SP40
SPIKE PULLER

Safety, Operation and Maintenance Manual

STANLEY

helps you do things right

17489 12/89

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.

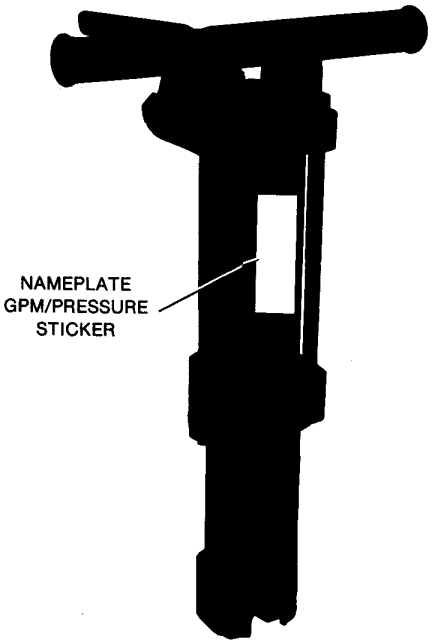
Supervising personnel should develop additional precautions relating to the specific work area and local safety regulations. If so, place the added precautions in the space provided on page 3.

GENERAL SAFETY PRECAUTIONS

The SP40 Spike Puller 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 spike puller and hose before operation. Failure to do so could result in personal injury or equipment damage.

- Establish a training program for all operators to ensure safe operation.
- The operator must be familiar with all prohibited work areas such as excessive slopes and dangerous terrain conditions.
- Do not operate the tool unless thoroughly trained or under the supervision of an instructor.
- Always wear safety equipment such as goggles, ear and head protection, and safety shoes when operating the spike diver.
- Never use tools near energized transmission lines.
- 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. Be sure all hose connections are tight.
- Do not operate the tool if it is damaged, improperly adjusted, or not completely and correctly assembled.

TOOL STICKERS AND TAGS



SP40
SPIKE PULLER
SERIAL Nº:
FLOW: 3-9 GPM/11-34 LPM
PRESS: 1500-2000 P.S.I.
70-140 BAR

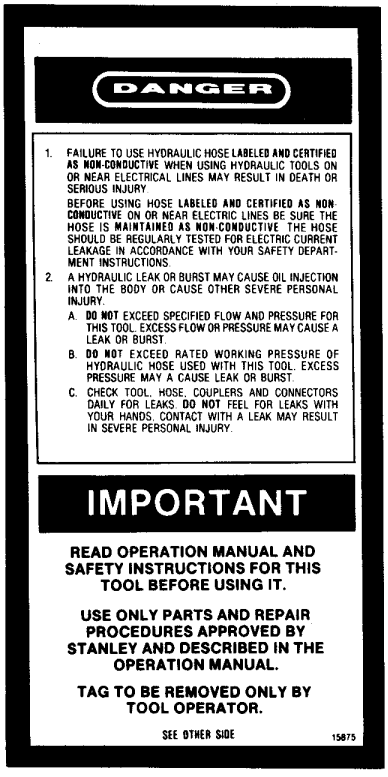
STANLEY®
Stanley Hydraulic Tools
Division of the Stanley Works

NAMEPLATE GPM/PRESSURE STICKER

A nameplate sticker is attached to the spike puller at the location shown. Never exceed the flow and pressure levels specified on this sticker.

The information listed on the sticker must be legible at all times. Always replace the sticker if it becomes worn or damaged. The sticker is available from your local Stanley distributor.

The safety tag at right is attached to the spike puller 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 spike puller when not in use.


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 ELECTRIC 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 DEPARTMENT 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 A CAUSE 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.

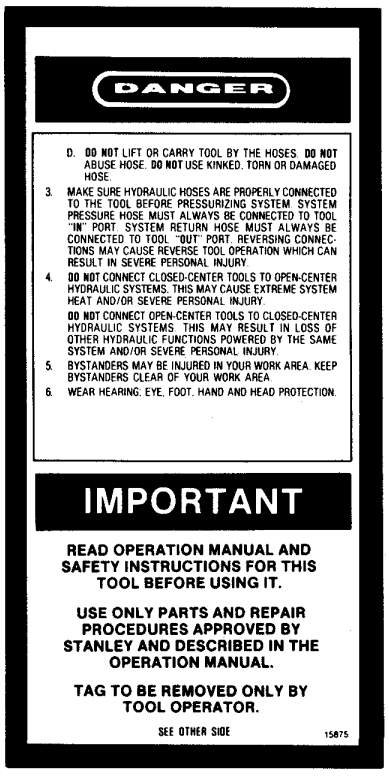
IMPORTANT

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 SIDE 15875


DANGER

   D. **DO NOT** LIFT OR CARRY TOOL BY THE HOSES. **DO 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.

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 SIDE 15875

SAFETY SYMBOLS

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

DANGER

This safety symbol may appear on the tool. It is used to alert the operator of an action that could place him/her or others in a life-threatening situation.

⚠ WARNING

This safety symbol appears in these instructions to identify an action that could cause bodily injury to the operator or other personnel.

IMPORTANT

This safety symbol appears in these instructions to identify an action or condition that could result in damage to the tool or other 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 store the tool in a clean, dry space, safe from damage or pilferage.
- Always keep critical tool markings, such as labels and warning 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.
- 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 may result in damage to the quick disconnect couplers and cause overheating of the hydraulic system.

HYDRAULIC HOSE REQUIREMENTS

HOSE TYPES

Always use hoses that have an oil resistant inner surface and an abrasive resistant outer surface. Hoses that conform to SAE100R1A or SAE100R2 are recommended for most tool applications. Whenever near electrical conductors, use **clean** SAE100R7 (nonmetalic braid) non-conductive hose.

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

1. Labeled and certified non-conductive
2. Wire braided (conductive)
3. Fabric braided (not certified or labeled non-conductive)

Hose 1 listed above is the only hose authorized for use near electrical conductors.

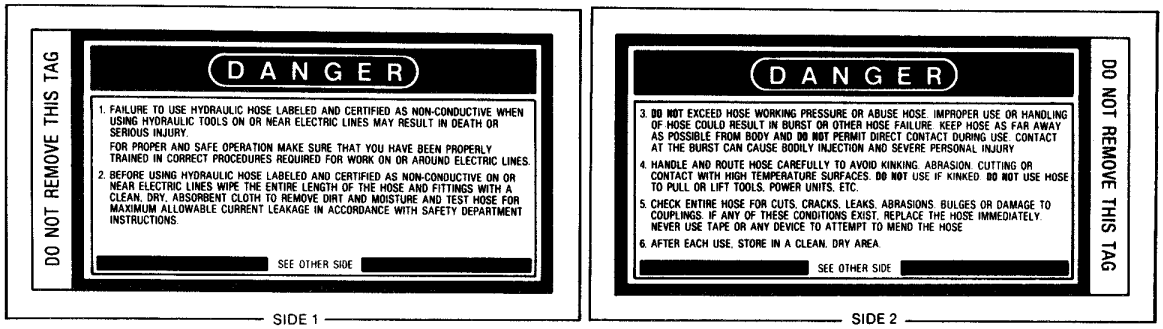
Hoses 2 and 3 listed above are **conductive** and **must never** be used near electrical conductors.

To help ensure your safety, the following DANGER tags are attached to all hose 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.

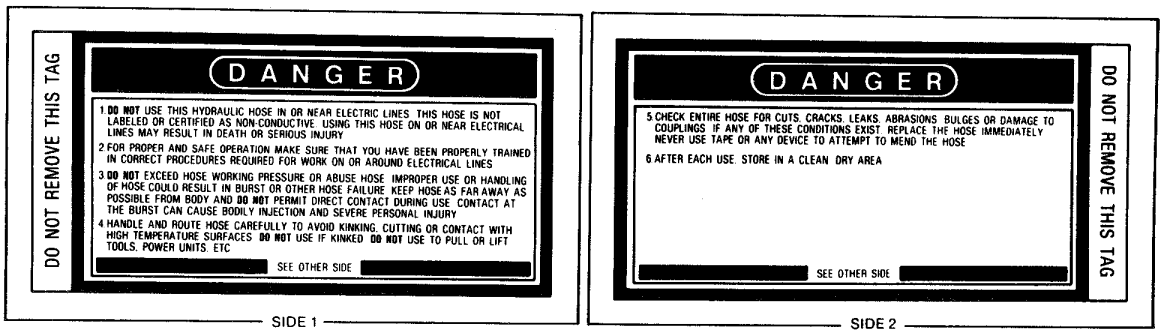
1 CERTIFIED NON-CONDUCTIVE HOSE

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



2 AND 3 WIRE- AND FABRIC-BRAIDED (NOT CERTIFIED OR LABELED NON-CONDUCTIVE) HOSE

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 spike puller.

HYDRAULIC SYSTEM REQUIREMENTS

- The hydraulic system should provide a flow of 4-9 gpm/15-34 lpm at an operating pressure of 2000 psi/140 bar. Recommended relief valve setting is 2100-2250 psi/145-155 bar.

- The hydraulic system should have no more than 250 psi/17 bar backpressure, measured at the tool end of the operating hose. 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 fluid 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 requireuments over a wide range of operating temperatures.

- The recommended hose size is .500 inch/12 mm I.D. up to 50 ft/15 m long and .625 inch/16 mm I.D. minimum up to 100 ft/30 m long.

- Do not use emulsifying hydraulic fluids. Keep the recommended fluids drained of settled moisture. Water in the fluid can cause pump cavitation and reduces or negates personnel safety gained through the use of non-conductive hoses.

OPERATING INSTRUCTIONS

CHECK POWER SOURCE

1. Using a calibrated flowmeter and pressure gauge, check that the hydraulic power source develops a flow of 4-9 gpm/15-34 lpm at 2000 psi/140 bar.

2. Make certain the hydraulic power source is equipped with a relief valve set to open at 2100-2250 psi/145-155 bar.

CONNECTING 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 return hoses first and disconnect them last to minimize or eliminate trapped pressure within the tool.

3. If hose couplers are used, observe the arrow on the coupler to ensure that the flow is in the proper direction. The female coupler on the tool hose is the inlet (pressure) coupler.

4. Move the hydraulic circuit control valve to the "ON" position to operate the tool.

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

TOOL OPERATION

1. Observe all safety precautions.

2. Position the puller against the spike to be pulled with the open side of the compression chute against the spike.

3. Kick the puller in place over the spike.

4. Squeeze the trigger to start the spike puller.

5. When the spike is completely pulled and ejected, release the trigger.

COLD WEATHER OPERATION

If the spike puller 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 spike puller can result from use with fluid that is too viscous or too thick.

SERVICE INSTRUCTIONS

Good maintenance practice keeps the spike puller 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 procedure contained in the HYDRAULIC SYSTEM REQUIREMENTS section of this manual to ensure peak performance from the tool.

Never disassemble the tool unless proper troubleshooting procedures have isolated the problem to an internal part. Disassemble it 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.

CHUTE/JAW DISASSEMBLY

The spike puller may be inoperable due to a bent or broken spike or because of debris jamming the jaw in the compression chute assembly.

Do not completely disassemble the spike puller. Follow the procedure below to avoid bending or scratching the piston rod.

1. Remove the two 3/8-16 UHC x 1/4-inch cap screws holding the chute assembly to the lower cylinder head.

2. The space between the chute and the cylinder head must be pulled apart wide enough to accommodate either the jaws of a machine vise or steel spacers at least 4 inches thick. Spacers must be equal in thickness to avoid bending the piston rod.

3. The vise jaws or spacers must be placed as shown in figure 1.

The vise jaws or spacers should cover the capscrew bolt holes but must not extend over the cavity in the chute assembly.

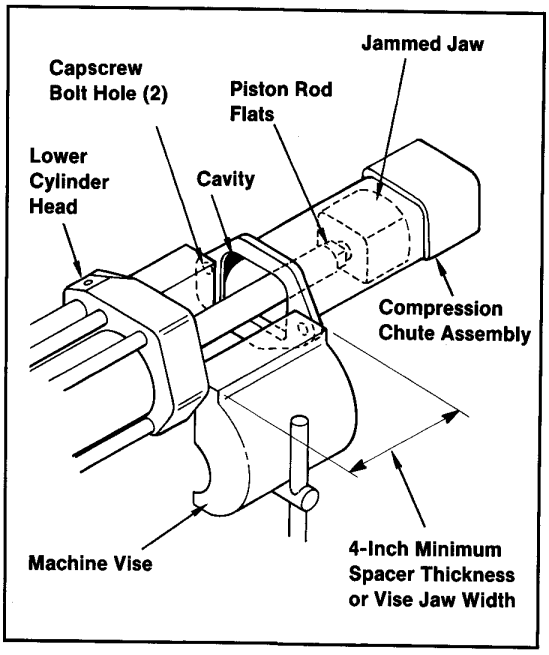


Figure 1. Placement of Vise Jaws or Spacers

4. Hold the trigger closed and connect the hydraulic supply hose. Slowly turn on the hydraulic power lever.

⚠ WARNING

Be sure to keep your fingers from between chute assembly and cylinder head during this step.

The jammed jaw should extend from inside the chute assembly. Be sure the vise jaws or spacers do not interfere with movement of the jaw.

Be sure both ends of the tool are supported during this step. If the jaw is pulled completely free, proceed to step 8.

5. The jaw may only partially extend from the chute. If so, it is necessary to place the barrel of the chute assembly in a vise and use a 7/8-inch open end wrench to unscrew the rod from the jammed jaw. Be sure to place the

open end wrench on the **piston rod flats only.** Be sure the opposite end of the tool is supported throughout this step.

6. If the jaw cannot be moved or it is impossible to access the piston rod flats, it may be necessary to cut off the chute so it can be replaced.

7. With the jaw removed from chute assembly, inspect both pieces for damage to the sliding surfaces. Be sure the chute flange has not been distorted. Repair or replace if necessary.

8. Inspect its piston rod. Replace the rod if bent or if surface has been damaged. Scratches on the flats does not require rod replacement. Unless the rod is to be replaced, further disassembly is unneccesary. For rod replacement, see COMPLETE SPIKE PULLER DISASSEMBLY.

9. Replace the rod by screwing it into the jaw. Use a wrench on the flats while holding the jaw in a vise. Tighten the rod to 200 ft lb/271 Nm lubricated.

10. Reassemble the unit as required.

PRIOR TO COMPLETE DISASSEMBLY

- Clean the exterior of the tool.
- Obtain Seal Kit (Part Number 18048) so all seals exposed during disassembly can be replaced during reassembly. Note the orientation of seals before removing them. Install new seals in the same position as original seals.

Note: For orientation of the parts identified in the following procedures, refer to the parts location at the center of this manual.

COMPLETE SPIKE PULLER DISASSEMBLY

1. Remove the two 3/8-16 UNC x 1-1/4 inch capscrews holding the compression chute assembly to the lower cylinder head. If necessary to separate the two pieces, apply compressed air (100 psi/9 bar) to the tool's "IN" port.

2. Hold the piston rod firmly with a 7/8-inch open-end wrench **(on the piston flats only)** and unscrew the jaw by turning counterclockwise.

3. Remove the trigger roll pin and trigger.

4. Remove the trigger spool cap. The compression coil spring pushes the spool out through the opening.

5. Remove the spool and spring.

6. Remove the o-ring plug and the o-ring from the opposite side of the handle.

7. Place the lower cylinder head into a soft-jawed vise so that the tool is upright.

8. Remove the four 5/8-11 UNC x 12-inch HSH capscrews.

9. Carefully lift the handle and cylinder tube straight up by the handles. Do not rock the cylinder tube. Rocking the cylinder tube can damage the handle and bend the oil tubes.

10. Remove the cylinder and piston rod. The piston itself should stay within the cylinder.

IMPORTANT

Do not unscrew the piston from the piston assembly. Damage to the rod can result from retightening the piston.

11. Pull the valve seat ring from the cylinder tube on the lower cylinder head assembly. Remove the valve ring and bow ring spring from the same assembly. Inspect parts for damage. Replace if necessary.

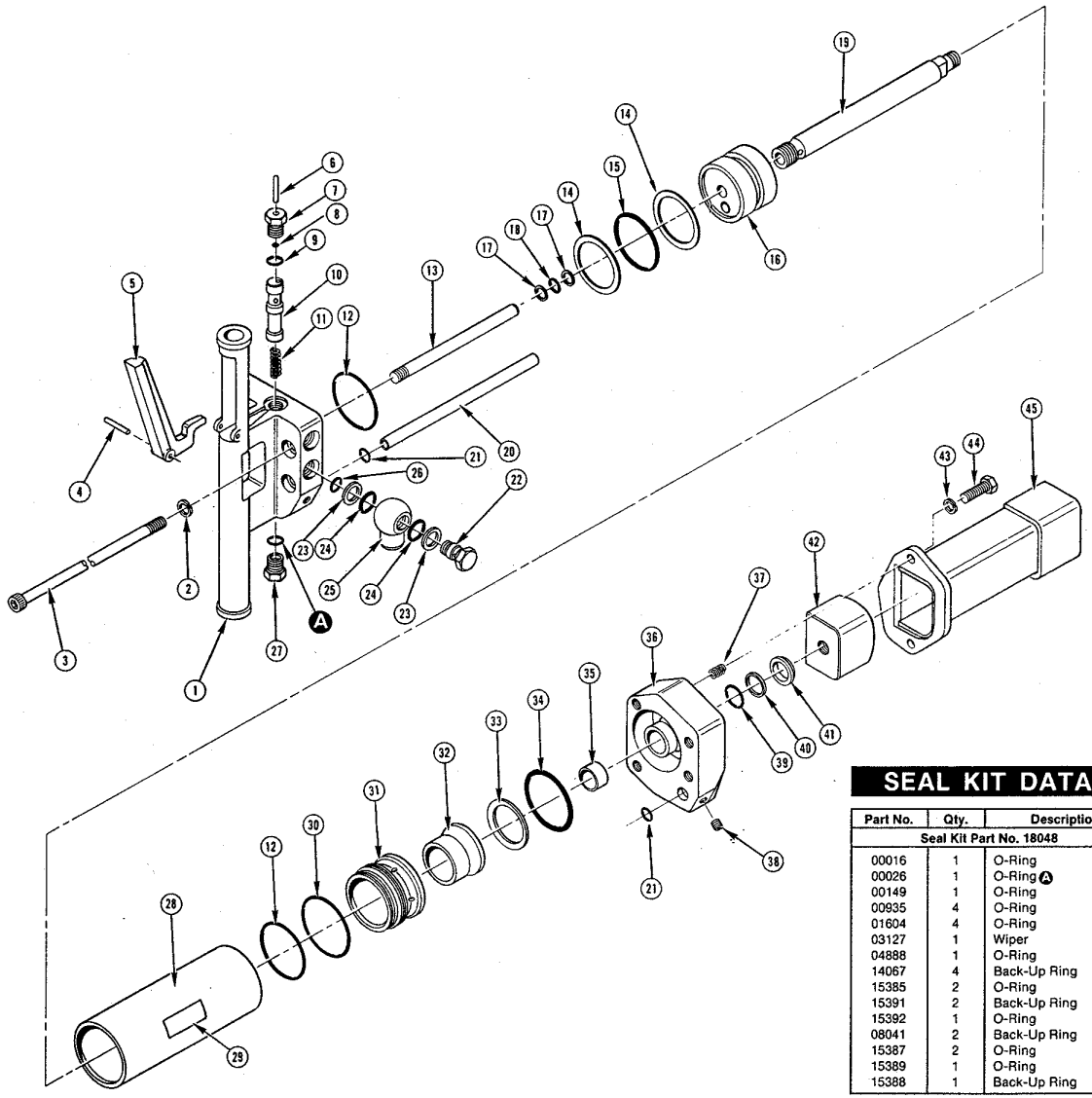
12. The spike puller down stroke should be considerably faster than the pull stroke. If it is not, the valve ring and valve seat are not closing the radial holes around the valve ring taper seal. Check for fit with color coat, bluing or grease and replace if necessary. Check bushings and seals.

13. Inspect the cylinder tube bore finish. Check the free action of the three piston check valves. Check the piston rod finish. Make sure rod is straight.

14. Inspect the cylinder oil tube. If scratched or damaged, it must be removed and a replacement bonded into handle center hole.

15. Inspect the trigger valve spool and valve bore for finish and free spool movement.

procedures continued on page 12



SEAL KIT DATA

Part No.	Qty.	Description
Seal Kit Part No. 18048		
00016	1	O-Ring
00026	1	O-Ring Ⓐ
00149	1	O-Ring
00935	4	O-Ring
01604	4	O-Ring
03127	1	Wiper
04888	1	O-Ring
14067	4	Back-Up Ring
15385	2	O-Ring
15391	2	Back-Up Ring
15392	1	O-Ring
08041	2	Back-Up Ring
15387	2	O-Ring
15389	1	O-Ring
15388	1	Back-Up Ring

PARTS LIST

Item No.	Part No.	Qty	Description
1	15381	1	Handle
2	02230	4	Lockwasher, 5/8
3	15383	4	Capscrew, 5/8-11 UNC x 12 HSH
4	15384	1	Roll Pin, 1/4 x 1-5/8
5	15373	1	Trigger
6	15352	1	Trigger Push Pin
7	15366	1	Spool Cap
8	00026	1	O-Ring, 3/16 I.D. x 1/16-008 ⊙
9	01604	2	O-Ring, #10 SAE 910 ⊙
10	15374	1	Spool
11	15356	1	Compression Coil Spring
12	15385	2	O-Ring, 3.000 I.D. x 1/16 -041 ⊙
13	15358	1	Cylinder Oil Tube (Center)
14	15391	2	Back-Up Ring, -33C ⊙
15	15392	1	O-Ring, 2-7/8 x 3-1/4 x 3/16-33G ⊙
16	15370	1	Piston Assembly
17	08041	2	Back-Up Ring, Size .015 ⊙
18	00016	1	O-Ring, Size 9/16 ID x 1/16 -015 ⊙
19	15368	1	Piston Rod
20	15359	1	Oil Tube (Offside)
21	15387	2	O-Ring, 5/8 x 3/4 x 1/16 -016 ⊙
22	14056	1	Stud
23	14067	2	Back-Up Ring -122 ⊙
24	00935	2	O-Ring 1-1/8 x 3/32 -122 ⊙
25	14065	1	Eye Pivot
26	01604	1	O-Ring, #10 SAE -910 ⊙
	14058	2	**Swivel fitting Assembly** (Includes Items 22 thru 26)
27	15354	1	Modified O-Ring Plug
28	15367	1	Cylinder Tube
29	17771	1	Name Tag
30	00149	1	O-Ring, 3-1/4 x 3-3/8 x 1/16 -042 ⊙
31	15379	1	Valve Seat Ring
32	15369	1	Valve Ring
33	15355	1	Spring (Bow Spring)
34	15389	1	O-Ring, 3-1/4 x 3-7/16 x 3/32 -152 ⊙
35	08146	1	Bushing
36	15376	1	Lower Cylinder Head
37	00698	2	Heli Coil, 3/8-16 UNC x .562
38	01545	1	Plug, 1/4 NPT HSH
	15375	1	**Lower Cylinder Head Assembly** (Includes Items 35 thru 38)
39	04888	1	O-Ring, 1-1/4 x 1-7/16 x 3/32 -124 ⊙
40	15388	1	Back-Up Ring, -124 ⊙
41	03127	1	Wiper, 1-1/4 x 1-5/8 x 3/16 ⊙
42	15377	1	Standard Jaw
43	01459	2	Lockwasher, 3/8
44	02099	2	Capscrew, 3/8-16 UNC x 1-1/4
45	15378	1	Compression Chute Assembly

NOTE: Use Part Name and Part Number when ordering.
⊙ Denotes part in Seal Kit.
Ⓐ Supplied as Part of Item (27)

procedures continued from page 9

16. Inspect the mating surfaces of the valve ring and valve seat ring. The surfaces of both should be smooth. Damage to either of these surfaces can allow fluid to bypass the valve and slow the action of the puller.

To test the valve ring and valve seat ring, place the parts nested together onto a flat surface. Apply low-pressure compressed air to the orifice. The two parts should be sealed and should allow no air leakage. If air escapes between the two parts, replace one or both parts.

PRIOR TO ASSEMBLY

- Clean all parts with a degreasing solvent.
- Obtain seal kit (Part Number 18048) so that all seals exposed during disassembly can be replaced during reassembly.
- Ensure that all seals exposed during disassembly are replaced with new mbly.
- Apply clean grease or o-ring lubricant to all parts during assembly.

Note: For orientation of parts identified in the following procedures, see the parts list exploded view illustrtion at the center of this manual.

SPIKE PULLER ASSEMBLY

1. Position the two greased o-rings over the valve seat ring.

2. Position the bushing, o-ring, and bow-ring spring into the lower cylinder head.

3. Fit the valve ring inside the valve seat ring and position inside the lower cylinder head, against the bow-ring spring.

4. Holding the piston assembly (attached to the piston rod), insert the threaded end of the piston rod through the top of the lower cylinder assembly, exposing the threads on the lower side.

5. Position the o-ring, back-up ring, and wiper over the exposed, threaded end of the piston rod. Lubricate the piston rod threads with waterproof grease.

6. Holding the piston rod by the wrench flats, turn the jaw onto the rod and tighten to a torque of 200 lb ft/271 Nm lubricated.

7. Apply waterproof grease to the top end of the compression chute, near the flange.

8. Position the compression chute over the jaw and against the lower cylinder head. Install the two 3/8-16 UNC x 1-1/4 inch capscrews and lockwashers through the holes in the compression chute and into the threaded holes in the lower cylinder head. Tighten the capscrews to a torque of 20 lb ft/27 Nm lubricated.

9. Position the two back-up rings and the o-ring over the piston assembly.

10. Inspect the threaded center oil tube which is bonded to the handle. It must be smooth and unscratched to seal well with pressure seal at piston center. Do not remove this tube unless bent or unless the finish has been damaged.

11. Inspect the trigger spool and valve bore for scratches or damage. If either is worn or damged, check power unit fluid and filter. The fluid must be clean and free of water. If not, the power supply must be emptied, flushed with clean fluid and a new full-flow filter installed.

12. Replace both the o-ring and back-up rings located in the center of the piston. The flat side of the back-up rings must face away from the o-ring. Inspect the rod for straightness. Make sure the surface is free of nicks and dents.

13. Inspect cylinder bore. Be sure it is smooth and free of dents or scratches.

14. Inspect the bushing in lower cylinder head. It should be a smooth, gray color. Replace the o-ring, back-up ring and wiper ring on opposite side of the lower cylinder head.

NOTE: If any internal, polished are scratched or bushings or seals worn, this indicates power supply fluid is contaminated. Clean and flush out the power supply and replace the fluid and filters before reconnecting tool.

15. Position the cylinder tube over the piston assembly, against the lower cylinder head and the valve seat ring.

16. Position the two back-up rings and the o-ring over the center cylinder oil tube.

17. Position one o-ring over each end of the offside oil tube. Position one end of the offside oil tube into the oil tube hole in the lower cylinder assembly.

18. Position the o-ring over the cylinder tube flange on the handle.

19. Taking care to align the offside oil tube with the oil tube hole in the handle, position the handle over the cylinder tube.

20. Lubricate the threads and install the four 5/8-11 UNC x 12-inch capscrews and lock-washers through the holes in the handle and into the threaded holes in the lower cylinder head. Tighten the capscrews to a torque of 110 lb ft/149 Nm.

21. Install the o-ring plug and its o-ring.

22. Position the compression coil-spring, spool, o-rings, spool cap, and trigger push pin into the trigger spool cavity in the handle. Tighten the spool cap firmly.

23. Postion the trigger and install the roll pin.

24. Insert the swivel fitting stud through the back-up ring, o-ring, and eye pivot, and place the o-ring, back-up ring, and small o-ring over the stud. Screw this assembly into the handle fitting hole. Tighten the stud to a torque of 80 lb ft/108 Nm.

25. Repeat Step 24 for the second swivel stud.

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 spike puller, make sure the hydraulic power source is supplying the correct hydraulic flow and pressure to the spike puller as listed in the table. Use a flowmeter known to be accurate. Check the flow when the hydraulic fluid temperature is at least 80° F/27° C.

PROBLEM	CAUSE	REMEDY
Spike puller does not run.	Power unit not functioning.	Check power unit for proper flow and pressure (4-9 gpm/15-34 lpm, 2000 psi/140 bar).
	Couplers or hoses blocked.	Remove restriction.
	Pressure and return line hoses reversed at ports.	Be sure hoses are connected to their proper ports.
Spike puller does not pull effectively.	Power unit not functioning properly.	Check power unit for proper flow and pressure (4-9 gpm/ 15-34 lpm, 2000 psi/140 bar).
	Couplers or hoses blocked.	Remove restriction.
	Fluid too hot (above 140° F/ 60° C).	Provide cooler to maintain proper fluid temperature (140° F/60° C max).
	The jaw is not sliding freely in the spike puller chute.	Remove, clean and replace as required.
Spike puller operates slow.	Low gpm supply from power unit.	Check power source for proper flow (4-9 gpm/15-34 lpm).
	High backpressure.	Check hydraulic system for excessive backpressure (over 250 psi/17 bar).
	Couplers or hoses blocked.	Remove restriction.
Jaw retracted with tool in neutral position.	Pressure and return lines reversed at ports.	Be sure hoses are connected to their proper ports.

PROBLEM	CAUSE	REMEDY
Spike puller operates slow. (Cont.)	Fluid too hot (above 140° F/ 60° C) or too cold (below 60° F/ 16° C).	Check power source for proper fluid temperature. Bypass cooler to warm fluid or provide cooler to maintain proper temperature.
	Relief valve set too low.	Adjust relief valve to 2100-2250 psi/148-158 bar.
Spike puller gets hot.	Hot fluid going through tool.	Check power unit. Be sure flow rate is not too high causing part of the fluid to go through the relief valve. Provide cooler to maintain proper fluid temperature (140° F/60° C max).Check relief valve setting.
		Eliminate flow control devices.
Fluid leakage on spike.	Piston seal failure.	Replace seal.
Fluid leakage around trigger.	Valve spool seal failure.	Replace seals.
Jaw is jammed inside compression chute assembly.	Bent or broken spike, debris in chute.	See CHUTE/JAW DISASSEMBLY INSTRUCTIONS.

SPECIFICATIONS

Capacity	13,000 lb/590 kg
Weight	45 lbs/20 kg
Length	25-1/2 in./64.7 cm
Width (At Handles)	14 in/35 cm
Pressure	2000 psi/140 bar
Flow Range	4-9 gpm/15-34 lpm
Optimum Flow	5 gpm/20 lpm
Port Size	#8 SAE O-ring
Hose Whips	Yes
Connect Size and Type	3/8 in. Male Pipe Hose End

NOTE

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

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 which 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.

SERVICE AND REPAIR NOTES

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STANLEY®

helps you do things right

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