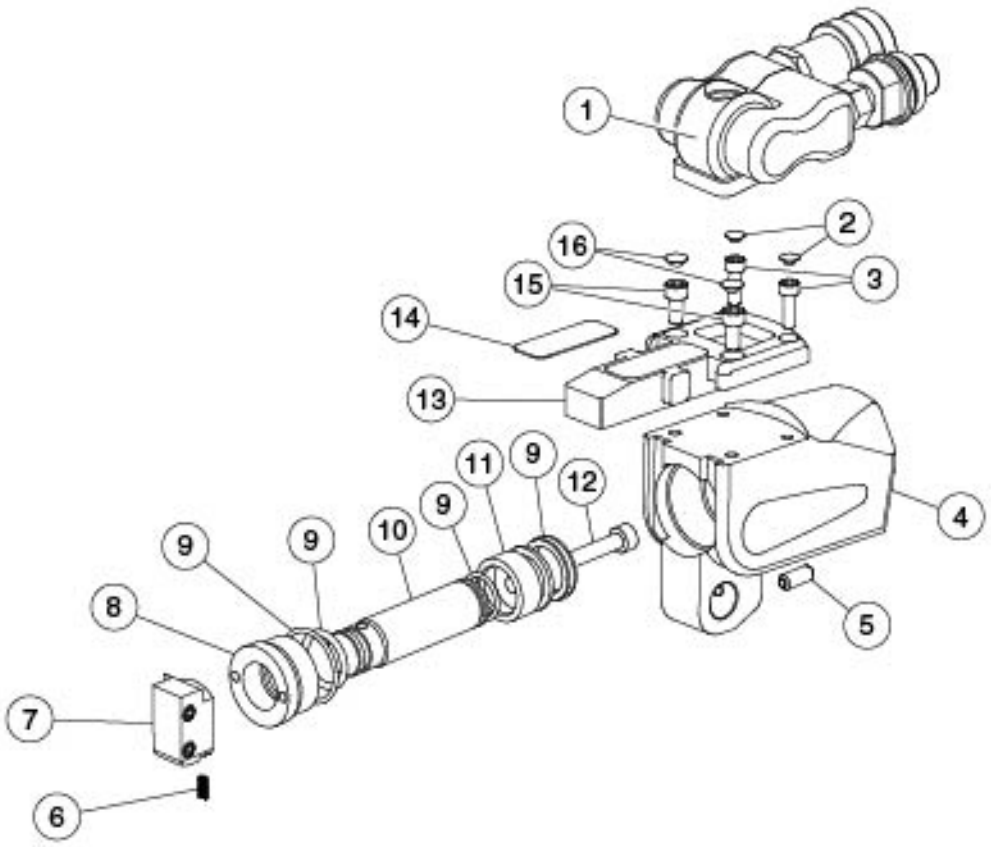
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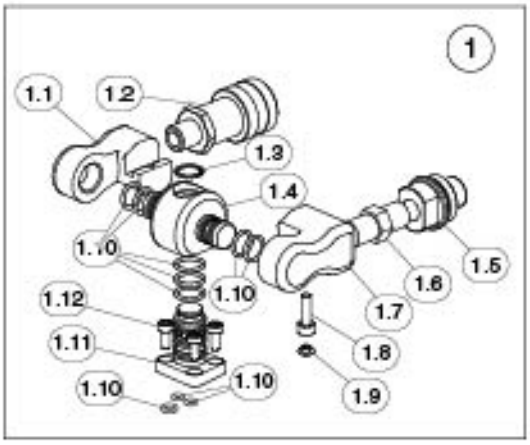
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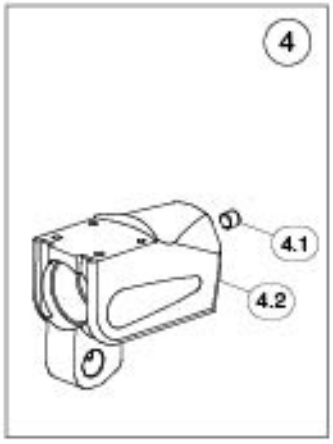
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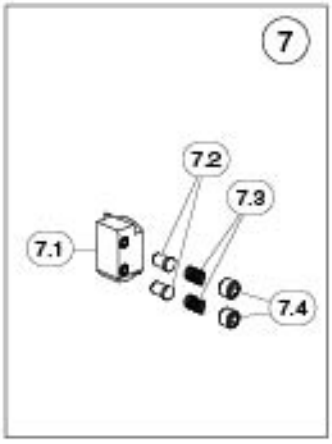
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TWLC8/15/30 Torque Wrench Parts List

Item No.	Part No.			Qty	Description
	TWLC8	TWLC15	TWLC30		
1	**DFTAS020006**	**DFTAS020006**	**DFTAS020006**	1	**Multiswivel manifold assembly**
1.1	**DFTAS020008**	**DFTAS020008**	**DFTAS020008**	1	-Multiswivel retract yoke
1.2	**STDHC000005**	**STDHC000005**	**STDHC000005**	1	-Female coupling
1.3	**STDRC000042**	**STDRC000042**	**STDRC000042**	1	-Clip
1.4	**DFTSB020001**	**DFTSB020001**	**DFTSB020001**	1	-Multiswivel banjo
1.5	**STDHC000004**	**STDHC000004**	**STDHC000004**	1	-Male coupling
1.6	**INTHC000002**	**INTHC000002**	**INTHC000002**	1	-Adaptor
1.7	**DFTAY020001**	**DFTAY020001**	**DFTAY020001**	1	-Multiswivel advance yoke
1.8	**STDFA000027**	**STDFA000027**	**STDFA000027**	1	-Screw
1.9	**STDST000078**	**STDST000078**	**STDST000078**	1	-Cap
1.10	**Multiswivel Seal Kit DFTAS020009**	**Multiswivel Seal Kit DFTAS020009**	**Multiswivel Seal Kit DFTAS020009**	4	-Seal
				3	-Seal
				2	-Seal
				1	-Seal
1.11	**DFTSP020001**	**DFTSP020001**	**DFTSP020001**	1	-Multiswivel post
1.12	**STDFA000025**	**STDFA000025**	**STDFA000025**	4	-Screw
2	**STDST000079**	**STDST000080**	**STDST000081**	2	Cap
3	**STDFA000030**	**STDFA000032**	**STDFA000035**	2	Screw
4	**LDFAS080002**	**LDFAS150002**	**LDFAS300002**	1	**TWLC body assembly**
4.1	**STDFA000071**	**STDFA000071**	**STDFA000071**	1	-Plug
4.2	**LDFBD080001**	**LDFBD150001**	**LDFBD300001**	1	-TWLC body
5	**STDST000041**	**STDST000008**	**STDST000008**	1	Spring plunger
6	**STDST000022**	**STDST000022**	**STDST000023**	1	Spring
7	**DFTAS080003**	**DFTAS150003**	**DFTAS300003**	1	**TWLC shuttle assembly**
7.1	**DFTSH080001**	**DFTSH150001**	**DFTSH300001**	1	-TWLC shuttle
7.2	**DFTSP080001**	**DFTSP150001**	**DFTSP300001**	2	-TWLC shuttle pin
7.3	**STDST000018**	**STDST000019**	**STDST000020**	2	-Spring
7.4	**STDFA000058**	**STDFA000058**	**STDFA000059**	2	-Screw
8	**DFTGL080001**	**DFTGL150001**	**DFTGL300001**	1	TWLC gland
9	**Body Seal Kit DFTAS080005**	**Body Seal Kit DFTAS150005**	**Body Seal Kit DFTAS300005**	1	Seal
				1	Seal
				1	Seal
				1	Seal
10	**DFTRD080001**	**DFTRD150001**	**DFTRD300001**	1	TWLC piston rod
11	**DFTPI080001**	**DFTPI150001**	**DFTPI300001**	1	TWLC piston
12	**STDFA000036**	**STDFA000037**	**STDFA000037**	1	Screw

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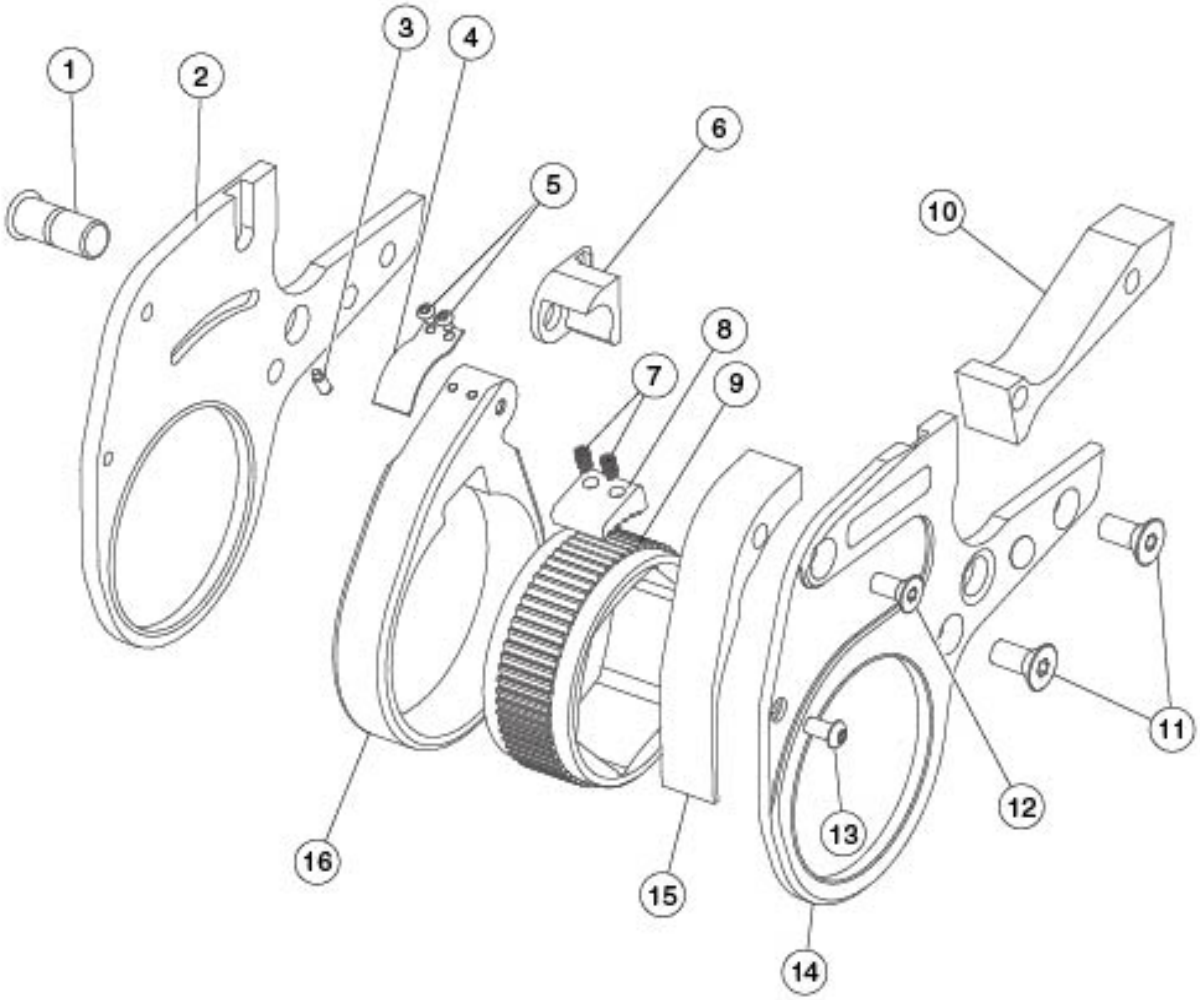
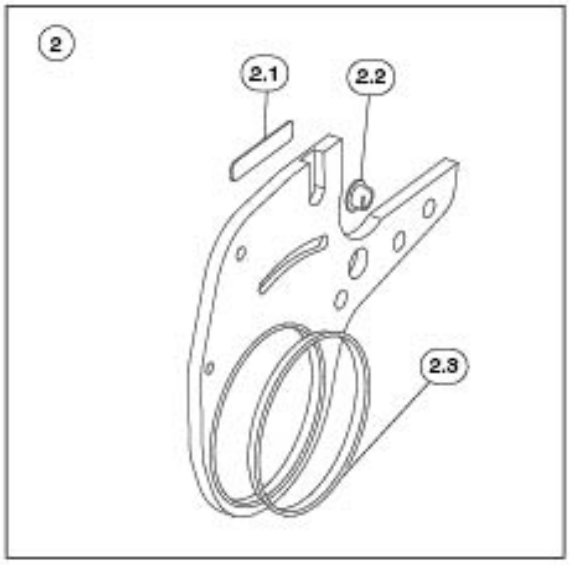
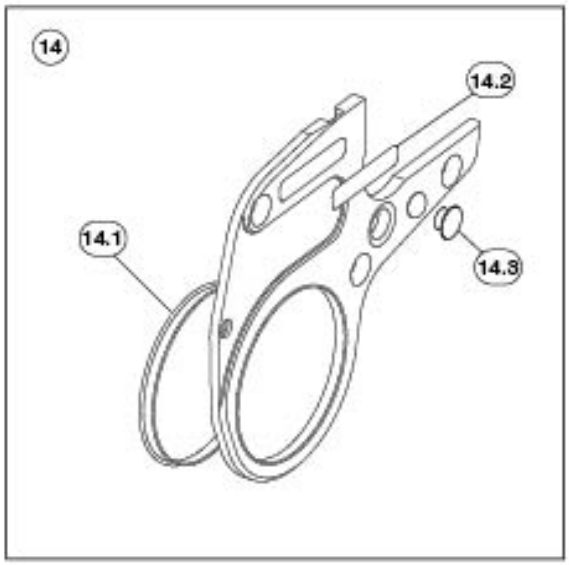
Item No.	Part No.			Qty	Description
	TWLC8	TWLC15	TWLC30		
13	**LDFTP080001**	**LDFTP150001**	**LDFTP300001**	1	TWLC top plate
14	**LDFLA080001**	**LDFLA150001**	**LDFLA300001**	1	TWLC decal
15	**STDFA000032**	**STDFA000034**	**STDFA000035**	2	Screw
16	**STDST000080**	**STDST000081**	**STDST000081**	2	Cap







TWLC8 Torque Wrench: Head Parts List

Head Ref: TWL8-1

Item No.	Part No.	Qty	Description
1	**DFTHP080001**	1	TWL8 head pin
2	**DFTAS080007**	1	**TWL8 left sideplate (head 1) assembly**
2.1	**DFTLA080004**	1	-TWL8 decal
2.2	**STDST000075**	1	-Dome plug
2.3	**DFTSJ080001**	1	-TWL8 sideplate bush (head 1)
3	**STDFA000063**	1	Screw
4	**DFTLS080001**	1	TWL8 leaf spring
5	**STDFA000021**	2	Screw
6	**DFTSL080001**	1	TWL8 slider
7	**STDST000014**	2	Spring
**8	**DFTDS080001**	1	TWL8 drive shoe (head 1)
**9	**—**	1	TWL8 ratchet (head 1)
—	**DFTRT080001C**	—	2 3/8 in./60 mm A/F (head 1)
10	**LDFRS080001**	1	TWL8 rear spacer (head 1)
11	**STDFA000096**	4	Screw
12	**STDFA000014**	2	Screw
13	**STDFA000097**	2	Screw
14	**DFTAS080008**	1	**TWL8 right sideplate (head 1) assembly**
14.1	**DFTSJ080001**	1	-TWL8 sideplate bush (head 1)
14.2	**DFTLA080004**	1	-TWL8 decal
14.3	**STDST000075**	1	-Dome plug
15	**LDFFS080001**	1	TWL8 front spacer (head 1)
16	**DFTCR080001**	1	TWL8 crank (head 1)

**Replace as a pair.

Head Ref: TWL8-2

Item No.	Part No.	Qty	Description
1	**DFTHP080001**	1	TWL8 head pin
2	**DFTAS080010**	1	**TWL8 left sideplate (head 2) assembly**
2.1	**DFTLA080004**	1	-TWL8 decal
2.2	**STDST000075**	1	-Dome plug
2.3	**DFTSJ080002**	1	-TWL8 sideplate bush (head 2)
3	**STDFA000063**	1	Screw
4	**DFTLS080001**	1	TWL8 leaf spring
5	**STDFA000021**	2	Screw
6	**DFTSL080001**	1	TWL8 slider
7	**STDST000014**	2	Spring

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Item No.	Part No.	Qty	Description
**8	**DFTDS080002**	1	TWL8 drive shoe (head 2)
**9	**—**	1	TWL8 ratchet (head 2)
—	**DFTRT080002C**	—	2 9/16 in./65 mm A/F (head 2)
10	**LDFRS080002**	1	TWL8 rear spacer (head 2)
11	**STDFA000096**	4	Screw
12	**STDFA000014**	2	Screw
13	**STDFA000097**	2	Screw
14	**DFTAS080011**	1	**TWL8 right sideplate (head 2) assembly**
14.1	**DFTSJ080002**	1	-TWL8 sideplate bush (head 2)
14.2	**DFTLA080004**	1	-TWL8 decal
14.3	**STDST000075**	1	-Dome plug
15	**LDFFS080002**	1	TWL8 front spacer (head 2)
16	**DFTCR080002**	1	TWL8 crank (head 2)

**Replace as a pair.

Head Ref: TWL8-3

Item No.	Part No.	Qty	Description
1	**DFTHP080001**	1	TWL8 head pin
2	**DFTAS080013**	1	**TWL8 left sideplate (head 3) assembly**
2.1	**DFTLA080004**	1	-TWL8 decal
2.2	**STDST000075**	1	-Dome plug
2.3	**DFTSJ080003**	1	-TWL8 sideplate bush (head 3)
3	**STDFA000063**	1	Screw
4	**DFTLS080001**	1	TWL8 leaf spring
5	**STDFA000021**	2	Screw
6	**DFTSL080001**	1	TWL8 slider
7	**STDST000014**	2	Spring
**8	**DFTDS080003**	1	TWL8 drive shoe (head 3)
**9	**—**	1	TWL8 ratchet (head 3)
—	**DFTRT080003C**	—	2 3/4 in./70 mm A/F (head 3)
10	**LDFRS080003**	1	TWL8 rear spacer (head 3)
11	**STDFA000096**	4	Screw
12	**STDFA000014**	2	Screw
13	**STDFA000097**	2	Screw
14	**DFTAS080014**	1	**TWL8 right sideplate (head 3) assembly**
14.1	**DFTSJ080003**	1	-TWL8 sideplate bush (head 3)
14.2	**DFTLA080004**	1	-TWL8 decal
14.3	**STDST000075**	1	-Dome plug
15	**LDFFS080003**	1	TWL8 front spacer (head 3)
16	**DFTCR080003**	1	TWL8 crank (head 3)

**Replace as a pair.

Head Ref: TWL8-4

Item No.	Part No.	Qty	Description
1	**DFTHP080001**	1	TWL8 head pin
2	**DFTAS080016**	1	**TWL8 left sideplate (head 4) assembly**
2.1	**DFTLA080004**	1	-TWL8 decal
2.2	**STDST000075**	1	-Dome plug
2.3	**DFTSJ080004**	1	-TWL8 sideplate bush (head 4)
3	**STDFA000063**	1	Screw
4	**DFTLS080001**	1	TWL8 leaf spring
5	**STDFA000021**	2	Screw
6	**DFTSL080001**	1	TWL8 slider
7	**STDST000014**	2	Spring
**8	**DFTDS080004**	1	TWL8 drive shoe (head 4)
**9	**—**	1	TWL8 ratchet (head 4)
—	**DFTRT080004C**	—	2 15/16 in./75 mm A/F (head 4)
10	**LDFRS080004**	1	TWL8 rear spacer (head 4)
11	**STDFA000096**	4	Screw
12	**STDFA000014**	2	Screw
13	**STDFA000097**	2	Screw
14	**DFTAS080017**	1	**TWL8 right sideplate (head 4) assembly**
14.1	**DFTSJ080004**	1	-TWL8 sideplate bush (head 4)
14.2	**DFTLA080004**	1	-TWL8 decal
14.3	**STDST000075**	1	-Dome plug
15	**LDFFS080004**	1	TWL8 front spacer (head 4)
16	**DFTCR080004**	1	TWL8 crank (head 4)

**Replace as a pair.

Head Ref: TWC8-5

Item No.	Part No.	Qty	Description
1	**DFTHP080001**	1	TWL8 head pin
2	**DFTAS080019**	1	**TWL8 left sideplate (head 5) assembly**
2.1	**DFTLA080004**	1	-TWL8 decal
2.2	**STDST000075**	1	-Dome plug
2.3	**DFTSJ080005**	1	-TWL8 sideplate bush (head 5)
3	**STDFA000063**	1	Screw
4	**DFTLS080001**	1	TWL8 leaf spring
5	**STDFA000021**	2	Screw
6	**DFTSL080001**	1	TWL8 slider
7	**STDST000014**	2	Spring
**8	**DFTDS080005**	1	TWL8 drive shoe (head 5)
**9	**—**	1	TWL8 ratchet (head 5)
—	**DFTRT080005B**	—	3 1/8 in./80 mm A/F (head 5)

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Item No.	Part No.	Qty	Description
10	**LDFRS080005**	1	TWL8 rear spacer (head 5)
11	**STDFA000096**	4	Screw
12	**STDFA000014**	2	Screw
13	**STDFA000097**	2	Screw
14	**DFTAS080020**	1	**TWL8 right sideplate (head 5) assembly**
14.1	**DFTSJ080005**	1	-TWL8 sideplate bush (head 5)
14.2	**DFTLA080004**	1	-TWL8 decal
14.3	**STDST000075**	1	-Dome plug
15	**LDFFS080005**	1	TWL8 front spacer (head 5)
16	**DFTCR080005**	1	TWL8 crank (head 5)

**Replace as a pair.

Head Ref: TWL8-6

Item No.	Part No.	Qty	Description
1	**DFTHP080001**	1	TWL8 head pin
2	**DFTAS080022**	1	**TWL8 left sideplate (head 6) assembly**
2.1	**DFTLA080004**	1	-TWL8 decal
2.2	**STDST000075**	1	-Dome plug
2.3	**DFTSJ080006**	1	-TWL8 sideplate bush (head 6)
3	**STDFA000063**	1	Screw
4	**DFTLS080001**	1	TWL8 leaf spring
5	**STDFA000021**	2	Screw
6	**DFTSL080001**	1	TWL8 slider
7	**STDST000014**	2	Spring
**8	**DFTDS080006**	1	TWL8 drive shoe (head 6)
**9	**—**	1	TWL8 ratchet (head 6)
—	**DFTRT080006A**	—	3 3/8 in./85 mm A/F (head 6)
	DFTRT080006B	—	3 1/2 in./90 mm A/F (head 6)
10	**LDFRS080006**	1	TWL8 rear spacer (head 6)
11	**STDFA000096**	4	Screw
12	**STDFA000014**	2	Screw
13	**STDFA000097**	2	Screw
14	**DFTAS080023**	1	**TWL8 right sideplate (head 6) assembly**
14.1	**DFTSJ080006**	1	-TWL8 sideplate bush (head 6)
14.2	**DFTLA080004**	1	-TWL8 decal
14.3	**STDST000075**	1	-Dome plug
15	**LDFFS080006**	1	TWL8 front spacer (head 6)
16	**DFTCR080006**	1	TWL8 crank (head 6)

**Replace as a pair.

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Head Ref: TWL8-7

Item No.	Part No.	Qty	Description
1	**DFTHP080001**	1	TWL8 head pin
2	**DFTAS080025**	1	**TWL8 left sideplate (head 7) assembly**
2.1	**DFTLA080004**	1	-TWL8 decal
2.2	**STDST000075**	1	-Dome plug
2.3	**DFTSJ080007**	1	-TWL8 sideplate bush (head 7)
3	**STDFA000063**	1	Screw
4	**DFTLS080001**	1	TWL8 leaf spring
5	**STDFA000021**	2	Screw
6	**DFTSL080001**	1	TWL8 slider
7	**STDST000014**	2	Spring
**8	**DFTDS080007**	1	TWL8 drive shoe (head 7)
**9	**—**	1	TWL8 ratchet (head 7)
—	**DFTRT080007A**	—	3 3/4 in./95 mm A/F (head 7)
	DFTRT080007B	—	3 7/8 in./100 mm A/F (head 7)
10	**LDFRS080007**	1	TWL8 rear spacer (head 7)
11	**STDFA000096**	4	Screw
12	**STDFA000014**	2	Screw
13	**STDFA000097**	2	Screw
14	**DFTAS080026**	1	**TWL8 right sideplate (head 7) assembly**
14.1	**DFTSJ080007**	1	-TWL8 sideplate bush (head 7)
14.2	**DFTLA080004**	1	-TWL8 decal
14.3	**STDST000075**	1	-Dome plug
15	**LDFFS080007**	1	TWL8 front spacer (head 7)
16	**DFTCR080007**	1	TWL8 crank (head 7)

**Replace as a pair.

TWLC15 Torque Wrench: Head Parts List

Head Ref: TWL15-1

Item No.	Part No.	Qty	Description
1	**DFTHP150001**	1	TWL15 head pin
2	**DFTAS150007**	1	**TWL15 left sideplate (head 1) assembly**
2.1	**DFTLA150004**	1	-TWL15 decal
2.2	**STDST000076**	1	-Dome plug
2.3	**DFTSJ150001**	1	-TWL15 sideplate bush (head 1)
3	**STDFA000065**	1	Screw
4	**DFTLS150001**	1	TWL15 leaf spring
5	**STDFA000022**	2	Screw
6	**DFTSL150001**	1	TWL15 slider

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Item No.	Part No.	Qty	Description
7	**STDST000015**	2	Spring
**8	**DFTDS150001**	1	TWL15 drive shoe (head 1)
**9	**—**	1	TWL15 ratchet (head 1)
—	**DFTRT150001C**	—	2 3/4 in./70 mm A/F (head 1)
10	**LDFRS150001**	1	TWL15 rear spacer (head 1)
11	**STDFA000090**	4	Screw
12	**STDFA000089**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS150008**	1	**TWL15 right sideplate (head 1) assembly**
14.1	**DFTSJ150001**	1	-TWL15 sideplate bush (head 1)
14.2	**DFTLA150004**	1	-TWL15 decal
14.3	**STDST000076**	1	-Dome plug
15	**LDFFS150001**	1	TWL15 front spacer (head 1)
16	**DFTCR150001**	1	TWL15 crank (head 1)

**Replace as a pair.

Head Ref: TWL15-2

Item No.	Part No.	Qty	Description
1	**DFTHP150001**	1	TWL15 head pin
2	**DFTAS150010**	1	**TWL15 left sideplate (head 2) assembly**
2.1	**DFTLA150004**	1	-TWL15 decal
2.2	**STDST000076**	1	-Dome plug
2.3	**DFTSJ150002**	1	-TWL15 sideplate bush (head 2)
3	**STDFA000065**	1	Screw
4	**DFTLS150001**	1	TWL15 leaf spring
5	**STDFA000022**	2	Screw
6	**DFTSL150001**	1	TWL15 slider
7	**STDST000015**	2	Spring
**8	**DFTDS150002**	1	TWL15 drive shoe (head 2)
**9	**—**	1	TWL15 ratchet (head 2)
—	**DFTRT150002C**	—	2 15/16 in./75 mm A/F (head 2)
10	**LDFRS150002**	1	TWL15 rear spacer (head 2)
11	**STDFA000090**	4	Screw
12	**STDFA000089**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS150011**	1	**TWL15 right sideplate (head 2) assembly**
14.1	**DFTSJ150002**	1	-TWL15 sideplate bush (head 2)
14.2	**DFTLA150004**	1	-TWL15 decal
14.3	**STDST000076**	1	-Dome plug
15	**LDFFS150002**	1	TWL15 front spacer (head 2)
16	**DFTCR150002**	1	TWL15 crank (head 2)

**Replace as a pair.

Head Ref: TWL15-3

Item No.	Part No.	Qty	Description
1	**DFTHP150001**	1	TWL15 head pin
2	**DFTAS150013**	1	**TWL15 left sideplate (head 3) assembly**
2.1	**DFTLA150004**	1	-TWL15 decal
2.2	**STDST000076**	1	-Dome plug
2.3	**DFTSJ150003**	1	-TWL15 sideplate bush (head 3)
3	**STDFA000065**	1	Screw
4	**DFTLS150001**	1	TWL15 leaf spring
5	**STDFA000022**	2	Screw
6	**DFTSL150001**	1	TWL15 slider
7	**STDST000015**	2	Spring
**8	**DFTDS150003**	1	TWL15 drive shoe (head 3)
**9	**—**	1	TWL15 ratchet (head 3)
—	**DFTRT150003B**	—	3 1/8 in./80 mm A/F (head 3)
10	**LDFRS150003**	1	TWL15 rear spacer (head 3)
11	**STDFA000090**	4	Screw
12	**STDFA000089**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS150014**	1	**TWL15 right sideplate (head 3) assembly**
14.1	**DFTSJ150003**	1	-TWL15 sideplate bush (head 3)
14.2	**DFTLA150004**	1	-TWL15 decal
14.3	**STDST000076**	1	-Dome plug
15	**LDFFS150003**	1	TWL15 front spacer (head 3)
16	**DFTCR150003**	1	TWL15 crank (head 3)

**Replace as a pair.

Head Ref: TWL15-4

Item No.	Part No.	Qty	Description
1	**DFTHP150001**	1	TWL15 head pin
2	**DFTAS150016**	1	**TWL15 left sideplate (head 4) assembly**
2.1	**DFTLA150004**	1	-TWL15 decal
2.2	**STDST000076**	1	-Dome plug
2.3	**DFTSJ150004**	1	-TWL15 sideplate bush (head 4)
3	**STDFA000065**	1	Screw
4	**DFTLS150001**	1	TWL15 leaf spring
5	**STDFA000022**	2	Screw
6	**DFTSL150001**	1	TWL15 slider
7	**STDST000015**	2	Spring
**8	**—**	1	TWL15 ratchet (head 4)
**9	**DFTDS150004**	1	TWL15 drive shoe (head 4)

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Item No.	Part No.	Qty	Description
—	**DFTRT150004A**	—	3 3/8 in./85 mm A/F (head 4)
	DFTRT150004B	—	3 1/2 in./90 mm A/F (head 4)
10	**LDFRS150004**	1	TWL15 rear spacer (head 4)
11	**STDFA000090**	4	Screw
12	**STDFA000089**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS150017**	1	**TWL15 right sideplate (head 4) assembly**
14.1	**DFTSJ150004**	1	-TWL15 sideplate bush (head 4)
14.2	**DFTLA150004**	1	-TWL15 decal
14.3	**STDST000076**	1	-Dome plug
15	**LDFFS150004**	1	TWL15 front spacer (head 4)
16	**DFTCR150004**	1	TWL15 crank (head 4)

**Replace as a pair.

Head Ref: TWL15-5

Item No.	Part No.	Qty	Description
1	**DFTHP150001**	1	TWL15 head pin
2	**DFTAS150019**	1	**TWL15 left sideplate (head 5) assembly**
2.1	**DFTLA150004**	1	-TWL15 decal
2.2	**STDST000076**	1	-Dome plug
2.3	**DFTSJ150005**	1	-TWL15 sideplate bush (head 5)
3	**STDFA000065**	1	Screw
4	**DFTLS150001**	1	TWL15 leaf spring
5	**STDFA000022**	2	Screw
6	**DFTSL150001**	1	TWL15 slider
7	**STDST000015**	2	Spring
**8	**—**	1	TWL15 ratchet (head 5)
**9	**DFTDS150005**	1	TWL15 drive shoe (head 5)
—	**DFTRT150005A**	—	3 3/4 in./95 mm A/F (head 5)
	DFTRT150005B	—	3 7/8 in./100 mm A/F (head 5)
10	**LDFRS150005**	1	TWL15 rear spacer (head 5)
11	**STDFA000090**	4	Screw
12	**STDFA000089**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS150020**	1	**TWL15 right sideplate (head 5) assembly**
14.1	**DFTSJ150005**	1	-TWL15 sideplate bush (head 5)
14.2	**DFTLA150004**	1	-TWL15 decal
14.3	**STDST000076**	1	-Dome plug
15	**LDFFS150005**	1	TWL15 front spacer (head 5)
16	**DFTCR150005**	1	TWL15 crank (head 5)

**Replace as a pair.

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Head Ref: TWL15-6

Item No.	Part No.	Qty	Description
1	**DFTHP150001**	1	TWL15 head pin
2	**DFTAS150022**	1	**TWL15 left sideplate (head 6) assembly**
2.1	**DFTLA150004**	1	-TWL15 decal
2.2	**STDST000076**	1	-Dome plug
2.3	**DFTSJ150006**	1	-TWL15 sideplate bush (head 6)
3	**STDFA000065**	1	Screw
4	**DFTLS150001**	1	TWL15 leaf spring
5	**STDFA000022**	2	Screw
6	**DFTSL150001**	1	TWL15 slider
7	**STDST000015**	2	Spring
**8	**DFTDS150006**	1	TWL15 drive shoe (head 6)
**9	**—**	1	TWL15 ratchet (head 6)
—	**DFTRT150006C**	—	105 mm A/F (head 6)
	DFTRT150006D	—	4 1/4 in. A/F (head 6)
10	**LDFRS150006**	1	TWL15 rear spacer (head 6)
11	**STDFA000090**	4	Screw
12	**STDFA000089**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS150023**	1	**TWL15 right sideplate (head 6) assembly**
14.1	**DFTSJ150006**	1	-TWL15 sideplate bush (head 6)
14.2	**DFTLA150004**	1	-TWL15 decal
14.3	**STDST000076**	1	-Dome plug
15	**LDFFS150006**	1	TWL15 front spacer (head 6)
16	**DFTCR150006**	1	TWL15 crank (head 6)

**Replace as a pair.

Head Ref: TWL15-7

Item No.	Part No.	Qty	Description
1	**DFTHP150001**	1	TWL15 head pin
2	**DFTAS150025**	1	**TWL15 left sideplate (head 7) assembly**
2.1	**DFTLA150004**	1	TWL15 decal
2.2	**STDST000076**	1	Dome plug
2.3	**DFTSJ150007**	1	TWL15 sideplate bush (head 7)
3	**STDFA000065**	1	Screw
4	**DFTLS150001**	1	TWL15 leaf spring
5	**STDFA000022**	2	Screw
6	**DFTSL150001**	1	TWL15 slider
7	**STDST000015**	2	Spring
**8	**DFTDS150007**	1	TWL15 drive shoe (head 7)
**9	**—**	1	TWL15 ratchet (head 7)

Item No.	Part No.	Qty	Description
—	**DFTRT150007A**	—	110 mm A/F (head 7)
	DFTRT150007B	—	115 mm A/F (head 7)
	DFTRT150007C	—	4 5/8 in. A/F (head 7)
10	**LDFRS150007**	1	TWL15 rear spacer (head 7)
11	**STDFA000090**	4	Screw
12	**STDFA000089**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS150026**	1	**TWL15 right sideplate (head 7) assembly**
14.1	**DFTSJ150007**	1	TWL15 sideplate bush (head 7)
14.2	**DFTLA150004**	1	TWL15 decal
14.3	**STDST000076**	1	Dome plug
15	**LDFFS150007**	1	TWL15 front spacer (head 7)
16	**DFTCR150007**	1	TWL15 crank (head 7)

**Replace as a pair.

TWLC30 Torque Wrench: Head Parts List

Head Ref: TWL30-1

Item No.	Part No.	Qty	Description
1	**DFTHP300001**	1	TWL30 head pin
2	**DFTAS300007**	1	**TWL30 left sideplate (head 1) assembly**
2.1	**DFTLA300004**	1	-TWL30 decal
2.2	**STDST000077**	1	-Dome plug
2.3	**DFTSJ300001**	1	-TWL30 sideplate bush (head 1)
3	**STDFA000065**	1	Screw
4	**DFTLS300001**	1	TWL30 leaf spring
5	**STDFA000023**	2	Screw
6	**DFTSL300001**	1	TWL30 slider
7	**STDST000016**	4	Spring
**8	**DFTDS300001**	1	TWL30 drive shoe (head 1)
**9	**—**	1	TWL30 ratchet (head 1)
—	**DFTRT300001A**	—	3 1/8 in./80 mm A/F (head 1)
	DFTRT300001B	—	3 3/8 in./85 mm A/F (head 1)
	DFTRT300001C	—	3 1/2 in./90 mm A/F (head 1)
10	**LDFRS300001**	1	TWL30 rear spacer (head 1)
11	**STDFA000092**	2	Screw
12	**STDFA000090**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS300008**	1	**TWL30 right sideplate (head 1) assembly**
14.1	**DFTSJ300001**	1	-TWL30 sideplate bush (head 1)
14.2	**DFTLA300004**	1	-TWL30 decal

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Item No.	Part No.	Qty	Description
14.3	**STDST000077**	1	-Dome plug
15	**LDFFS300001**	1	TWL30 front spacer (head 1)
16	**DFTCR300001**	1	TWL30 crank (head 1)

**Replace as a pair.

Head Ref: TWL30-2

Item No.	Part No.	Qty	Description
1	**DFTHP300001**	1	TWL30 head pin
2	**DFTAS300010**	1	**TWL30 left sideplate (head 2) assembly**
2.1	**DFTLA300004**	1	-TWL30 decal
2.2	**STDST000077**	1	-Dome plug
2.3	**DFTSJ300002**	1	-TWL30 sideplate bush (head 2)
3	**STDFA000065**	1	Screw
4	**DFTLS300001**	1	TWL30 leaf spring
5	**STDFA000023**	2	Screw
6	**DFTSL300001**	1	TWL30 slider
7	**STDST000016**	4	Spring
**8	**DFTDS300002**	1	TWL30 drive shoe (head 2)
**9	**—**	1	TWL30 ratchet (head 2)
—	**DFTRT300002A**	—	3 3/4 in./95 mm A/F (head 2)
	DFTRT300002B	—	3 7/8 in./100 mm A/F (head 2)
10	**LDFRS300002**	1	TWL30 rear spacer (head 2)
11	**STDFA000092**	2	Screw
12	**STDFA000090**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS300011**	1	**TWL30 right sideplate (head 2) assembly**
14.1	**DFTSJ300002**	1	-TWL30 sideplate bush (head 2)
14.2	**DFTLA300004**	1	-TWL30 decal
14.3	**STDST000077**	1	-Dome plug
15	**LDFFS300002**	1	TWL30 front spacer (head 2)
16	**DFTCR300002**	1	TWL30 crank (head 2)

**Replace as a pair.

Head Ref: TWL30-3

Item No.	Part No.	Qty	Description
1	**DFTHP300001**	1	TWL30 head pin
2	**DFTAS300013**	1	**TWL30 left sideplate (head 3) assembly**
2.1	**DFTLA300004**	1	-TWL30 decal
2.2	**STDST000077**	1	-Dome plug
2.3	**DFTSJ300003**	1	-TWL30 sideplate bush (head 3)
3	**STDFA000065**	1	Screw

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Item No.	Part No.	Qty	Description
4	**DFTLS300001**	1	TWL30 leaf spring
5	**STDFA000023**	2	Screw
6	**DFTSL300001**	1	TWL30 slider
7	**STDST000016**	4	Spring
**8	**DFTDS300003**	1	TWL30 drive shoe (head 3)
**9	**—**	1	TWL30 ratchet (head 3)
—	**DFTRT300003B**	—	105 mm A/F (head 3)
	DFTRT300003C	—	4 1/4 in. A/F (head 3)
	DFTRT300003D	—	110 mm A/F (head 3)
10	**LDFRS300003**	1	TWL30 rear spacer (head 3)
11	**STDFA000092**	2	Screw
12	**STDFA000090**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS300014**	1	**TWL30 right sideplate (head 3) assembly**
14.1	**DFTSJ300003**	1	-TWL30 sideplate bush (head 3)
14.2	**DFTLA300004**	1	-TWL30 decal
14.3	**STDST000077**	1	-Dome plug
15	**LDFFS300003**	1	TWL30 front spacer (head 3)
16	**DFTCR300003**	1	TWL30 crank (head 3)

**Replace as a pair.

Head Ref: TWL30-4

Item No.	Part No.	Qty	Description
1	**DFTHP300001**	1	TWL30 head pin
2	**DFTAS300016**	1	**TWL30 left sideplate (head 4) assembly**
2.1	**DFTLA300004**	1	-TWL30 decal
2.2	**STDST000077**	1	-Dome plug
2.3	**DFTSJ300004**	1	-TWL30 sideplate bush (head 4)
3	**STDFA000065**	1	Screw
4	**DFTLS300001**	1	TWL30 leaf spring
5	**STDFA000023**	2	Screw
6	**DFTSL300001**	1	TWL30 slider
7	**STDST000016**	4	Spring
**8	**DFTDS300004**	1	TWL30 drive shoe (head 4)
**9	**—**	1	TWL30 ratchet (head 4)
—	**DFTRT300004A**	—	115 mm A/F (head 4)
	DFTRT300004B	—	4 5/8 in. A/F (head 4)
10	**LDFRS300004**	1	TWL30 rear spacer (head 4)
11	**STDFA000092**	2	Screw
12	**STDFA000090**	2	Screw
13	**STDFA000093**	2	Screw

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Item No.	Part No.	Qty	Description
14	**DFTAS300017**	1	**TWL30 right sideplate (head 4) assembly**
14.1	**DFTSJ300004**	1	-TWL30 sideplate bush (head 4)
14.2	**DFTLA300004**	1	-TWL30 decal
14.3	**STDST000077**	1	-Dome plug
15	**LDFFS300004**	1	TWL30 front spacer (head 4)
16	**DFTCR300004**	1	TWL30 crank (head 4)

**Replace as a pair.

Head Ref: TWL30-5

Item No.	Part No.	Qty	Description
1	**DFTHP300001**	1	TWL30 head pin
2	**DFTAS300019**	1	**TWL30 left sideplate (head 5) assembly**
2.1	**DFTLA300004**	1	-TWL30 decal
2.2	**STDST000077**	1	-Dome plug
2.3	**DFTSJ300005**	1	-TWL30 sideplate bush (head 5)
3	**STDFA000065**	1	Screw
4	**DFTLS300001**	1	TWL30 leaf spring
5	**STDFA000023**	2	Screw
6	**DFTSL300001**	1	TWL30 slider
7	**STDST000016**	4	Spring
**8	**DFTDS300005**	1	TWL30 drive shoe (head 5)
**9	**—**	1	TWL30 ratchet (head 5)
—	**DFTRT300005A**	—	120 mm A/F (head 5)
	DFTRT300005C	—	5 in. A/F (head 5)
10	**LDFRS300005**	1	TWL30 rear spacer (head 5)
11	**STDFA000092**	2	Screw
12	**STDFA000090**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS300020**	1	**TWL30 right sideplate (head 5) assembly**
14.1	**DFTSJ300005**	1	-TWL30 sideplate bush (head 5)
14.2	**DFTLA300004**	1	-TWL30 decal
14.3	**STDST000077**	1	-Dome plug
15	**LDFFS300005**	1	TWL30 front spacer (head 5)
16	**DFTCR300005**	1	TWL30 crank (head 5)

**Replace as a pair.

Head Ref: TWL30-6

Item No.	Part No.	Qty	Description
1	**DFTHP300001**	1	TWL30 head pin
2	**DFTAS300022**	1	**TWL30 left sideplate (head 6) assembly**
2.1	**DFTLA300004**	1	-TWL30 decal

Item No.	Part No.	Qty	Description
2.2	**STDST000077**	1	-Dome plug
2.3	**DFTSJ300006**	1	-TWL30 sideplate bush (head 6)
3	**STDFA000065**	1	Screw
4	**DFTLS300001**	1	TWL30 leaf spring
5	**STDFA000023**	2	Screw
6	**DFTSL300001**	1	TWL30 slider
7	**STDST000016**	4	Spring
**8	**DFTDS300006**	1	TWL30 drive shoe (head 6)
**9	**—**	1	TWL30 ratchet (head 6)
—	**DFTRT300006A**	—	130 mm A/F (head 6)
	DFTRT300006B	—	5 3/8 in./135 mm A/F (head 6)
10	**LDFRS300006**	1	TWL30 rear spacer (head 6)
11	**STDFA000092**	2	Screw
12	**STDFA000090**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS300023**	1	**TWL30 right sideplate (head 6) assembly**
14.1	**DFTSJ300006**	1	-TWL30 sideplate bush (head 6)
14.2	**DFTLA300004**	1	-TWL30 decal
14.3	**STDST000077**	1	-Dome plug
15	**LDFFS300006**	1	TWL30 front spacer (head 6)
16	**DFTCR300006**	1	TWL30 crank (head 6)

**Replace as a pair.

Head Ref: TWL30-7

Item No.	Part No.	Qty	Description
1	**DFTHP300001**	1	TWL30 head pin
2	**DFTAS300025**	1	**TWL30 left sideplate (head 7) assembly**
2.1	**DFTLA300004**	1	-TWL30 decal
2.2	**STDST000077**	1	-Dome plug
2.3	**DFTSJ300007**	1	-TWL30 sideplate bush (head 7)
3	**STDFA000065**	1	Screw
4	**DFTLS300001**	1	TWL30 leaf spring
5	**STDFA000023**	2	Screw
6	**DFTSL300001**	1	TWL30 slider
7	**STDST000016**	4	Spring
**8	**DFTDS300007**	1	TWL30 drive shoe (head 7)
**9	**—**	1	TWL30 ratchet (head 7)
—	**DFTRT300007B**	—	5 3/4 in./145 mm A/F (head 7)
10	**LDFRS300007**	1	TWL30 rear spacer (head 7)
11	**STDFA000092**	2	Screw
12	**STDFA000090**	2	Screw

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Item No.	Part No.	Qty	Description
13	**STDFA000093**	2	Screw
14	**DFTAS300026**	1	**TWL30 right sideplate (head 7) assembly**
14.1	**DFTSJ300007**	1	-TWL30 sideplate bush (head 7)
14.2	**DFTLA300004**	1	-TWL30 decal
14.3	**STDST000077**	1	-Dome plug
15	**LDFFS300007**	1	TWL30 front spacer (head 7)
16	**DFTCR300007**	1	TWL30 crank (head 7)

**Replace as a pair.

Head Ref: TWL30-8

Item No.	Part No.	Qty	Description
1	**DFTHP300001**	1	TWL30 head pin
2	**DFTAS300028**	1	**TWL30 left sideplate (head 8) assembly**
2.1	**DFTLA300004**	1	TWL30 decal
2.2	**STDST000077**	1	Dome plug
2.3	**DFTSJ300008**	1	TWL30 sideplate bush (head 8)
3	**STDFA000065**	1	Screw
4	**DFTLS300001**	1	TWL30 leaf spring
5	**STDFA000023**	2	Screw
6	**DFTSL300001**	1	TWL30 slider
7	**STDST000016**	4	Spring
**8	**DFTDS300008**	1	TWL30 drive shoe (head 8)
**9	**—**	1	TWL30 ratchet (head 8)
—	**DFTRT300008A**	—	150 mm A/F (head 8)
	DFTRT300008B	—	6 1/8 in./155 mm A/F (head 8)
10	**LDFRS300008**	1	TWL30 rear spacer (head 8)
11	**STDFA000092**	2	Screw
12	**STDFA000090**	2	Screw
13	**STDFA000093**	2	Screw
14	**DFTAS300029**	1	**TWL30 right sideplate (head 8) assembly**
14.1	**DFTSJ300008**	1	-TWL30 sideplate bush (head 8)
14.2	**DFTLA300004**	1	-TWL30 decal
14.3	**STDST000077**	1	-Dome plug
15	**LDFFS300008**	1	TWL30 front spacer (head 8)
16	**DFTCR300008**	1	TWL30 crank (head 8)

**Replace as a pair.

Declaration of Incorporation

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We declare that this product complies with the appropriate ESR's of the following directives,

- 2006/42/EC

Where appropriate the requirements of the following standards have been invoked,

- EN 292/2/91

Product description: HYDRAULIC TORQUE WRENCH.

Model type: TWLC2, 4, 8, 15, 30 LOW CLEARANCE TORQUE WRENCH.

In addition, the goods supplied have been classified as falling into the Sound Engineering Practice (SEP) category according to the EC Pressure Equipment Directive (PED) 97/23/EC.

SPX Bolting Systems is the person authorised to compile the technical file.

SPX Bolting Systems, the manufacturer / supplier, undertake to transmit and / or make available in response to reasoned request, technical file details and other relative information to EEC National Authorities, in electronic or hard copy format

Installation and operation of this equipment must be in accordance with the installation and operating instructions provided. This product must not be put into service until the machinery into which it is incorporated has been declared in conformity with the provisions of the above directives.

The Company Directors are the equally responsible persons. The person named below is empowered to act as signatory on behalf of the Company Directors

Signed: D. Campbell

Printed: DAVID CAMPBELL Date: 6th December 2011