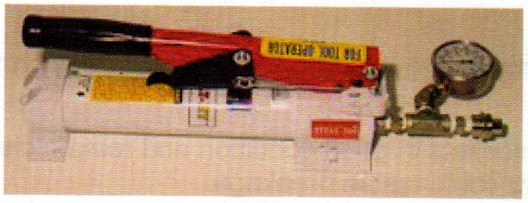
MULT-HY

Tool Operation and Spare Parts Manual

Hydraulic Wrench Operating Manual for the: SQV – LC – F – Y – and Uni-Tool Series







MULT-HY Div. JETYD Corporation
120 Wesley Street, South Hackensack, NJ 07606
Tel: (201) 343-4570 Fax: (201) 820-2545

IMPORTANT SAFETY INFORMATION

WARNING – Read and understand this material before operating or servicing this equipment. Failure to understand how to safely operate this tool could result in an accident causing serious injury or death.

- Only qualified operators should install, operate, adjust, maintain, clean, repair, or transport this machinery.
- Inspect tool before use. Replace any worn or damaged parts. Failure to observe these warnings can result in severe injury or death.
- Keep work area clean and well lit.
- When not in use, wrenches and accessories should be properly stored to avoid deterioration.

WARNING – To help prevent personal injury:

- Always wear eye protection whenever operating hydraulic equipment.
- Always wear hearing protection as required.
- Operation, repair, or maintenance of hydraulic equipment should be performed by a qualified person who understands the proper function of hydraulic equipment per local directives and standards.
- To prevent personal injury, use common sense. Do not use any power equipment under the influence of any mood altering substances.
- Never place your hands or other body parts near a hydraulic fluid leak.
- Never use your hands or other body parts to check for a possible leak.
- High-pressure fluid can be injected under your skin causing serious injury and/or infection.
- Electric motors may spark, causing an explosion when flammable materials are present. Do not operate in an explosive atmosphere or in the presence of conductive liquids. Use an air motor or hand pump instead.
- To prevent electrical shock, make sure the pump is properly grounded and the proper voltage is being used.
- To prevent personal injury, the remote control must only be used by the wrench operator.
- Do not use hydraulic hoses, pump power, or remote control cords as means of moving the equipment.
- Make sure all hydraulic connections are securely attached. Verify that the hydraulic hoses are not kinked.
- Remain clear of the reaction arm during operation. Never put body parts between the reaction arm and the reaction point.
- Always use top quality impact sockets in good condition and remain clear of sockets during operation because hidden flaws could cause breakage.

CAUTION – To prevent wrench damage, always use the properly sized tool and accessories. Do not use a wrench for anything other than the intended purpose.

Instructions Before Use

1. Read and understand all instructions before operating the hydraulic wrench. Most malfunctions in new equipment are the result of improper operation and/or setup. It is the operator's responsibility to read, understand, and follow all safety instructions.
2. Remove the hydraulic 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.
3. Locate a solid, secure reaction point to absorb and counteract the forces created as the hydraulic wrench is operated.
4. Make sure the hydraulic hoses are free of the reaction point.
5. Momentarily pressurize the system. If the wrench tends to "ride up" or "creep," stop and readjust the reaction arm to a more solid and secure reaction point.
6. Cycle the hydraulic cylinder inside the wrench to ensure proper function.

Note: Each time the hydraulic cylinder inside the wrench is extended and retracted, it is called a cycle.

Working Pressure

The maximum working pressure for this hydraulic wrench is 10,000 psi (68,900 kPa). Make sure all hydraulic equipment used with this wrench is rated for 10,000 psi (68,900 kPa) operating pressure.

Hydraulic Connections – Warning!

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

Important – Loose or improperly threaded fittings can be potentially dangerous if pressurized, however, over-tightening can cause premature thread failure. Fittings should only be tightened until they are secure and leak-free.

Electrical Connections

Make sure the power supply is compatible with the requirements of the electric pump motor. Minimize the length of extension cords and be sure they are of adequate gauge and grounded.

Air Connections

Make sure the airflow rating is adequate and compatible prior to pressuring the pump. Make sure all connections are tight and leak-free.

OPERATION

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 (for example, hammering on socket wrench).

General

Each hydraulic 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.

Connecting the System

The hydraulic wrench head and power pack are connected by a 10,000 psi (68,900 kPa) single-line hose assembly. Each end of the hose will have one female connector.

Note: DO NOT switch the hose connector from female to male. It is necessary for the hose to have a female connector to engage the male connector on the hydraulic wrench.

Drive Direction Change

To change the square drive direction, lightly tap on the extended end of the direction control button and it will "slide" through to the other side.

Reaction Arm

Each hydraulic wrench is equipped with a universal reaction arm. The reaction arm is used to absorb and counteract any opposing forces created by the operation of the hydraulic wrench.

Setting Torque

- Electric and Air Pumps

1. Make sure the system is fully connected and the proper power supply is available.
2. Use the Pressure/Torque conversion chart supplied with the wrench to find the required pressure setting. **Note:** On electric or air pumps, 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 by loosening the locking ring on the pressure regulator valve and turning the thumb screw. **Note:** Turn the thumb screw clockwise to increase pressure and counterclockwise to decrease pressure. When decreasing pressure, it is necessary to turn the thumb screw to a pressure setting below what is desired and gradually increase pressure to the desired level.
7. Once the desired pressure is stabilized, release the remote control button and tighten the locking ring.
8. Prior to tightening a nut, press the remote control button and confirm the correct pressure has been set.

- Manual Pumps

  Find the required torque in the Pressure/Torque conversion chart and read across the chart to the corresponding pressure.

APPLYING THE WRENCH

1. Place the proper size impact socket on the square drive and secure it properly with the locking ring and pin. Make sure the square drive is fully engaged into the socket.
2. Place the wrench and socket on the nut. Make sure the socket is fully engaged on the nut.
3. Make sure the reaction arm is placed firmly against a stationary object such as an adjacent nut, flange, equipment housing, etc.

   Note: When positioning the wrench, make sure the hose connection will not hit any stationary object. This may result in snapping a hose connection or breaking the coupler connection.
4. Apply momentary pressure to the system to ensure proper wrench placement.

OPERATING THE WRENCH

Electric or Air Pump

Tightening

1. Make sure the hydraulic wrench and the reaction arm are in position for tightening.
2. Ensure the reaction arm is squarely against a solid reaction point.
3. Press and hold the remote control button while the socket turns.
4. When an audible "click" is heard, the hydraulic cylinder inside the wrench is fully extended and will not turn the socket further.

   Note: The pressure reading on the gauge will go to the preset pressure. This rapid buildup of pressure DOES NOT INDICATE the nut is fully tightened. It only indicates that the hydraulic cylinder is fully extended inside the wrench and cannot turn the socket further.
5. Release the remote control button to allow the hydraulic cylinder inside the wrench to automatically retract until an audible "click" is heard. This completes one cycle.
6. Continue to tighten the nut with successive cycles until the hydraulic cylinder inside the wrench "stalls".
7. Always attempt one final cycle to make sure the "stall" point has been reached and no audible click is heard.
8. Proceed to the next nut.

Loosening

1. Set the pump to 10,000 psi (68,900 kPa).
2. Make sure the hydraulic wrench and the reaction arm are positioned for loosening.
3. Make sure the reaction arm is squarely against a solid reaction point.
4. Press and hold the remote control button.

   Note: Pressure will build up as the socket begins to turn.
5. When an audible "click" is heard, the hydraulic cylinder inside the wrench is fully extended and will not turn the socket further.
6. Release the remote control button to allow the hydraulic cylinder inside the wrench to automatically retract until an audible "click" is heard. This completes one cycle.

7. Continue to loosen the nut with successive cycles until the nut can be removed by hand.

Manual Pumps

1. To operate the hydraulic wrench with a hand pump, make sure the pump is rated at 10,000 psi (68,900 kPa) maximum pressure.
2. Connect the hand pump to the hydraulic wrench with a single-line hose assembly.

Tightening

1. Determine the required pressure.

Manual Pumps (Tightening continued)

2. Make sure the hydraulic wrench and the reaction arm are in the tightening mode.
3. Pump the hand pump to advance the hydraulic cylinder inside the wrench until the socket stops turning.
4. Release the pump pressure. The hydraulic cylinder inside the wrench will automatically retract and an audible "click" will be heard. This completes one cycle.
5. Continue to tighten the nut with successive cycles until the needle on the pump gets close to the required pressure.

   Note: The final torque check is made by paying close attention to the needle on the pressure gauge.
6. Pressurize the wrench until the needle stops on the required pressure.

   Note: When the pressure is released, the wrench will not make the audible "click".
7. Proceed to the next nut.

Loosening

1. Make sure the hydraulic wrench and the reaction arm are on the loosening mode.
2. Pump the hand pump to advance the hydraulic cylinder inside the wrench. As pressure builds, the bolt will begin to loosen.
3. Stop pumping when the socket stops turning.
4. Release the pump pressure. The hydraulic cylinder inside the wrench will automatically retract and an audible "click" will be heard. This completes one cycle.
5. Continue to loosen the nut with successive cycles until the nut can be removed by hand.
6. Proceed to the next nut.

MAINTENANCE

Preventative Maintenance

Inspect hoses and fittings before every use. Connections must be clean and properly connected before each use. Replace worn or damaged fittings. Keep tools clean and protected from damage.

Disassembly Instructions

Removing the Square Drive

1. Remove the two shroud screws.
2. Rotate the square drive until the ratchet retaining screw lines up with the hole in the front of the drive plate.
3. Unscrew the set screw so the square drive can easily slide out.

Disassembly of Cylinder

1. Using a manual pump, advance the wrench until the roll pin can be seen through the access holes in the side of the housing.
2. With a punch and hammer, remove the roll pin, which connects the cylinder rod to the rod end.
3. Release the pressure on the pump and the cylinder will retract. Remove the coupler.
4. Using the proper hex socket, loosen the end cap and slowly unscrew it.

WARNING – To prevent personal injury, proceed with caution. Remember, the spring is compressed and is applying pressure against the end cap.

5. Remove the spring.

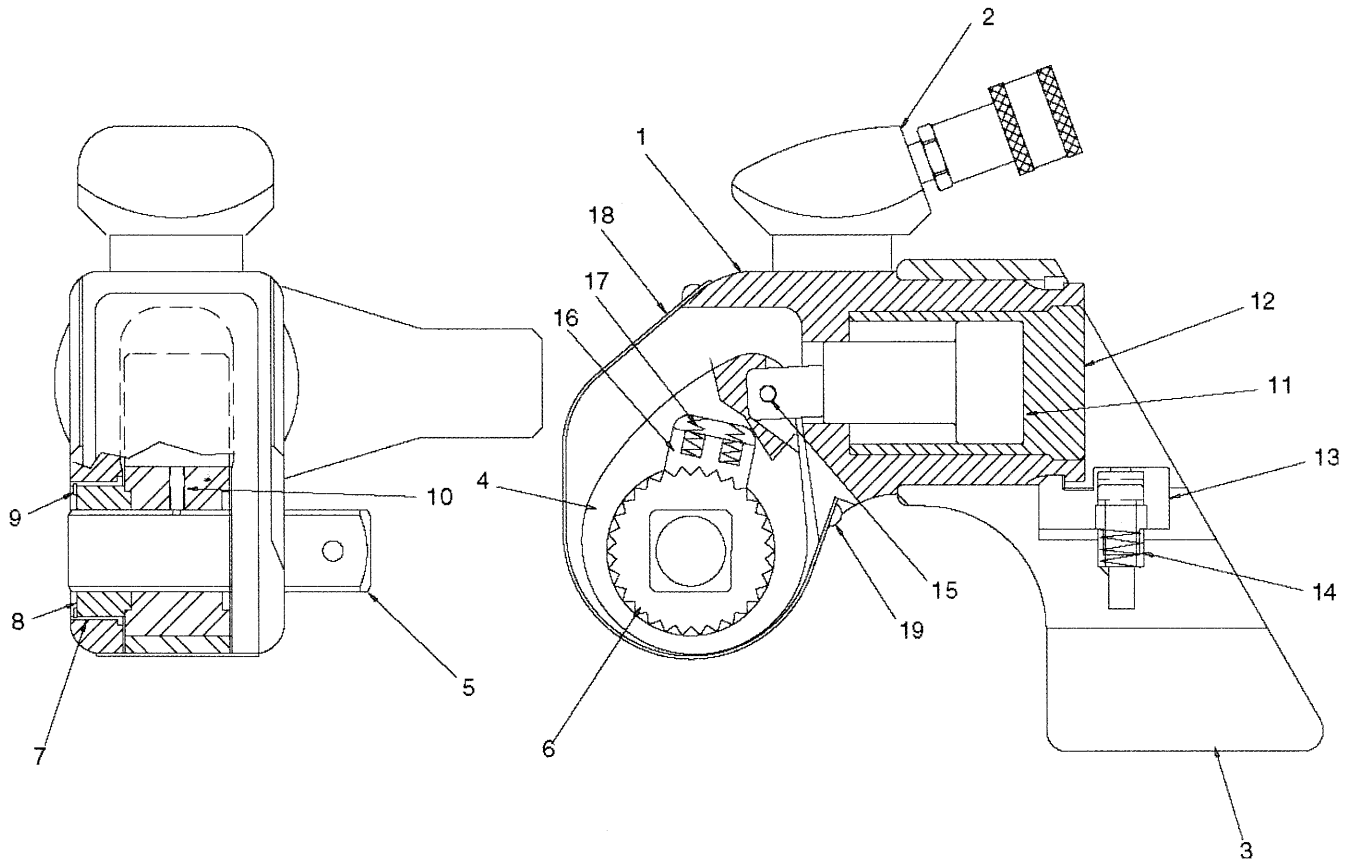
Changing the Piston Seal

1. Drain the oil from the cylinder.
2. Remove the piston end cap from the cylinder rod.
3. Replace the seal.

Removing the Drive Plate and Ratchet

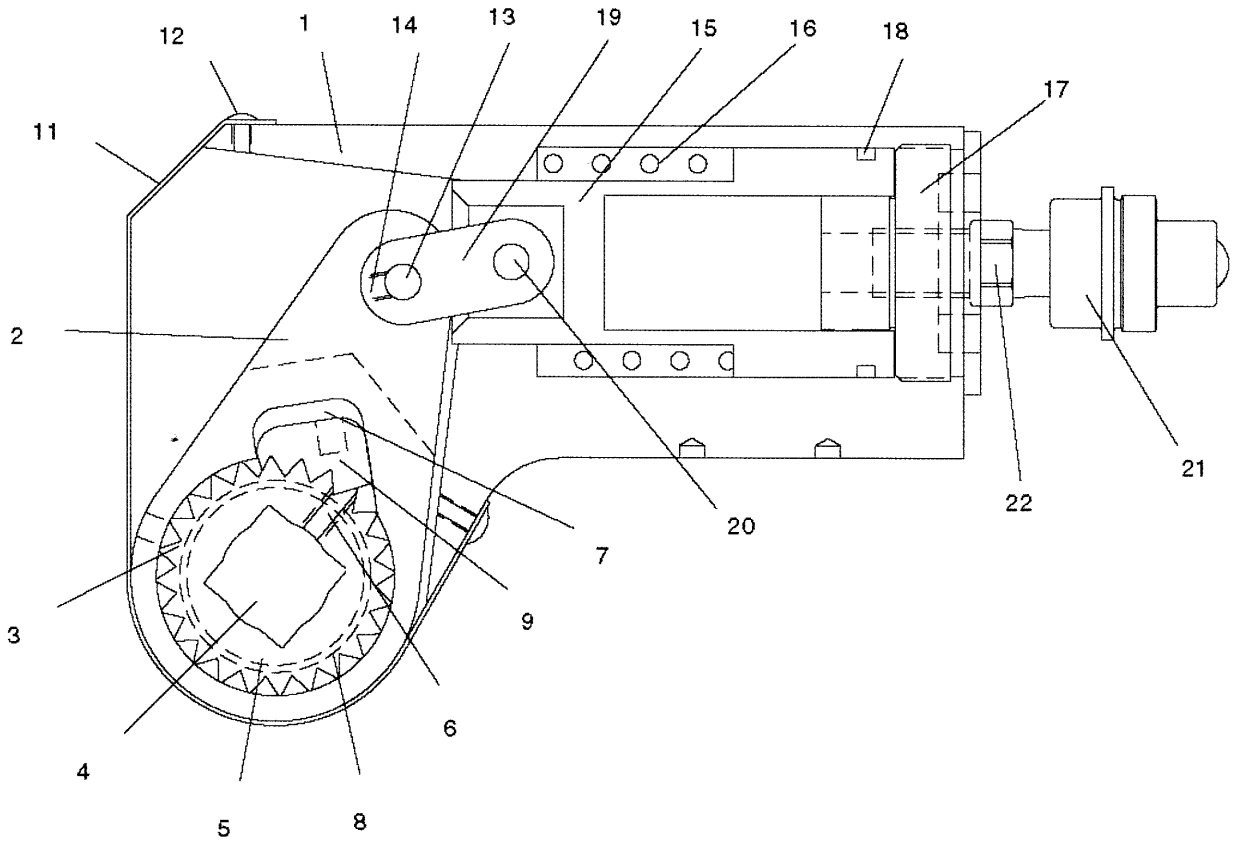
1. Insert the square drive and turn the ratchet and drive plate until the rod end sticks out of the wrench.
2. Take out square drive and pull the remaining parts out of the wrench.

SQV SERIES PARTS LIST



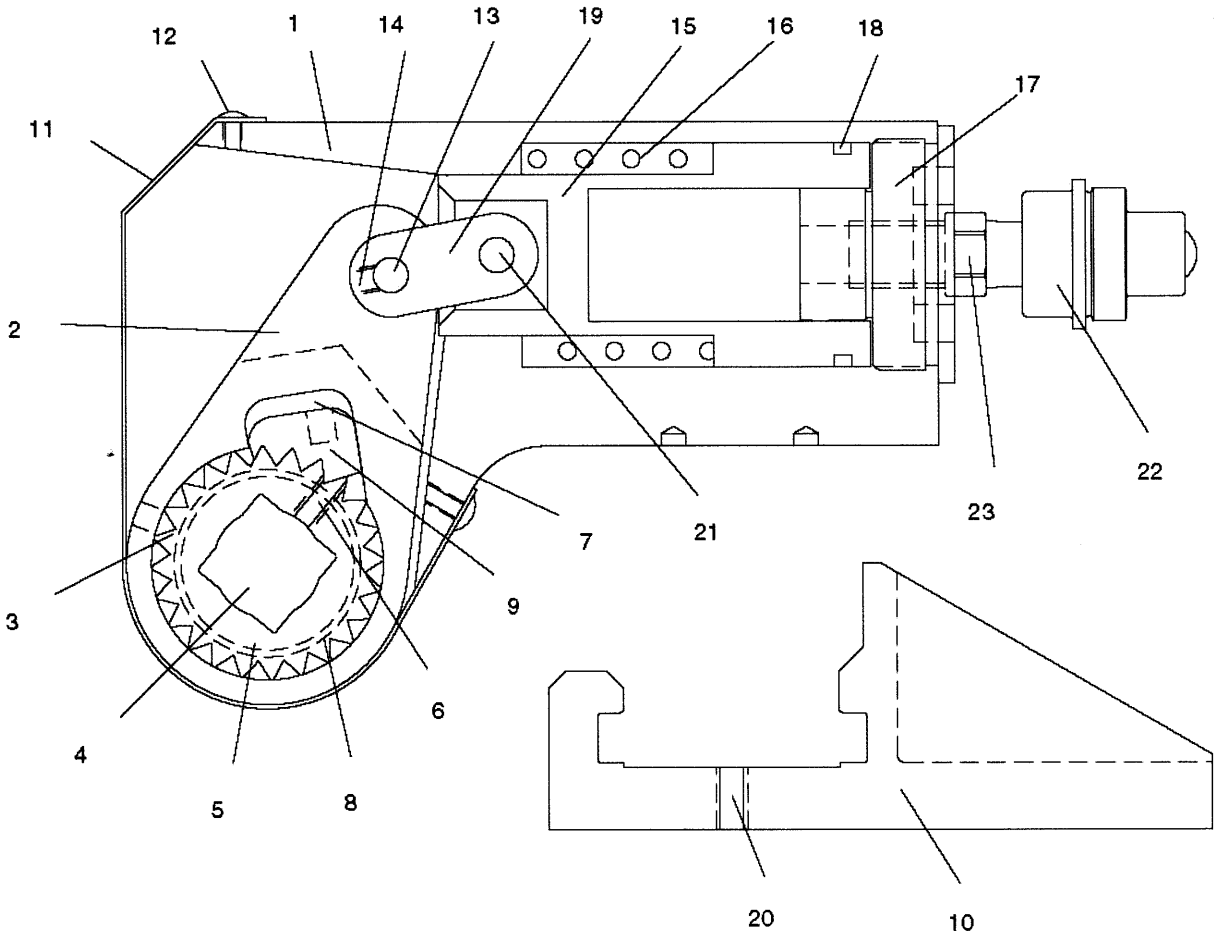
Item No.	Description	SQV06 3/4" Drive	SQV2 3/4" Drive	SQV4 1" Drive	SQV8 1-1/2" Drive	SQV12 1-1/2" Drive
1	Housing	SQV-P6-01	SQV-02-01	SQV-04-01	SQV-08-01	SQV-12-01
2	Uniswivel Assembly	SQV-01-00	SQV-01-00	SQV-001-00	SQV-001-00	SQV-001-00
3	Reaction Arm	SQV-P6-03	SQV-02-03	SQV-04-03	SQV-08-03	SQV-12-03
4	Drive Plate	SQV-P6-04	SQV-02-04	SQV-04-04	SQV-08-04	SQV-12-04
5	Square Drive	SQV-P6-05	SQV-02-05	SQV-04-05	SQV-08-05	SQV-12-05
6	Ratchet	SQV-P6-06	SQV-02-06	SQV-04-06	SQV-08-06	SQV-12-06
7	Bushing	SQV-P6-07	SQV-02-07	SQV-04-07	SQV-08-07	SQV-12-07
8	Drive Sleeve Square	SQV-P6-08	SQV-02-08	SQV-04-08	SQV-08-08	SQV-12-08
9	Retaining Ring	SQV-P6-30	SQV-02-30	SQV-04-30	SQV-08-30	SQV-12-30
10	Set Screw, Ratchet	SQV-P6-09	SQV-02-09	SQV-04-09	SQV-08-09	SQV-12-09
11	Piston Rod Assembly	SQV-P6-61	SQV-02-61	SQV-04-61	SQV-08-61	SQV-12-61
12	End Cap Sleeve	SQV-P6-26	SQV-02-26	SQV-04-26	SQV-08-26	SQV-12-26
13	Reaction Arm Clamp Assembly	SQV-P6-28	SQV-02-28	SQV-04-28	SQV-08-28	SQV-12-28
14	Clamp Spring	SQV-P6-38	SQV-02-38	SQV-04-38	SQV-08-38	SQV-12-38
15	Roll Pin/Drive Plate	SQV-P6-17	SQV-02-17	SQV-04-17	SQV-08-17	SQV-12-17
16	Drive Pawl	SQV-P6-60	SQV-02-60	SQV-04-60	SQV-08-60	SQV-12-60
17	Drive Pawl Spring	SQV-P6-27	SQV-02-27	SQV-04-27	SQV-08-27	SQV-12-27
18	Shroud	SQV-P6-31	SQV-02-31	SQV-04-31	SQV-08-31	SQV-12-31
19	Shroud Screw	SQV-P6-32	SQV-02-32	SQV-04-32	SQV-08-32	SQV-12-32

F SERIES PARTS LIST



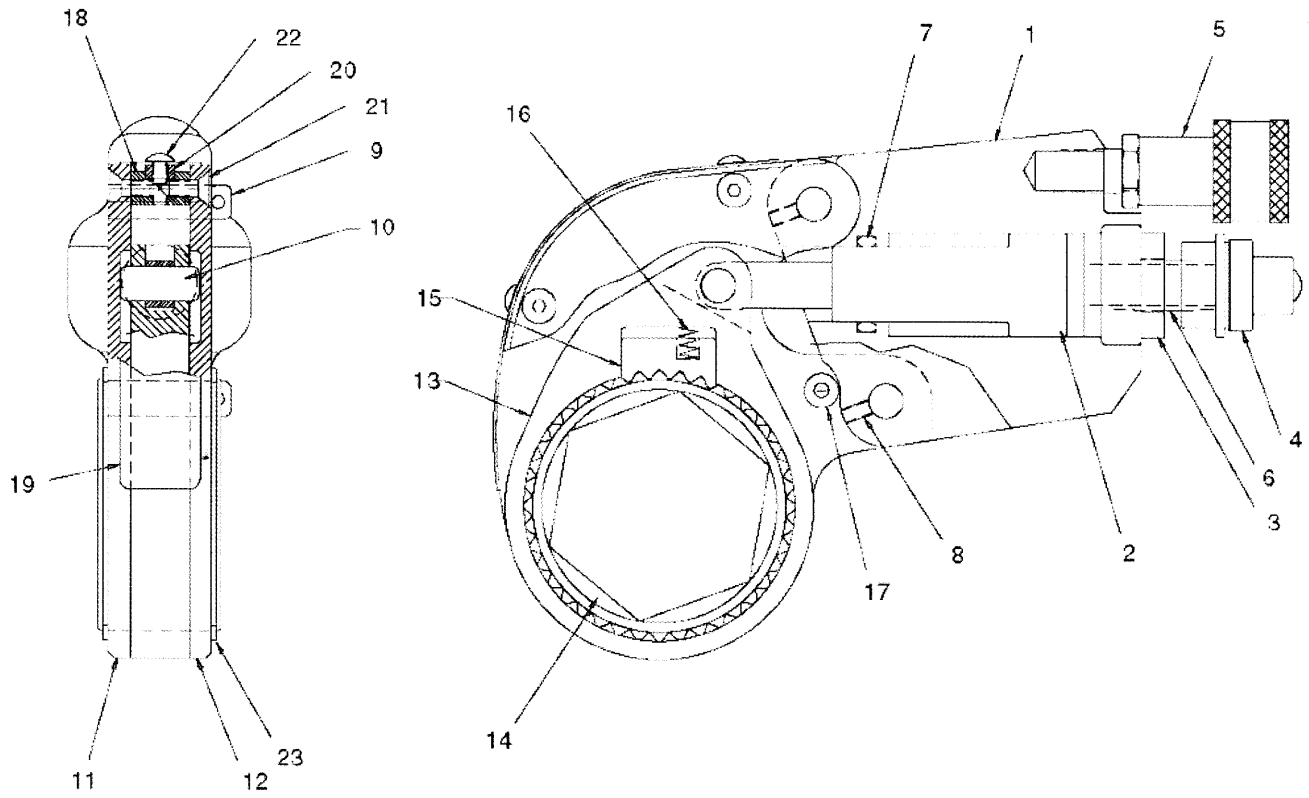
Item No.	Description	F0.5	F1	F3
1	Housing	FP5-01	F1-01	F3-01
2	Drive Plate	FP5-03	Y1-03	Y3-03
3	Ratchet	FP5-10	Y1-10	Y3-10
4	Square Drive	FP5-11	Y1-11	Y3-11
5	Sleeve (2 Rod)	FP5-12	Y1-12	Y3-12
6	Set Screw- Ratchet	FP5-13	Y1-13	Y3-13
7	Spring - Drive Segment	FP5-14	Y1-14	Y3-14
8	O-Ring - Sleeves	FP5-15	Y1-15	Y3-15
9	Drive Segment	FP5-20	Y1-20	Y3-20
10	Reaction Arm (Not Shown)	FP5-30	F1-30	F3-30
10a	Reaction Stud (Not Shown)	FP5-31	F1-31	F3-31
10b	Reaction Arm Lock (Not Shown)	FP5-33	F1-33	F3-33
11	Shroud	FP5-35	Y1-35	Y3-35
12	Shroud Screw	FP5-36	Y1-36	Y3-36
13	Drive Pin	FP5-38	Y1-38	Y3-38
14	Set Screw - Rod End	FP5-39	Y1-39	Y3-39
15	Cylinder Rod	FP5-51	Y1-51	Y3-51
16	Return Spring	FP5-52	Y1-52	Y3-52
17	Piston End Cap	FP5-53	F1-53	F3-53
18	O-Ring - Piston Endcap	FP5-54	Y1-54	Y3-54
19	Rod End	FP5-61	Y1-61	Y3-61
20	Roll Pin Rod End	FP5-63	Y1-63	Y3-63
21	Male Coupler	090155	090155	090155
22	Hex Nipple	090101	090101	090101

Y SERIES PARTS LIST



Item No.	Description	Y1	Y3	Y5	Y8	Y10
1	Housing	Y1-01	Y1-01	Y5-01	Y8-01	Y10-01
2	Drive Plate	Y1-03	Y3-03	Y5-03	Y8-03	Y10-03
3	Ratchet	Y1-10	Y3-10	Y5-10	Y8-10	Y10-10
4	Square Drive	Y1-11	Y3-11	Y5-11	Y8-11	Y10-11
5	Sleeve (2 Rod)	Y1-12	Y3-12	Y5-12	Y8-12	Y10-12
6	Set Screw- Ratchet	Y1-13	Y3-13	Y5-13	Y8-13	Y10-13
7	Spring - Drive Segment	Y1-14	Y3-14	Y5-14	Y8-14	Y10-14
8	O-Ring - Sleeves	Y1-15	Y3-15	Y5-15	Y8-15	Y10-15
9	Drive Segment	Y1-20	Y3-20	Y5-20	Y8-20	Y10-20
10	Reaction Arm	Y1-30	Y3-30	Y5-30	Y8-30	Y10-30
11	Shroud	Y1-35	Y3-35	Y5-35	Y8-35	Y10-35
12	Shroud Screw	Y1-36	Y3-36	Y5-36	Y8-36	Y10-36
13	Drive Pin	Y1-38	Y3-38	Y5-38	Y8-38	Y10-38
14	Set Screw - Rod End	Y1-39	Y3-39	Y5-39	Y8-39	Y10-39
15	Cylinder Rod	Y1-51	Y3-51	Y5-51	Y8-51	Y10-51
16	Return Spring	Y1-52	Y3-52	Y5-52	Y8-52	Y10-52
17	Piston End Cap	Y1-53	Y3-53	Y5-53	Y8-53	Y10-531
18	O-Ring - Piston Endcap	Y1-54	Y3-54	Y5-54	Y8-54	Y10-54
19	Rod End	Y1-61	Y3-61	Y5-61	Y8-61	Y10-61
20	Set Screw - Reaction Arm	Y1-62	Y3-62	Y5-62	Y8-62	Y10-62
21	Roll Pin Rod End	Y1-63	Y3-63	Y5-63	Y8-63	Y10-63
22	Male Coupler	090155	090155	090155	090155	090155
23	Hex Nipple	090101	090101	090101	090101	090101

LC SERIES PARTS LIST



Item No.	Description	LC2	LC4	LC8	LC20
1	Housing	LC-02-01	LC-04-01	LC-08-01	LC-20-01
2	Piston Rod Assembly	LC-02-06	LC-04-06	LC-08-06	LC-20-06
3	End Cap With Seal	LC-02-02	LC-04-02	LC-08-02	LC-20-02
4	Male Coupler	090155	090155	090155	090155
5	Female Coupler	090156	090156	090156	090156
6	Male Hex Nipple	090101	090101	090101	090101
7	Seal Kit	LC-02-13	LC-04-13	LC-08-13	LC-20-13
8	Link Pin Retaining Screw	LC-02-12	LC-04-12	LC-08-12	LC-20-12
9	Link Pin With Ring	LC-02-10	LC-04-10	LC-08-10	LC-20-10
10	Rod Pin	LC-02-05	LC-04-05	LC-08-05	LC-20-05
11	Side Plate Left	LC-02-52L	LC-04-52L	LC-08-52L	LC-20-52L
12	Side Plate Right	LC-02-52R	LC-04-52R	LC-08-52R	LC-20-52R
13	Drive Plate	LC-02-35	LC-04-35	LC-08-35	LC-20-35
14	Ratchet	LC-02-28	LC-04-28	LC-08-28	LC-20-28
15	Drive Pawl	LC-02-22	LC-04-22	LC-08-22	LC-20-22
16	Drive Pawl Spring	LC-02-27	LC-04-27	LC-08-27	LC-20-27
17	Side Plate Spacer	LC-02-32	LC-04-32	LC-08-32	LC-20-32
18	Side Plate Spacer/Shroud	LC-02-47	LC-04-47	LC-08-47	LC-20-47
19	Shroud	LC-02-43	LC-04-43	LC-08-43	LC-20-43
20	Shroud Spacer	LC-02-36	LC-04-36	LC-08-36	LC-20-36
21	Side Plate Screws	LC-02-50	LC-04-50	LC-08-50	LC-20-50
22	Shroud Screws	LC-02-44	LC-04-44	LC-08-44	LC-20-44
23	Side Plate Retaining Ring	LC-02-31	LC-04-31	LC-08-31	LC-20-31

BOLT - TORQUE AND TOOL GUIDELINE CHARTS

BOLT - TORQUE

TOOL GUIDELINE

SAE1 SAE 2 30,000 PSI	ASTM 193 GR. B7 BOLT	8-7 A/F HEAVY HEX NUT	ASTM 354 B8 60000PSI	FT. - LBS.	RECOMMENDED MODEL					
					SQUARE DRIVE MAKE-UP ONLY	ALT.	LIMITED CLEARANCE MAKE-UP	SQUARE DRIVE BREAK OUT	ALT.	LIMITED CLEARANCE BREAK OUT
1"	7/8"	1-7/16"		300	SQVP6	FP5	LC2	SQVP6	FP5	LC2
1-1/8"	1"	1-5/8"	7/8"	425	SQVP6	F1-Y1	LC2	SQV2	F1-Y1	LC2
				500	SQVP6	F1-Y1	LC2	SQV2	F1-Y1	LC2
1-1/4"			1"	600	SQV2	F1-Y1	LC2	SQV2	F1-Y1	LC2
1-3/8"	1-1/8"	1-13/16"		700	SQV2	F1-Y1	LC2	SQV2	F3-Y3	LC2
	1-1/4"	2"	1-1/8"	800	SQV2	F1-Y1	LC2	SQV2	F3-Y3	LC4
1-1/2"				900	SQV2	F1-Y1	LC2	SQV4	F3-Y3	LC4
				1,000	SQV2	F1-Y1	LC2	SQV4	F3-Y3	LC4
1-5/8"	1-3/8"	2-3/16"	1-1/4"	1,250	SQV4	F3-Y3	LC2	SQV4	F3-Y3	LC4
				1,350	SQV4	F3-Y3	LC2	SQV4	F3-Y3	LC4
	1-1/2"	2-3/8"	1-3/8"	1,500	SQV4	F3-Y3	LC2	SQV4	Y5	LC4
1-3/4"				1,600	SQV4	F3-Y3	LC4	SQV4	Y5	LC4
1-7/8"				1,800	SQV4	F3-Y3	LC4	SQV4	Y5	LC4
	1-5/8"	2-9/16"		2,000	SQV4	F3-Y3	LC4	SQV4	Y5	LC8
2"				2,200	SQV4	F3-Y3	LC4	SQV8	Y5	LC8
	1-3/4"	2-3/4"	1-5/8"	2,600	SQV4	F3-Y3	LC4	SQV8	Y8	LC8
2-1/4"				3,000	SQV8	Y5	LC4	SQV8	Y8	LC8
	1-7/8"	2-15/16"	1-3/4"	3,700	SQV8	Y5	LC8	SQV8	Y8	LC8
2-1/2"	2"	3-1/8"		4,000	SQV8	Y5	LC8	SQV8	Y8	LC8
"			1-7/8"	4,400	SQV8	Y5	LC8	SQV12	Y8	LC20
2-3/4"			2"	5,100	SQV8	Y5	LC8	SQV12	Y10	LC20
	2-1/4"	3-1/2"		6,000	SQV8	Y8	LC8	SQV12	Y10	LC20
3"		3-7/8"	2-1/4"	7,000	SQV8	Y8	LC8	SQV12	Y10	LC20
	2-1/2"			8,000	SQV12	Y8	LC20	SQV12		LC20
3-1/4"				9,000	SQV12	Y10	LC20	SQV30		LC20
3-1/2"	2-3/4"	4-1/4"	2-1/2"	10,000	SQV12	Y10	LC20	SQV30		
				11,500	SQV12		LC20	SQV30		
3-3/4"	3"	4-5/8"	2-3/4"	13,000	SQV30		LC20	SQV30		FOR
4"				14,500	SQV30			SQV30		HIGHER
				15,500	SQV30			SQV30		TORQUE
	3-1/4"	5"	3"	16,500	SQV30		FOR	SQV30		VALUES
4-1/4"				19,500	SQV30		HIGHER	SQV30		
	3-1/2"	5-3/8"	3-1/4"	20,500	SQV30		TORQUE			
4-1/2"				21,500	SQV30		VALUES			
				24,500	SQV30		PLEASE	PLEASE		
4-3/4"	3-3/4"	5-3/4"	3-1/2"	25,500	SQV30		INQUIRE	INQUIRE		
6-1/2"	4-1/4"			29,500	SQV30					

The above data is based on bolts lubricated according to the manufacturer's specifications. Due to a variation in friction, we recommend in extreme cases to check with the bolt manufacturer, as the chart represents a guideline only.