# IW09
# HYDRAULIC IMPACT WRENCH

# Safety, Operation and Maintenance Manual

*Focused on performance* ™

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helps you do things right

21830 4/93R

# SAFETY PRECAUTIONS

Tool operators and maintenance personnel must always comply with the safety precautions given in this manual and on the stickers and tags attached to the tool and hose.

These safety precautions are given for your safety. Review them carefully before operating the tool and before performing maintenance or repairs.

Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations. If so, place the added precautions in the space provided on page 3.

## GENERAL SAFETY PRECAUTIONS

The IW09 Impact Wrench provides safe and dependable service if operated in accordance with the instructions given in this manual. Read and understand this manual and any stickers and tags attached to the tool and hose before operation. Failure to do so can result in personal injury or equipment damage.

- Operators must start in a work area without bystanders. Flying debris can cause serious injury.
- The operator must be familiar with all prohibited work areas such as excessive slopes and dangerous terrain conditions.
- Always wear safety equipment such as goggles, ear and head protection, and safety shoes when operating the tool.
- Do not operate the tool if it is damaged, improperly adjusted or not completely and correctly assembled.
- Do not overreach. Maintain proper footing and balance at all times.
- Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
- Always connect hoses to the tool hose couplers before energizing the hydraulic power source. Make sure all hose connections are tight.
- Establish a training program for all operators to ensure safe operation.
- Do not operate the tool unless thoroughly trained or under the supervision of an instructor.
- When working near electrical conductors, always assume that all conductors are energized and that insulation, clothing and hoses can conduct electricity. Use hose labeled and certified as non-conductive.
- Do not operate the tool at fluid temperatures above 140°F/60°C. Operation at higher temperatures can cause higher than normal temperatures at the tool which can result in operator discomfort.
- Never wear loose clothing that can get entangled in the working parts of the tool.
- To avoid personal injury or equipment damage, all tool repair, maintenance and service must only be performed by authorized and properly trained personnel.

# TOOL STICKERS AND TAGS


The stickers and tags attached to the wrench prior to shipment from the factory are shown below. The pressures and flow rates specified must never be exceeded. All stickers and tags must be read and understood prior to operation of the tool.

The information listed on stickers and tags must be legible at all times. Always replace stickers that have become worn or damaged. They are available from your local Stanley distributor.

**OC/CC**

FOR USE ON OPEN CENTER AND CLOSED CENTER HYDRAULIC SYSTEMS. "SET FOR PROPER SYSTEM BEFORE USE."

OC/CC STICKER

**DANGER**

ELECTROCUTION HAZARD

Failure to use hydraulic hose labeled and certified as non-conductive when using hydraulic tools on or near electric lines may result in death or serious injury.

For proper and safe operation read owners manual and make sure that you have been properly trained in correct procedures required to work on or around electric lines.

4-12 GPM/15-45 LPM
DO NOT EXCEED 2000 PSI/ 140 BAR

■ DO NOT EXCEED SPECIFIED FLOW OR PRESSURE. ■ USE CLOSED-CENTER TOOL ON CLOSED-CENTER SYSTEM. ■ USE OPEN-CENTER TOOL ON OPEN-CENTER SYSTEM ■ CORRECTLY CONNECT HOSE TO TOOL "IN "AND "OUT" PORTS. IMPROPER HANDLING, USE OR MAINTENANCE OF TOOL COULD RESULT IN A LEAK, BURST OR OTHER TOOL FAILURE. ■ CONTACT AT A LEAK OR BURST CAN CAUSE OIL INJECTIONS INTO THE BODY ■ FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN SERIOUS PERSONAL INJURY.

GPM/PRESSURE DANGER STICKER

## SAFETY TAGS

The safety tag at right is attached to the wrench when shipped from the factory. Read and understand the safety instructions listed on this tag before removal. We suggest you retain this tag and attach it to the wrench when not in use.

**DANGER**

DO NOT USE THIS WRENCH CONNECTED TO THE HYDRAULIC SYSTEM IN REVERSE. REVERSING CONNECTIONS WILL CAUSE REVERSE HYDRAULIC FLOW THROUGH THE TOOL WHICH MAY RESULT IN A LEAK OR BURST.

CONTINUED USE OF THIS TOOL WITH REVERSED HYDRAULIC CONNECTIONS CAN CAUSE FATIGUE IN TOOL SEALS AND COMPONENTS WHICH MAY CAUSE A LEAK OR BURST.

A HYDRAULIC LEAK OR BURST MAY CAUSE OIL INJECTION INTO YOUR BODY OR CAUSE OTHER SERIOUS PERSONAL INJURY.

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**DANGER**

1. FAILURE TO USE HYDRAULIC HOSE LABELED AND CERTIFIED AS NON-CONDUCTIVE WHEN USING HYDRAULIC TOOLS ON OR NEAR ELECTRICAL LINES MAY RESULT IN DEATH OR SERIOUS INJURY.

   BEFORE USING HOSE LABELED AND CERTIFIED AS NON-CONDUCTIVE ON OR NEAR ELECTRICAL LINES BE SURE THE HOSE IS MAINTAINED AS NON-CONDUCTIVE. THE HOSE SHOULD BE REGULARLY TESTED FOR ELECTRIC CURRENT LEAKAGE IN ACCORDANCE WITH YOUR SAFETY DEPART-MENT INSTRUCTIONS.
2. A HYDRAULIC LEAK OR BURST MAY CAUSE OIL INJECTION INTO THE BODY OR CAUSE OTHER SEVERE PERSONAL INJURY.
   A. DO NOT EXCEED SPECIFIED FLOW AND PRESSURE FOR THIS TOOL. EXCESS FLOW OR PRESSURE MAY CAUSE A LEAK OR BURST.
   B. DO NOT EXCEED RATED WORKING PRESSURE OF HYDRAULIC HOSE USED WITH THIS TOOL. EXCESS PRESSURE MAY CAUSE A LEAK OR BURST.
   C. CHECK TOOL HOSE COUPLERS AND CONNECTORS DAILY FOR LEAKS. DO NOT FEEL FOR LEAKS WITH YOUR HANDS. CONTACT WITH A LEAK MAY RESULT IN SEVERE PERSONAL INJURY.
   D. DO NOT LIFT OR CARRY TOOL BY THE HOSES. DO

**IMPORTANT**

READ OPERATION MANUAL AND SAFETY INSTRUCTIONS FOR THIS TOOL BEFORE USING IT.

USE ONLY PARTS AND REPAIR PROCEDURES APPROVED BY STANLEY AND DESCRIBED IN THE OPERATION MANUAL.

TAG TO BE REMOVED ONLY BY TOOL OPERATOR.

SEE OTHER SIDE15875

**DANGER**

NOT ABUSE HOSE. DO NOT USE KINKED, TORN OR DAMAGED HOSE.

3. MAKE SURE HYDRAULIC HOSES ARE PROPERLY CONNECTED TO THE TOOL BEFORE PRESSURIZING SYSTEM. SYSTEM PRESSURE HOSE MUST ALWAYS BE CONNECTED TO TOOL "IN" PORT. SYSTEM RETURN HOSE MUST ALWAYS BE CONNECTED TO TOOL "OUT" PORT REVERSING CONNECTIONS MAY CAUSE REVERSE TOOL OPERATION WHICH CAN RESULT IN SEVERE PERSONAL INJURY.
4. DO NOT CONNECT CLOSED-CENTER TOOLS TO OPEN-CENTER HYDRAULIC SYSTEMS. THIS MAY CAUSE EXTREME SYSTEM HEAT AND/OR SEVERE PERSONAL INJURY.

   DO NOT CONNECT OPEN-CENTER TOOLS TO CLOSED-CENTER HYDRAULIC SYSTEMS. THIS MAY RESULT IN LOSS OF OTHER HYDRAULIC FUNCTIONS POWERED BY THE SAME SYSTEM AND/ OR SEVERE PERSONAL INJURY.
5. BYSTANDERS MAY BE INJURED IN YOUR WORK AREA. KEEP BYSTANDERS CLEAR OF YOUR WORK AREA.
6. WEAR HEARING, EYE, FOOT, HAND AND HEAD PROTECTION.
7. TO AVOID PERSONAL INJURY OR EQUIPMENT DAMAGE, ALL TOOL REPAIR, MAINTENANCE AND SERVICE MUST ONLY BE PERFORMED BY AUTHORIZED AND PROPERLY TRAINED PERSONNEL.

**IMPORTANT**

READ OPERATION MANUAL AND SAFETY INSTRUCTIONS FOR THIS TOOL BEFORE USING IT.

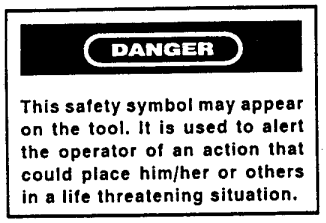
USE ONLY PARTS AND REPAIR PROCEDURES APPROVED BY STANLEY AND DESCRIBED IN THE OPERATION MANUAL.

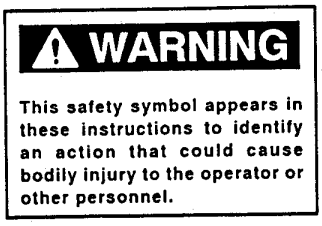
TAG TO BE REMOVED ONLY BY TOOL OPERATOR.

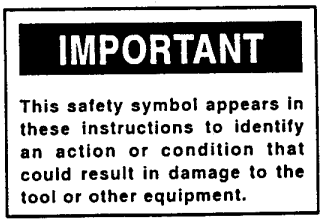
SEE OTHER SIDE15875

## SAFETY SYMBOLS

Safety symbols are used to emphasize all operator, maintenance and repair actions which, if not strictly followed, could result in a life-threatening situation, bodily injury or damage to equipment.




Always observe safety symbols. They are included for your safety and for the protection of the tool.

## LOCAL SAFETY REGULATIONS

Enter any local safety regulations here. Keep these instructions in an area accessible to the operator and maintenance personnel.

# EQUIPMENT PROTECTION AND CARE

**IMPORTANT**

**In addition to the Safety Precautions on pages 1 thru 3 of this manual, observe the following for equipment protection and care.**

- Always use sockets and accessories designed for impact type applications. DO NOT USE STANDARD SOCKETS OR ACCESSORIES. THESE CAN CRACK OR FRACTURE DURING OPERATION.
- Always store the tool in a clean, dry space, safe from damage or pilferage.
- Always keep critical tool markings, such as labels and stickers, legible.
- Always replace hoses, couplings, and other parts with replacement parts recommended by Stanley Hydraulic Tools. Supply hoses must have a minimum working pressure rating of 2500 psi/175 bar.
- Always use hoses that have a fluid resistant inner surface and an abrasive resistant outer surface. Whenever near electrical conductors, use **clean** hose labeled and certified non-conductive.
- Tool repair should be performed by experienced personnel only.
- Make sure all couplers are wiped clean before connection.
- The hydraulic circuit control valve must be in the "OFF" position when coupling or uncoupling hydraulic tools. Failure to do so can result in damage to the quick couplers and cause overheating of the hydraulic system.
- Do not exceed 12 gpm/45 lpm flow rate. Rapid failure of the impact mechanism can result.
- Make sure the circuit PRESSURE hose (with male quick disconnect) is connected to the port furthest from the trigger. The circuit RETURN hose (with female quick disconnect) is connected to the port closest to the trigger.
- **Do not** reverse circuit flow. The reversing spool that is part of the tool provides for reverse operation of the wrench. Operation with circuit flow reversed causes rapid failure of the motor shaft seal and can break the impact mechanism. ALWAYS USE THE REVERSING SPOOL BUILT INTO THE WRENCH FOR REVERSE OPERATION.

# HYDRAULIC HOSE REQUIREMENTS

## HOSE TYPES

Hydraulic hose types authorized for use with Stanley Hydraulic Tools are as follows:

❶ Labeled and certified non-conductive

❷ Wire braided (conductive)

❸ Fabric braided (not certified or labeled non-conductive)

Hose ❶ listed above is the only hose authorized for use near electrical conductors.

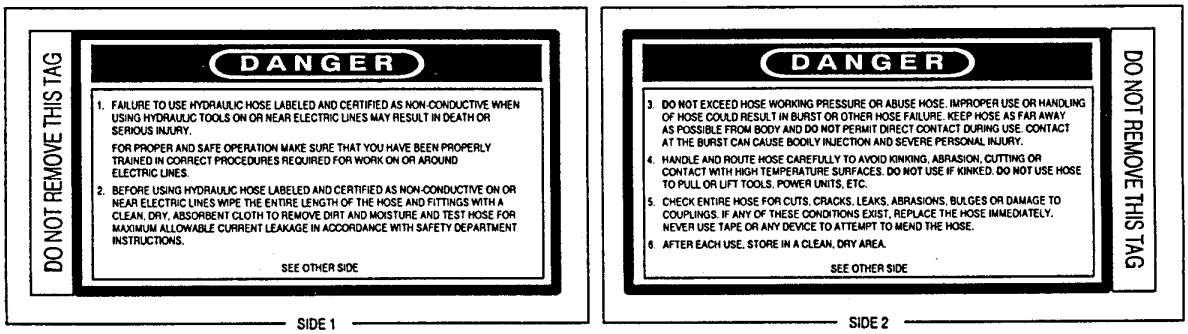
Hoses ❷ and ❸ listed above are **conductive** and **must never** be used near electrical conductors.

To help ensure your safety, the following DANGER tags are attached to all hoses purchased from Stanley Hydraulic Tools. DO NOT REMOVE THESE TAGS.

If the information on a tag is illegible because of wear or damage, replace the tag immediately. A new tag can be obtained at no charge from your Stanley distributor.

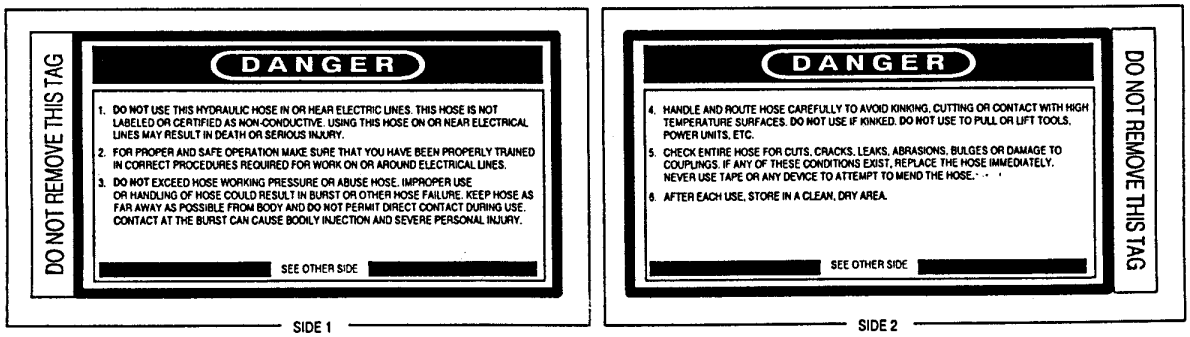
### ❶ CERTIFIED NON-CONDUCTIVE HOSE

This tag is attached to all certified and labeled **non-conductive** hose.




### ❷ AND ❸ WIRE- AND FABRIC-BRAIDED (NOT CERTIFIED OR LABELED NON-CONDUCTIVE)

This tag is attached to all **conductive** hose.




## HOSE PRESSURE RATING

The rated working pressure of the hydraulic hose **must be equal to or higher than** the relief valve setting on the hydraulic system used to power the impact wrench.

# HYDRAULIC SYSTEM REQUIREMENTS

- The hydraulic system should provide a flow of 4-12 gpm/15-45 lpm at an operating pressure of 750-2000 psi/50-140 bar. Recommended relief valve setting is 2100 psi/145 bar.

- The system should not have more than 250 psi/17 bar backpressure measured at the tool end of the operating hoses. The system conditions for measurement are at maximum fluid viscosity of 400 ssu/82 centistokes (minimum operating temperatures).

- The hydraulic system should have sufficient heat rejection capacity to limit the maximum oil temperature to 140°F/60°C at the maximum expected ambient temperature. The recommended minimum cooling capacity is 5 hp/3.73 kW at a 40°F/4°C difference between ambient temperature and fluid temperature.

- The hydraulic system should have a minimum of 25 micron full-flow filtration. It is recommended that filter elements be sized for a flow of at least 30 gpm/114 lpm for cold temperature startup and maximum dirt holding capacity.

- The hydraulic fluid used should have a viscosity between 100 and 400 ssu/20 and 82 centistokes at the maximum and minimum expected operating temperatures. Hydraulic fluids of petroleum base with antiwear and non-conductive properties and viscosity indexes over 140 meet the recommended requirements over a wide range of operating temperatures.

- The recommended hose size is 0.500-inch/12 mm I.D. to 50 ft/15 m long and 0.625-inch/16 mm I.D. minimum up to 100 ft/30 m long.

- The wrench return hose must connect directly to the circuit return line and go straight through the fluid filter, thermal valve, and fluid cooler to the reservoir. To prevent trapped or reversed pressure, fluid should not be returned through a blocking or reversing valve.

- Do not use emulsifying hydraulic fluids and keep the recommended fluids drained of settled moisture. Water in the fluid can cause pump cavitation.

- The impact wrench must not be operated with the hydraulic flow reversed. Supply (IN) and return (OUT) hoses must be connected as marked on the tool. Forward and reverse operation of the tool is selected with the reversing spool located on the side of the wrench.

# OPERATION

## WRENCH TORQUE INFORMATION

### FACTORS THAT AFFECT TORQUE

An impact wrench is a rotary hammer that impacts the head of a bolt or nut. It does not apply a slow steady torque as do standard torque wrenches. Therefore, several factors can affect resultant torque when using impact wrenches:

1. **Long bolts.** Long bolts, having high-friction threads with lubrication under the bolt head or associated nut, can twist when impacted, then untwist before the next impact, especially if there is low friction between the bolt head or nut and the mating surface.

2. **Heavy, loose or multiple adapters.** Heavy, loose or multiple adapters between the wrench and socket can dissipate the intensity of the impact to the bolt head or nut.

3. **Amount of impact.** Maximum resultant torque can be obtained by allowing continuous impacting of the socket against the bolt head or nut for at least 10 seconds.

4. **Hydraulic flow rate.** If the flow rate to the tool is too low, hammer (or impact) speed is reduced. If the flow is correct, a change in the relief pressure does not affect the impact force. Poorly designed hydraulic circuits can result in lower flow rates and reduced impact speeds when pressure is required during impacting.

### BOLT GRADE AND THREAD RECOMMENDATIONS

Allowable bolt torque is limited by both bolt thread diameter and grade of steel in the bolt. The IW09 Impact Wrench is recommended for use on the following bolt grade and thread sizes:

| | |
|---|---|
| SAE Grade 2 | 7/16-7/8 inch/11-22 mm |
| SAE Grade 5 | 3/8-5/8 inch/9-16 mm |
| SAE Grade 8 | 3/8-9/16 inch/9-14 mm |

## PREOPERATION PROCEDURES

### CHECK POWER SOURCE

1. Using a calibrated flowmeter and pressure gauge, check that the hydraulic power source develops a flow of 4-12 gpm/15-45 lpm at 750-2000 psi/50-140 bar.

2. Make certain that the hydraulic power source is equipped with a relief valve set to open at 2100 psi/145 bar, minimum.

### CONNECT HOSES

1. Wipe all hose couplers with a clean lint-free cloth before making connections.

2. Connect the hoses from the hydraulic power source to the tool fittings or quick disconnects. It is a good practice to connect the return hose first and disconnect it last to minimize or eliminate trapped pressure within the wrench.

3. Observe the flow indicators stamped on the main body assembly and the hose couplers to ensure that the flow is in the proper directions. The female coupler on the tool's "IN" port is the inlet (pressure) coupler.

**Note:** If uncoupled hoses are left in the sun, pressure increase within the hoses can make them difficult to connect. Whenever possible, connect the free ends of hoses together.

## WRENCH OPERATION

- The IW09 Impact Wrench is configured with 1/2-inch square or 7/16-inch hex quick-change drives. The 1/2-inch square drive configuration is used with drive sockets for high-impact (160-220 ft lb/218-307 Nm) installation and removal of fasteners. The 7/16-inch hex quick-change drive configuration is used with auger bits for boring wood (poles, etc.). Number 05117) is supplied with the 7/16-inch hex quick-change anvil to adapt it to 1/2-inch square drive wrench sockets.

- Adapters are used to extend the capability of each drive configuration. The 1/2-inch square anvil is adapted to 7/16-inch or 5/8-inch hex quick-change drive by use of adapter (Part Number 05079 or 07192 respectively). Adapter (Part Number 05117) is supplied with the 7/16-inch hex quick-change anvil to adapt it to 1/2-inch square drive wrench sockets.

- During normal operation it is common to see some grease leakage from around the anvil during hard use. See the SERVICE INSTRUCTIONS section of this manual for the correct lubrication procedures.

- Substitute an IW12 Impact Wrench for the IW09 in jobs requiring continuous application of greater than 200 ft lb/271 Nm of torque on successive fasteners or requiring impact times to constantly exceed 10 seconds. Such jobs are performed faster using the IW12, the impact mechanism runs cooler, and the wrench is subjected to less wear and tear.

1. Observe all safety precautions.

2. Move the hydraulic circuit control valve to the "ON" position to operate the wrench.

**⚠ WARNING**

**Always use sockets and accessories designed for impact type applications. DO NOT USE STANDARD SOCKETS OR ACCESSORIES. THESE CAN CRACK OR FRACTURE DURING OPERATION.**

3. Select the direction of impact desired using the reversing spool located on the side of the wrench. To select clockwise direction, press the valve towards the right side of the wrench. To select counterclockwise direction, press the valve to the left.

**Note:** To more accurately tighten bolts, lubricate threads, check with a torque wrench and duplicate time of impacting for other bolts of the same length and thread size.

4. Squeeze the trigger to activate the wrench.

5. Release the trigger to stop the wrench.

## COLD WEATHER OPERATION

If the wrench is to be used during cold weather, preheat the hydraulic fluid at low engine speed. When using the normally recommended fluids, fluid temperature should be at or above 50° F/10° C (400 ssu/82 centistokes) before use.

Damage to the hydraulic system or wrench can result from use with fluid that is too viscous or too thick.

## POST-OPERATION

UNDERWATER MODELS ONLY. The wrench impact mechanism must be cleaned and greased with waterproof grease after each days use. The main housing valves and motor are sealed and do not require maintenance unless they are malfunctioning.

Remove, clean, grease and assemble the impact mechanism as described in the SERVICE INSTRUCTIONS section of this manual.

# SERVICE INSTRUCTIONS

Good maintenance practice keeps the wrench on the job and increases its service life.

The most important maintenance practice is to keep the hydraulic fluid clean at all times. Contaminated hydraulic fluid causes rapid wear and/or failure of internal parts.

Follow the procedures contained in the HYDRAULIC SYSTEM REQUIREMENTS section of this manual to ensure peak performance from the tool.

Never disassemble the main housing unless proper troubleshooting procedures have isolated the problem to an internal part. Then, disassemble the tool only to the extent necessary to replace the defective part. KEEP CONTAMINANTS SUCH AS DIRT AND GRIT AWAY FROM INTERNAL PARTS AT ALL TIMES.

Always determine and correct the cause of the problem prior to reassembly. Further wear and tool failure can result if the original cause is not corrected.

## PRIOR TO DISASSEMBLY

- Clean the exterior of the tool.
- Obtain impact grease (Part Number 02718) for land models or waterproof impact grease (Part Number 03201) for underwater models.
- Obtain Seal Kit (Part Number 21618) so all seals exposed during disassembly can be replaced during reassembly.

## PRIOR TO REASSEMBLY

- Clean all parts with a degreasing solvent.
- Ensure that all seals exposed during disassembly are replaced with new parts.
- Apply clean grease or o-ring lubricant to all parts during assembly.

**Note:** For orientation of the parts identified in the following procedures, refer to the parts location illustration contained at the back of this manual.

## IMPACT MECHANISM REMOVAL

1. Clean the exterior of the wrench.
2. Remove the three 10-24 x 5/8-inch/15.8 mm socket head capscrews securing the hammer case assembly to the main body assembly. Swing the trigger guard out of the way.
3. Hold the wrench with the impact mechanism pointing down and pull the hammer case assembly, o-ring and impact mechanism away from the main body assembly.
4. Remove the bearing and two bearing races, if they were not removed with the impact mechanism.

## IMPACT MECHANISM DISASSEMBLY

1. Remove the hammer pins, hammers, and anvil assembly from the hammer frame assembly.
2. Pull the two hammer pins from the hammer frame to free all the impact mechanism parts.
3. If the hammer case bushing is damaged, use an arbor press to remove it.
4. On underwater models, remove the o-ring from the hammer case bushing.
5. Remove the grease from inside the hammer case.

**Note:** If the grease is not discolored and if there is no grit or wear particles, it can be used again.

## IMPACT MECHANISM REASSEMBLY

**Note:** It is best to reassemble the impact mechanism on the main shaft of the wrench. Complete any other service before reassembly or installation of the impact mechanism.

**IMPORTANT**

**Use the proper impact grease for equipment protection and care.**

1. Thoroughly clean and inspect all parts of the impact mechanism.

2. Secure the wrench by lightly clamping the handle grip portion in a vise with the main shaft pointing up. Grease the bearing and the two bearing races. Install a bearing race, bearing and the remaining bearing race onto the main shaft in that order and against the seal back-up washer.

3. Grease the inside of the hammer frame spline, then place the hammer frame on the main shaft.

4. See figure 1. Place the hammers side-by-side in the hammer frame. The two hammers are identical, but must be installed with the grooves opposite each other. Place the hammer frame assembly on the main shaft.

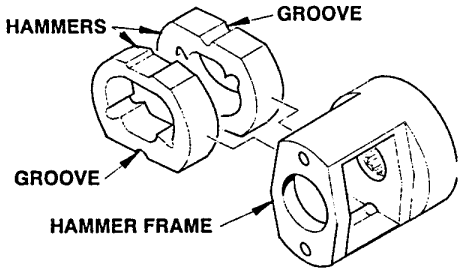



**Figure 1.**

5. Install the hammer pins through the hammer frame and hammers. Pack the hammer frame center space with the **correct** grease. Use impact grease (Part Number 02718) for land models, and waterproof impact grease (Part Number 03201) for underwater models.

6. Push the anvil down into the grease pocket with a twisting motion.

7. For underwater models, grease the o-ring and insert it inside the hammer case bushing.

8. If the hammer case bushing must be replaced, press it into place using an arbor press after greasing the case bore.

9. Install the o-ring into the hammer case assembly. Remove any existing grease from the inside of the hammer case to avoid over-lubrication.

10. Grease the hammer case bushing and slide onto the anvil.

11. Install the hammer case socket head capscrews. Two of the screws are used to attach the top of the trigger guard. Attach the bottom of the guard to the main body using the 10-24 x 2-inch/50.8 mm hex socket head capscrews.

## ANVIL DISASSEMBLY

**Note:** Refer to the impact mechanism removal procedures.

### FOR 1/2-INCH SQUARE DRIVE

Turn the hammer case assembly with the anvil pointing up. The impact mechanism components will drop out.

### FOR 7/16-INCH QUICK CHANGE

1. The anvil remains with the hammer case assembly, but the rest of the impact mechanism drops out into your hand by twisting the anvil back and forth.

2. Place the hammer case and anvil assembly as a unit over a bar or block to support the anvil from inside.

3. Push down on the thrust ring located inside the retainer sleeve and remove the front thrust ring lock (wire ring).

4. Remove the thrust ring, retainer sleeve, retainer spring, and retainer ball.

5. Remove the rear thrust ring lock. The anvil can now be removed from inside the hammer case assembly.

## ANVIL REASSEMBLY

### 7/16-INCH QUICK CHANGE

1. Install the anvil through the hammer case bushing. Place the hammer case and anvil over a bar or block to support them from the anvil end. Install a thrust ring lock in the groove below the hole in the anvil. Grease the retainer ball and place in the hole.

2. Slide the retainer sleeve (open end up), spring and thrust ring (hollow end up) onto the anvil. Press down on the thrust ring and install the thrust ring lock.

3. Install the impact mechanism following the IMPACT MECHANISM REASSEMBLY procedures.

## MAIN SHAFT SEAL REPLACEMENT

1. Remove the impact mechanism.

2. Remove the retaining ring that holds the seal back-up washer and back-up ring at the impact mechanism end of the main body.

3. With the splined end of the main shaft pointing down, the back-up ring and o-ring can be shaken out or caused to fall out by tapping on the face of the main body assembly with a soft-faced mallet. Another method is to close off the pressure port and apply air pressure to the return (front) port.

4. If necessary, pick the o-ring out with an o-ring removal tool, taking care not to mar the main shaft or housing bore.

5. Lubricate the new o-ring and position it inside the housing bore.

6. Replace the back-up ring, flat face out.

7. Install the washer and retaining ring.

8. Clean, grease and reassemble the impact mechanism.

## WRENCH DISASSEMBLY

**IMPORTANT**

**Do not remove or tighten the reversing spool capscrews unless the idler shaft has been removed.**

1. Remove the impact mechanism.

2. Remove the six 5/16-18 UNC x 1 3/4-inch/ 44.5 mm socket head capscrews and lockwashers securing the motor cap assembly to the main body assembly.

3. Tap on the splined end of the main shaft and push the motor cap assembly and gears from the main body. DO NOT pry or in any way excessively force the motor cap assembly off of the main body assembly.

4. Remove the o-ring from the motor cap assembly.

5. Remove the idler gear, idler shaft, and main shaft.

6. Remove the trigger bracket and trigger as an assembly.

7. Remove the spool end socket from the trigger by removing the external retaining ring. For underwater models, also remove the washer.

8. Unscrew the spring cap, then remove the spring and o-ring.

9. Remove the spool, relief poppet ring, spring, washer keeper and spring keeper as an assembly.

10. Remove the two 12-24 x 3/8-inch/9.5 mm flat head screws and stop washers from each side of the main body assembly.

11. Unscrew the two seal caps from the side of the main body assembly and then remove wiper seal and three o-rings from each cap.

12. Carefully pull out the shift bar with the reversing spool attached.

13. Remove the two retaining rings securing the reversing spool to the shift bar.

14. Carefully remove the reversing spool.

## MOTOR CLEANING AND INSPECTION

### Cleaning

Clean all parts with a degreasing solvent. Blow dry with compressed air and wipe clean. Use only lint-free cloths.

### Gear Chamber (Motor Cap)

The gear chamber bores and end faces around the bores should be polished, not rough or grooved. The flat surfaces around the chamber and bolt holes should be flat and free of nicks and burrs that could cause misalignment or leaks.

### Idler Gear and Drive Gear

The idler gear should have flat, straight tips without nicks. It should have a smooth even polish on the teeth and end faces. Discard the gear if cracks are present.

### Main Body Assembly

The gear running surfaces should show two interconnecting polished circles without a step or roughness.

### Shafts

Main and idler shaft diameter must be smooth. Grooves, roughness or a reduced diameter indicates fluid contamination. If abnormally worn (in

excess of normal polishing), both shafts must be replaced. The hydraulic system should be thoroughly flushed and the filter replaced before further operation of the wrench.

## WRENCH REASSEMBLY

1. Place the reversing spool at the center of the shift bar and then secure it using the two retaining rings (Figure 2).

2. Slide the reversing spool and shift bar into the main body. Secure both parts by installing the idler shaft's small end into the deep slot in the reversing spool.

3. Move the shift bar back and forth to make sure the reversing spool, shift bar, and retaining rings only move a slight distance due to the engagement of the idler shaft end and reversing spool slot.

4. Assemble the motor.

5. Lubricate and install an o-ring at each end of the shift bar. Lubricate and replace the seal cap's o-rings, the o-ring at the thread relief, and the wiper seal.

6. Secure all parts to the shift bar using the seal caps.

7. Install a stop washer and capscrew at each end of the shift bar. Using two screwdrivers at the same time fully tighten both capscrews.

8. Install the relief poppet ring, spring and washer keeper on the trigger spool. Secure these parts to the spool using the spring keeper.

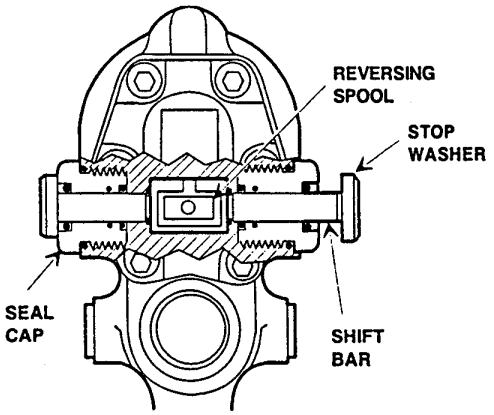



**Figure 2.**

9. Install the assembled trigger spool, then install the spring and spring cap. Tighten the cap securely. Make sure a new o-ring has been installed on the cap.

10. Rotate the reversing spool so that its **small** horizontal groove faces straight back toward the motor cap end of the main body. The tip of the idler shaft must fit in this groove. (See Figure 2.)

11. Install the idler shaft so that the tip of the shaft fits into the groove in the reversing spool. This indexes the spool properly and prevents it from rotating.

12. Lubricate and install the o-ring in the groove of the motor cap. The o-ring stays in the groove better if it is limbered-up by slight stretching and with the groove filled with grease.

**Note:** Do not force, wobble or use impact when assembling parts.

13. Carefully slide the main body over the main shaft until the main body seats firmly against the motor cap.

14. Lubricate and install the six 5/16 x 1-3/4-inch/ 44.5 mm hex socket head capscrews and lockwashers to secure the motor cap to the main body. Tighten the capscrews to 17 ft lbs/23 Nm torque lubricated.

15. Lubricate and install the o-ring and back-up ring over the splined end of the main shaft. Install the back-up washer and retaining ring to secure the assembly.

16. Check that the reversing spool and main shaft move freely. Turn the main shaft by using the impact mechanism frame. If the tool is damaged or incorrectly assembled, rough movement of these parts will be noticed. If this occurs, disassemble the unit and inspect parts.

17. Install the assembled impact mechanism on the main shaft, then attach the hammer case assembly to the main body. Refer to IMPACT MECHANISM REASSEMBLY procedures given in this section.

18. Install the spool-to-socket adapter on the end of the trigger spool. Install the spool end. On underwater models, be sure to install the washer before installing the retaining ring.

19. Install the trigger and trigger bracket using the two 10-24 x 2-inch/50.8 mm hex socket head capscrews. Tighten the screws securely.

20. Attach the trigger to the spool end using the external retaining ring.

# TROUBLESHOOTING

If symptoms of poor performance develop, the following chart can be used as a guide to correct the problem.

When diagnosing faults in operation of the wrench, always check that the hydraulic power source is supplying the correct hydraulic flow and pressure to the tool as listed in the following table. Use a flowmeter known to be accurate. Check the flow with the hydraulic fluid temperature at least 80° F/ 27° C

| PROBLEM | CAUSE | REMEDY |
|---|---|---|
| Low performance or impact. | Incorrect hydraulic flow. | Check that hydraulic power source is producing 4-12 gpm/15-45 lpm at 750-2000 psi/50-140 bar. |
| | Defective quick disconnects. | Check each quick disconnect separately. |
| | Worn impact mechanism. | Repair or replace the impact mechanism. See SERVICE INSTRUCTIONS. |
| | Hammer pins broken. | Replace hammer pins. |
| | Incorrect grease or overpacked. | See SERVICE INSTRUCTIONS. |
| | Spools incorrectly installed. | Reverse spool upside down. Reassemble. See SERVICE INSTRUCTIONS, figure 2. |
| | Sockets or adapters too heavy or loose. | Use the correct impact type sockets or adapters. |
| | Long bolt with lubricated head. | Lubricate threads only. |
| | Hammers incorrectly assembled. | Correct assembly. Grooves must be opposite (figure 1). |
| | Impact mechanism out of grease. | Grease mechanism. |
| Wrench runs too fast; impact mechanism or screws broken. | Incorrect hydraulic flow. | Check that hydraulic power source is producing 4-12 gpm/15-45 lpm at 750-2000 psi/50-140 bar. |
| | Supply and return hoses reversed. | Install hoses correctly. Observe the arrow on hose couplers. The female coupler on the tool is the inlet (pressure) coupler. |
| | Relief sleeve or spring damaged. | Remove and replace spool assembly. |
| | Spool not operating properly. | Replace spool assembly. |
| Grease leaks at anvil bushing, wrench warm. | Hard duty cycle and heat forces grease out. | Normal unless greasing instructions in SERVICE INSTRUCTIONS are not followed. |
| | Hydraulic pressure and return reversed or main shaft seal leaking. | Correct hose connections. Pressure should be to the handle port away from the trigger, return is near the trigger. |

| PROBLEM | CAUSE | REMEDY |
|---|---|---|
| Grease leaks at anvil bushing, wrench is cold. | Main shaft o-ring leaking. | Replace as required. |
| | Hydraulic pressure and return reversed. | Correct hose connections. |
| Fluid leak at motor cap face. | Fasteners loose. | Tighten to recommended torque. |
| | Face o-ring worn or missing. | Replace as required. |
| | Motor cap/main body housing damaged. | Replace as required. |
| Fluid leaks at reversing spool. | Damaged o-rings. | Replace as required. |
| | Wrong hydraulic fluid. Circuit too hot. | See OPERATING INSTRUCTIONS for correct fluid/circuit specifications. |
| | Hydraulic pressure and return reversed. | Correct hose connections. |
| Performance low and seems to get worse rapidly. | Bearing missing or failed. | Replace bearing. Check motor cap, seal back-up washer, and main shaft for damage. |
| | Impact grease over filled; prevents free spool and hammer shift. | See impact mechanism maintenance instructions. |
| | Trigger spool bypass worn or screws damaged. | Replace spool or damaged parts. |
| | Impact mechanism lubricant contaminated by overheat. Worn or broken parts. | Replace damaged impact mechanism parts. Perform periodic maintenance lubrication service. |
| Fluid gets hot, power unit working hard. | Circuit relief set too low. | Adjust relief valve to 1250-2200 psi/86-155 bar, minimum. |
| | Too much fluid going through tool. | Adjust flow for 12 gpm/45 lpm maximum. |
| | Circuit is generating high heat with flow controls, over relief, etc. | Use pump size and rpm for producing needed flow only. Eliminate circuit heating causes. |
| | Circuit has contaminants that have caused wear and high heat generation. | Replace worn pump and valves; install a large clean filter and keep circuit fluid clean. |

**Note:** Internal wear in pump motors and valves is a sure sign of water or abrasive fluid contaminants. If the circuit is efficient and cool (without internal leaks from wear), the system and tools perform better, last longer, and leaks are less likely to occur.

# SPECIFICATIONS

**Drive Size** ..... 1/2-inch Square Drive
7/16-inch Quick-Change
**Weight** ..... 8.1 lb/3.67 kg
**Overall Length** ..... 8-inch/20.3 cm
**Width** ..... 3 5/8-inch/9.2 cm
**Pressure Range** ..... 750-2000 psi/50-140 bar
**Flow Range** ..... 4-12 gpm/15-45 lpm
**Optimum Flow** ..... 4-9 gpm/15-34 lpm
**Porting** ..... 8 SAE O-Ring
**Connect Size and Type** ..... 3/8-inch NPT male adapter
**Torque** ..... 400 ft lb/540 Nm

## NOTE

Weights, dimensions, and operating specifications listed are subject to change without notice. Where specifications are critical to your application, please consult the factory.

# ACCESSORIES

| PART NUMBER | DESCRIPTION |
|---|---|
| 02718 | Impact Tool (Land Model) Lubricant 1 Pound Can |
| 03201 | Lubricant for Underwater Tools 1 Pound Can |
| 05127 | 1/2-inch Sq. Female x 3/4-inch Sq. Male Adapter |
| 05119 | Jacobs Chuck 1/2-inch Sq. Dr. Female Plain Chuck for Drills 1/8 to 1/2-inch Plain Shank |
| 05117 | 7/16-inch Hex Shank x 1/2-inch Sq. Male Adapter |
| 05079 | 1/2-inch Sq. Drive to 7/16-inch QC Chuck |
| 07192 | 1/2-inch Sq. Drive to 5/8 Hex QC Adapter |
| 08207 | 0-1/2-inch Adjustable Jacobs #34 Chuck |
| 21755 | Socket Set-- 1/2 inch Square Drive Extra Length Double Square 8-Point with Metal Box |
| | **Auger Drill Bits – Lineman's Style 7/16-inch Hex Shank Auger Drill Bits** |
| 05097 | Auger 8/16-inch x 12 -inch/30.5 cm |
| 05098 | Auger 9/16-inch x 12 -inch/30.5 cm |
| 05099 | Auger 9/16-inch x 18-inch/45.7 cm |
| 05100 | Auger 11/16-inch x 12 -inch/30.5 cm |
| 05101 | Auger 11/16-inch x 18 -inch/45.7 cm |
| 05103 | Auger 13/16-inch x 18 -inch/45.7 cm |
| 05104 | Auger 15/16-inch x 18 -inch/45.7 cm |
| 05105 | Auger 17/16-inch x 12 -inch/30.5 cm |
| 05106 | Auger 17/16-inch x 18 -inch/45.7 cm |
| | **1/2-inch Square Female Shank Auger Drill Bits** |
| 04657 | Auger 11/16-inch x 12-inch/30.5 cm |
| 04658 | Auger 13/16-inch x 12-inch/30.5 cm |
| | **Individual Sockets – 1/2-inch Square Drive Extra Length Double Square 8-Point** |
| 05108 | 1/2-inch Socket |
| 05109 | 9/16-inch Socket |
| 05110 | 5/8-inch Socket |
| 05111 | 11/16-inch Socket |
| 05112 | 3/4-inch Socket |
| 05113 | 13/16-inch Socket |
| 05114 | 7/8-inch Socket |
| 05115 | 15/16-inch Socket |
| 05116 | 1-inch Socket |

### SOCKET SET

Part No. 21755

| PART NO. | DESCRIPTION |
|---|---|
| 21756 | 1/2 in. x 1/2 in. Sq. Dr. 8 Point Deep Soc. |
| 21757 | 9/16 in. x 1/2 in. Sq. Dr. 8 point Deep Soc. |
| 21758 | 5/8 in. x 1/2 in. Sq. Dr. 8 Point Deep Soc. |
| 21759 | 11/16 in. x 1/2 in. Sq. Dr. 8 Point Deep Soc. |
| 21760 | 3/4 in. x 1/2 in. Sq. Dr. 8 Point Deep Soc. |
| 21761 | 13/16 in. x 1/2 in. Sq. Dr. 8 Point Deep Soc. |
| 21762 | 7/8 in. x 1/2 in. Sq. Dr. 8 Point Deep Soc. |
| 21763 | 1 x 1/2 in. Sq. Dr. 8 Point Deep Soc. |
| 21764 | 1 1/16 in. x 1/2 in. Sq. Dr. 8 Point Deep Soc. |
| 21765 | Metal Box |

# WARRANTY

Hand held tools and their parts are warranted against defects in materials and workmanship for a period of 12 months from the date of purchase. Exceptions are cutting parts, steels and other parts not manufactured by Stanley (such as impact mechanisms, alternators, regulators and hoses), and parts subject to normal wear and tear (such as o-rings, saw blades, and other parts that become worn through normal use of the tool).

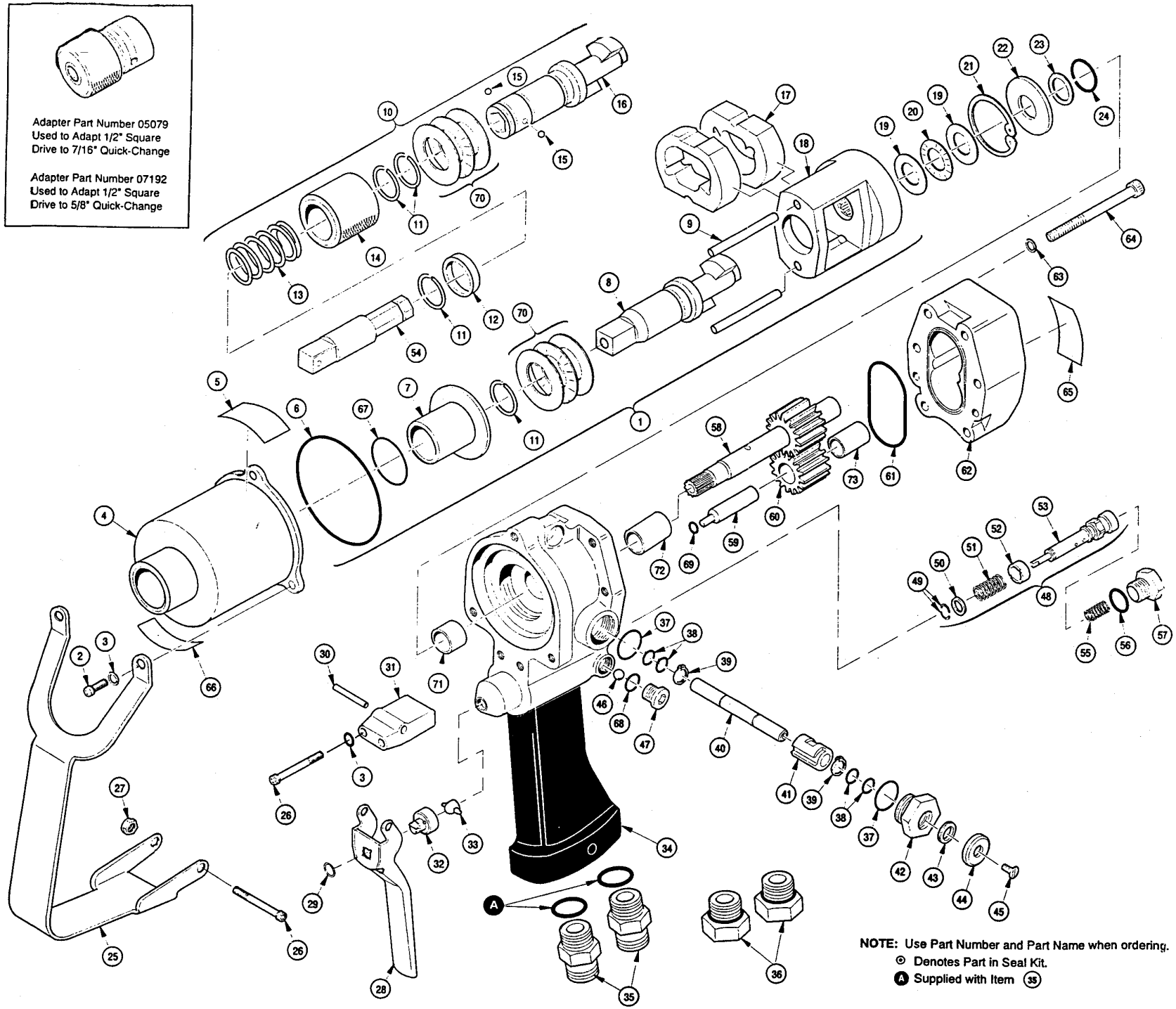
The Warranty Registration Card packed with the tool must be filled out and returned to Stanley upon receipt of the tool.

Stanley reserves the right to replace or repair only those parts that, under our examination, prove to have been defective at the time of purchase.

Shipping charges are prepaid by the customer unless otherwise authorized by Stanley.

The warranty is void if maximum flow and pressure ratings are exceeded.

There is no other warranty expressed or implied.


Adapter Part Number 05079
Used to Adapt 1/2" Square
Drive to 7/16" Quick-Change
Adapter Part Number 07192
Used to Adapt 1/2" Square
Drive to 5/8" Quick-Change
NOTE: Use Part Number and Part Name when ordering.
⊙ Denotes Part in Seal Kit.
Ⓐ Supplied with Item (35)

# SEAL KIT DATA

| Part No. | Qty. | Description |
|---|---|---|
| **Seal Kit Part No. 21618** | | |
| 00026 | 2 | O-Ring |
| 01262 | 1 | O-Ring |
| 03364 | 2 | O-Ring |
| 05641 | 1 | O-Ring |
| 01605 | 3 | O-Ring |
| 00106 | 4 | O-Ring |
| 13995 | 1 | Back-up Ring |
| 01604 | 2 | O-Ring |
| 02178 | 2 | Wiper Seal |
| 00354 | 1 | O-Ring |
| 01403 | 1 | O-Ring |

# PARTS LIST

| Item No. | Part No. | Qty. | Description |
|---|---|---|---|
| 1 | 18178 | 1 | Impact Mechanism, 1/2-in. Square Drive (Includes Items 4 thru 9, 17, 18, 70) |
| | 18169 | 1 | Impact Mechanism, 7/16-in. Quick Change (Includes Items 4, 9, 10, 17, 18, 70) |
| | 21856 | 1 | Impact Mechanism, 1.2-in. Square Drive Modified (Includes Items 4, 8, 9, 17, 18, 67, 70) (UWTR Model Only) |
| 2 | 00296 | 3 | Capscrew, 10-24 x 5/8 HSH |
| | 00803 | 3 | Capscrew, 10-24 x 5/8 HSH SST (UWTR Model) |
| 3 | 04420 | 5 | Lockwasher, #10 |
| | 09623 | 5 | Lockwasher, #10 SST (UWTR Model) |
| 4 | 18154 | 1 | Hammer Case Assembly (Includes Item 7) |
| | 21931 | 1 | Hammer Case Assembly (UWTR Model) |
| 5 | 17275 | 1 | GPM / Pressure Danger Sticker |
| 6 | 05641 | 1 | O-Ring, 2-3/8 x 2-1/2 x 1/16 ⊙ |
| 7 | 18155 | 1 | Hammer Case Bushing |
| | 21932 | 1 | Hammer Case Bushing (UWTR Model) |
| 8 | 18164 | 1 | Anvil 1/2-in. Square Drive |
| 9 | 18157 | 2 | Hammer Pin |
| 10 | 21930 | 1 | Anvil Assembly 7/16-in. Quick-Change (Includes Items 11 thru 16, 70) |
| 11 | 18158 | 3 | Thrust Ring Lock |
| 12 | 18159 | 1 | Thrust Ring |
| 13 | 18160 | 1 | Retainer Spring |
| 14 | 18161 | 1 | Retainer Sleeve |
| 15 | 18162 | 2 | Retainer Ball |
| 16 | 18163 | 1 | Anvil |
| 17 | 06758 | 2 | Hammer |
| 18 | 18156 | 1 | Hammer Frame |
| 19 | 20761 | 2 | Bearing Race TRA 815 |
| 20 | 20762 | 1 | Bearing NTA 815 |
| 21 | 06635 | 1 | Retaining Ring, 1-3/8 Internal |
| 22 | 20767 | 1 | Seal, Back - Up Washer |
| 23 | 13995 | 1 | Back - Up Ring ⊙ |
| 24 | 00354 | 1 | O-Ring, 1/2 x 11/16 x 3/32 ⊙ |
| 25 | 14022 | 1 | Trigger Guard |
| 26 | 14757 | 3 | Capscrew, 10-24 x 2 HSH |
| | 09687 | 3 | Capscrew, 10-24 x 2 HSH SST (UWTR Model) |
| 27 | 06971 | 1 | ESNA Locknut |
| 28 | 14024 | 1 | Trigger |
| 29 | 14028 | 1 | Retaining Ring |
| 30 | 07970 | 1 | Spirol Pin, 3/16 x 1-3/8 |
| | 21846 | 1 | Spirol Pin, 3/16 x 1-3/8 SST (UWTR Model) |
| 31 | 14021 | 1 | Trigger Bracket |
| 32 | 14019 | 1 | Spool End |
| 33 | 18919 | 1 | Spool to Socket Adapter |
| 34 | 20790 | 1 | Main Body Assembly |
| 35 | 00936 | 2 | Fitting, 1/2 SAE to 3/8 NPT Male |
| 36 | 06345 | 2 | Plastic Plug |
| 37 | 01604 | 2 | O-Ring, .775 x .949 x .097 ⊙ |
| 38 | 00106 | 4 | O-Ring, 3/8 x 1/2 c 1/16 ⊙ |
| 39 | 04855 | 2 | Retaining Ring |
| 40 | 20785 | 1 | Shift Bar |
| 41 | 20779 | 1 | Reversing Spool |
| 42 | 20786 | 2 | Seal Cap |
| 43 | 02178 | 2 | Wiper Seal ⊙ |
| 44 | 20783 | 2 | Stop Washer |
| 45 | 23174 | 2 | Capscrew, 12-24 x 3/8 Flat Hd |
| | 21834 | 2 | Capscrew, 12-24 x 3/8 Flat Hd SST (UWTR Model) |
| 46 | 12100 | 2 | Ball, 3/8 Dia Steel |
| 47 | 03709 | 2 | #5 SAE Plug |
| 48 | 20780 | 1 | Spool Assembly (Includes Items 49 thru 53) |
| 49 | 06625 | 2 | Spring Keeper |
| 50 | 20803 | 1 | Washer Keeper |
| 51 | 12138 | 1 | Compression Coil Spring |
| 52 | 24244 | 1 | Relief Poppet Ring |
| 53 | 20787 | 1 | Spool o.c./c.c. |
| 54 | 05117 | 1 | Adapter |
| 55 | 06617 | 1 | Compression Coil Spring |
| 56 | 01605 | 1 | O-Ring, .644 x .818 x .087 ⊙ |
| 57 | 20781 | 1 | Spring Cap |
| 58 | 20788 | 1 | Main Shaft |
| 59 | 20782 | 1 | Idler Shaft |
| 60 | 20769 | 1 | Idler Gear Assembly |
| 61 | 01262 | 1 | O-Ring, 1-3/4 x 1-7/8 x 1/16 ⊙ |
| 62 | 20770 | 1 | Motor Cap Assembly |
| 63 | 00145 | 6 | Lockwasher, 5/16 |
| | 00231 | 6 | Lockwasher, 5/16 High Collar (UWTR Model) |
| 64 | 00146 | 6 | Capscrew, 5/16-18UNC x 1-3/4 HSH |
| | 18206 | 6 | Capscrew, 5/16-18UNC x 1-3/4 HSH (UWTR Model) |
| 65 | 17689 | 1 | Name Tag |
| 66 | 11354 | 1 | OC/CC Sticker |
| 67 | 01403 | 1 | O-Ring, 7/8 x 1 x 1-1/16 (UWTR Model) ⊙ |
| 68 | 03364 | 2 | #5 SAE O-Ring ⊙ |
| | 15875 | 1 | Tool Operator Warning Tag (Not Illustrated) |
| 69 | 00026 | 2 | O-Ring, 3/16 x 1/16 ⊙ |
| 70 | 22764 | 1 | Bearing Assy |
| 71 | 20758 | 1 | Bushing |
| 72 | 05207 | 1 | Bushing |
| 73 | 20760 | 1 | Bushing |

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