HB29

UNDERWATER

HYDRAULIC BRUSH

Safety, Operation and Maintenance Manual

STANLEY®

helps you do things right

17743 U.S.A. 11/89

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 4.

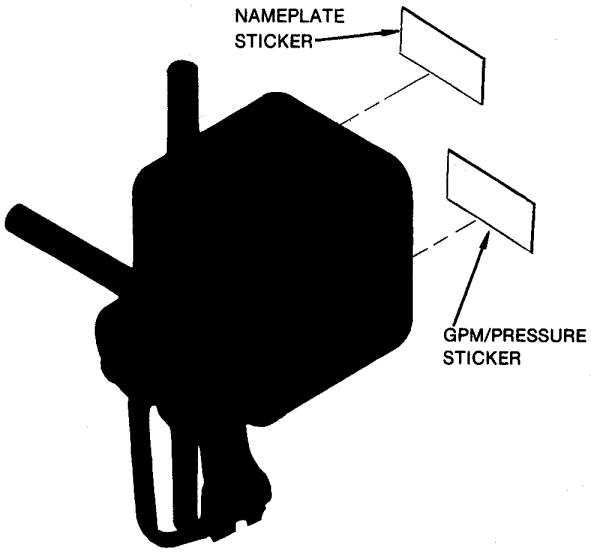
GENERAL SAFETY PRECAUTIONS

The HB29 Hydraulic Brush will provide safe and dependable service if operated in accordance with the instructions given in this manual. Read and understand the safety precautions given in 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.

- Operator's must be familiar with all prohibited work areas.
- Do not operate the tool if it is damaged, improperly adjusted or not completely and correctly assembled.
- Do not overreach. Maintain 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.
- Establish a training program for all operators to ensure safe operation.
- Do not operate the tool unless thoroughly trained or under 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 when using tool on or near electric lines.
- Do not operate the tool at oil 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.
- Always hold the tool with both hands when the unit is running. Use a firm grip.
- Keep all parts of your body away from a rotating brush/disc.
- Keep the brush/disc off all surfaces when starting the tool.
- Always carry the tool with the brush stopped.
- Make sure the brush/disc has stopped before setting down the tool.
- Keep the handles clean and free of oil at all times.
- All services must be performed by experienced service personnel only.

- Always inspect brush/disc for possible damage before installation.
- Never transport or store the tool with the brush/disc installed.
- Never cock, jam or wedge the brush/disc during operation.
- Never cause sparks in the vicinity of flammable materials.
- Do not start grinding until you have a clear work area.
- Do not allow other persons near the tool when starting or operating the tool.
- Never operate the tool when you are tired or fatigued.
- Do not use a brush/disc that is cracked or otherwise damaged.
- Always wear safety equipment at all times when operating the tool.
- Do not reverse brush/disc rotation direction by changing oil flow direction.
- Be alert for loose debris, cables and abrupt changes in surface texture.

TOOL STICKERS AND TAGS



The stickers and tags attached to the tool 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 those that have become worn or damaged. They are available from your Stanley distributor.

STANLEY Stanley Hydraulic Tools
Milwaukie, Oregon U.S.A.

Model No. HB29301 Serial No.

Manufactured under on or more of the following US Patent Nos

NAMEPLATE STICKER

CAUTION

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 HOSES 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 INJECTION INTO THE BODY. ■ FAILURE TO OBSERVE THESE PRECAUTIONS CAN RESULT IN SERIOUS PERSONAL INJURY. 03788

GPM/PRESSURE STICKER

The safety tag at right is attached to the tool 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 tool 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

0 **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 which, 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.

IMPORTANT

In addition to the Safety Precautions on pages 1 thru 4 of this manual, observe the following for equipment protection and care.

- 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 couplers and cause overheating of the hydraulic system.
- Always store the tool in a clean dry space, safe from damage or pilferage.
- Make sure the circuit PRESSURE hose (with male quick disconnect) is connected to the port farthest 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. This can cause damage to internal seals and to the brush/disc.
- 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 2000 psi/140 bar.
- Do not exceed 12 gpm/45 lpm flow rate. Rapid failure of the internal seals may result.
- Always keep critical tool markings, such as labels and warning stickers legible.

HYDRAULIC HOSE REQUIREMENTS

HOSE TYPES

All hoses must have an oil-resistant inner surface and an abrasive-resistant outer surface. Hoses that conform to SAE1000R1A are recommended for most tool applications. Whenever near electrical conductors, use **clean** SAE100R7 labeled and certified non-conductive.

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.

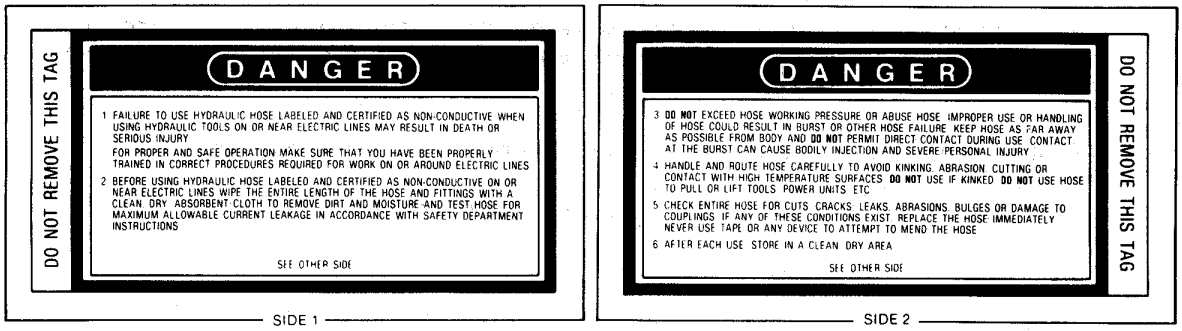
Hoses 2 and 3 listed above are **conductive** and **must never** be used near electrical conductors.

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 may be obtained at no charge from your Stanley distributor.

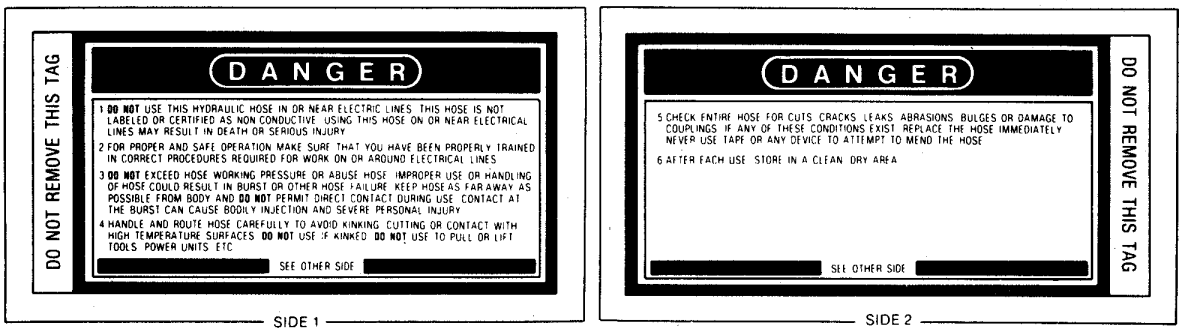
1 CERTIFIED NON-CONDUCTIVE HOSE

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 tool.

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/53-140 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/22°C difference between ambient temperature and oil temperature.
- The hydraulic system should have a minimum of 25 micron 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 nonconductive properties and viscosity indexes over 140 will meet the recommended requirements over a wide range of operating temperatures.
- The recommended hose size is .500 inch/12 mm I.D. to 50 ft/15 m long and .625 inch/16 mm I.D. minimum up to 100 ft/30 m long.
- The tool return hose must connect directly to the circuit return line and go straight through the oil filter, thermal valve, and oil 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 and will reduce or negate the personnel safety factor gained through the use of nonconductive hoses.

OPERATION

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 950-2000 psi/67-140 bar.

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

CHECK TRIGGER MECHANISM

1. Check that the trigger operates smoothly and is free to travel between the "ON" and "OFF" positions.

2. Check that the trigger is set to disengage the tool when released.

CHECK HANDLE

Check that the handle bar is securely screwed into the floatation bracket. Remove any oil from the handle.

CHECK BRUSH/DISC ADAPTER

1. Inspect the brush/disc for cracks and other structural damage.

2. Ensure that the spindle end nut is tight and holds the brush/disc securely.

⚠ WARNING

Never use a washer or other such hardware in place of the brush/disc adapter. This can cause the brush/disc to fracture, resulting in serious personal injury.

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 avoid trapped pressure within the tool.

3. Observe the arrow on hose couplers to ensure that the flow is in the proper direction. The female coupler on the tool is the inlet (pressure) coupler.

4. Make sure the circuit PRESSURE hose (with male quick disconnect) is connected to the port farthest from the trigger. The circuit RETURN hose (with female quick disconnect) is connected to the port closest to the trigger.

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

TOOL OPERATION

For best results, use only Stanley approved accessories. They have been designed and selected to get the most from the tool.

A brush/disc has been designed for hull-scrubbing operations such as removal of barnacles and chemical buildup from underwater surfaces and is recommended for use with the HB29.

Review the Safety Precautions given at the front of this manual before operating the tool.

Remember to grip the tool with both hands at all times during startup and operation and be sure you have full balance before starting brush rotation. Always keep your body away from the "plane of rotation" of the brush/disc rotation.

Always start brush/disc rotation off the work surface. Start hydraulic flow at 1 GPM and slowly increase flow to a level that produces desired efficiency, but allows the operator to maintain full balance and control.

⚠ WARNING

Starting the hydraulic brush on the work with full hydraulic flow can push the operator off balance, creating a condition that can cause severe personal injury.

Refer to the TROUBLESHOOTING table in this manual to isolate other possible conditions that can lower tool efficiency.

COLD WEATHER OPERATION

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

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

SERVICE INSTRUCTIONS

Good maintenance practices will keep the tool on the job and increase its service life.

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

Follow the procedures contained in the "HYDRAULIC SYSTEMS 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. Then, only disassemble the tool 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.

SCHEDULED LUBRICATION

The tool should be lubricated yearly. Use waterproof EP-1 grease or equal. Grease the unit through the grease fitting on the bearing carrier.

Remove the 1/8 pipe plug from the bearing carrier and pump grease into the grease fitting until clean grease exits the pipe plug hole.

Install the pipe plug and tighten securely.

PRIOR TO DISASSEMBLY

- Clean the exterior of the tool.
- Obtain waterproof EP-1 grease or equal.
- Obtain Seal Kit (Part Number 17741) to replace all seals exposed during disassembly. Note orientation of seals before removing them. Install new seals in the same position as original seals.

DISASSEMBLY

REMOVAL OF BEARING CARRIER AND SPINDLE SHAFT

1. Remove the floatation collar by removing the four 5/16-18 x 1-inch/25.4 mm capscrews that hold the collar to the floatation bracket weldment.

2. Unfasten the lower end of the trigger guard by removing the ESNA #10 nut and 10-24 x 1-inch/25.4 mm capscrews.

3. Remove the motor cap as described in **step 1** of DISASSEMBLY OF MOTOR SECTION, then remove the gears and woodruff key from the end of the spindle shaft.

IMPORTANT

When pulling the assembled bearing carrier away from the main housing, the woodruff key on the end of the spindle shaft may damage the o-ring and bushings in the main housing. It will be necessary to remove the motor cap to remove the woodruff key first.

4. Remove the four 5/16-18 x 1-inch/25.4 mm capscrews that secure the floatation bracket weldment bearing carrier to the main assembly.

5. Carefully separate the bearing carrier from the main housing. The spindle shaft, seal, o-ring, bearing and two retainer rings will remain with the carrier. DO NOT pry or in any way excessively force the bearing carrier off of the main housing.

6. To remove the spindle shaft and bearing from the bearing carrier, remove the large internal retaining ring. Remove the bearing from the spindle shaft by removing the small external retaining ring.

7. Remove the o-ring, then press the seal out of the bearing carrier.

DISASSEMBLY OF MOTOR SECTION

The motor section consists of the drive gear, idler gear assembly, idler shaft, motor cap assembly, o-ring and spindle shaft.

1. Remove the eight 3/8-16 x 1-3/4 inch/44 mm long sockethead capscrews and lockwashers securing the motor cap assembly to the main housing. Carefully remove the motor cap.

IMPORTANT

DO NOT pry or in any way excessively force the motor cap assembly off the main housing. If necessary, loosen the motor cap by tapping lightly with a non-metallic mallet.

2. Remove the #5-821 large o-ring from the motor cap. Discard the o-ring. Use the new o-ring provided in the seal kit during assembly.

3. Remove the idler gear and idler shaft. Slide the drive gear off of the spindle shaft. Be careful not to lose the woodruff key.

4. Inspect the motor parts as described in this section prior to assembly. Replace any parts found to be defective.

MOTOR SECTION CLEANING AND INSPECTION

Cleaning

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

Inspection of Bushings (Main Housing and Motor Cap)

The inside of the bushings should be gray in color. If a significant amount of yellow-bronze shows, the bushing is worn and the assembly should be replaced. Inspect shafts for corresponding wear and replace as required.

Inspection of 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.

Inspection of Gears

Both gears should have flat, straight tips without nicks. They should have smooth even polish on the teeth and end faces. Discard the gear if cracks are present. Further use can cause severe internal damage.

Inspection of Main Housing Assembly

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

IMPORTANT

If abnormal wear occurs in excess of normal polishing, both shafts and associated parts must be replaced. The hydraulic system should be thoroughly flushed and the filter replaced before further operation of the tool.

Inspection of Spindle Shaft

The main shaft diameter at the bushing location must be smooth. Grooves, roughness or a reduced diameter indicates fluid contamination and damaged bushings.

DISASSEMBLY OF MAIN HOUSING

1. Remove the 1/2-20 x 1/4-inch/6.4 mm setscrew securing the valve keeper to the reversing spool. Remove the keeper.

2. Remove the retaining ring at the opposite end of the spool.

3. Push on the retaining ring end of the reversing spool and slide the spool out of the housing. Remove the two backup rings and o-rings from the spool.

4. Remove the trigger by removing the 10-24 x 1-3/4 inch/44 mm capscrew and ESNA #10 nut.

5. Unscrew and remove the spool cap. Remove the two o-rings and needle roller from the cap.

6. Remove the valve spool assembly (with internal reverse check ball assembly).

Note: The valve sleeve will remain in the main housing. It is not removable in the field. If the sleeve is damaged, return the main housing to your Stanley dealer.

7. Remove the retaining ring at the bearing carrier end of the main housing. Remove the back-up washer, back-up ring and o-ring. The o-ring is subject to severe service and should be replaced whenever the main shaft is serviced.

PRIOR TO ASSEMBLY

- 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.
- Obtain seal kit (Part Number 17741) so that all seals exposed during disassembly can be replaced.

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

ASSEMBLY PROCEDURES

ASSEMBLY OF MAIN HOUSING

1. Lubricate and install the spring and spool assembly in the main housing. There is a hex plug in one end of the spool to retain the steel check ball and strut. This end of the spool must be installed first.

2. Lubricate and install the two o-rings in the spool cap, then screw the cap into the main housing. Tighten securely.

3. Lubricate and install the needle roller.

4. Install the trigger using the 10-24 x 1-3/4 inch/44 mm capscrew and ESNA #10 nut.

5. Lubricate and install one o-ring on the small diameter end of the reversing spool. Install one back-up ring on the same end.

6. Insert the large diameter end of the reversing spool into the left side of the spool bore of the main housing. Insert the spool just far enough to expose its second o-ring groove on the far side of the main housing.

7. Lubricate the second o-ring and install on the exposed groove in the large diameter end of the reversing spool. Install the second back-up ring on the same end.

8. Push the reversing spool to a neutral position.

9. Install the retaining ring onto the large diameter end of the reversing spool. Turn the spool so that the hole on the small end points toward the motor cap end of the tool.

10. Install the valve keeper onto the small diameter end of the reversing spool. Install the setscrew and tighten securely.

11. Lubricate and install the spindle shaft o-ring in the main housing. Install the back-up washer and secure in place using the internal retaining ring.

ASSEMBLY AND INSTALLATION OF BEARING CARRIER

IMPORTANT

Fill the bearing carrier with water-proof grease before assembly parts.

1. Install the ball bearing on the spindle shaft and secure in place using the small external retaining ring.

2. Lubricate and install the shaft seal in the bearing carrier. Make sure the new seal is installed in the same direction as the original seal.

3. Install the o-ring in the bearing carrier.

4. Position the bearing carrier onto the shaft far enough to install the internal retaining ring.

5. Make sure the spindle shaft is well lubricated and that the woodruff key is removed. Carefully position the assembled bearing carrier against the main housing, making sure the shaft does not damage the o-ring seal in the main housing.

6. Secure the bearing carrier in place using the four 5/16-18 x 1 inch/25.4 mm long capscrews. Be sure to install the floatation bracket against the face of the bearing carrier before installing the four capscrews. (see parts list illustration). The trigger guard is fastened by two capscrews as shown in the illustration.

7. Connect the lower section of the trigger guard to the main housing using the ESNA #10 nut and 10-24 x 3/4 inch/19 mm long capscrew.

ASSEMBLY OF MOTOR SECTION

1. Grip the main housing in a vise with the handle in the vertical position.

2. Inspect the motor cap gear chamber, gears and bushings as specified in this section.

IMPORTANT

Fill the front hollow of the main housing with waterproof grease before installing motor gears and motor cap.

3. Lubricate and install the drive gear and idler gear in the motor cap.

4. Install the idler shaft in the idler gear.

5. Lubricate and install the large o-ring in the motor cap.

6. The spindle shaft remains with the bearing carrier during disassembly. If the carrier has been removed, it must be assembled and installed on the main housing before the motor cap can be installed.

7. Install the woodruff key on the spindle shaft. Align the keyway in the drive gear with the woodruff key, then position the assembled motor cap against the main housing. Make sure that the drive gear slides on the spindle shaft so that the woodruff key enters the keyway in the drive gear.

8. Lubricate and install the eight 3/8-16 x 1-3/4 inch/44 mm long sockethead capscrews and washers. Tighten to a torque of 22-25 ft lb/29.8-33.9 Nm.

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

PROBLEM	CAUSE	REMEDY
Low performance	Incorrect hydraulic flow.	Check that power source is producing 4-12 gpm/15-45 lpm at 1000-2000 psi/70-140 bar.
	Defective quick disconnet couplers.	Check each quick disconnect.
Oil leak at motor cap face.	Fasteners loose.	Tigthen to recommended torque.
	Face o-ring worn or missing.	Replace as required.
	Motor cap/main housing damaged.	Replace as required.
Oil leaks at reversing spool.	Damaged o-rings.	Replace as required.
	Wrong hydraulic fluid. Circuit too hot.	See HYDRAULIC SYSTEM REQUIREMENTS for correct fluid/circuit specifications.
	Hydraulic pressure and return reversed.	Correct hose connections.
Oil gets hot, power unit working hard.	Open center tool on a closed center circuit.	Use open-center circuit or use closed-center spool.
	Too much oil going through tool.	Adjust flow for 12 gpm/45 lpm maximum.
	Circuit is generating high heat with flow controls, popover relief, etc.	Use pump size and rpm for producing needed flow only. Eliminate circuit heating cause.
	Circuit has contaminants which have caused wear and high heat generation.	Replace worn pump and valves; install a large clean filter and keep circuit fluid clean.

PROBLEM	CAUSE	REMEDY
Tool doesn't run.	Power unit not functioning.	Check power unit for output of 4-12 gpm/15-45 lpm at 2000 psi/140 bar.
	Pressure and return hoses reversed, reversing flow direction.	Correct for proper flow direction. Brush/disc should rotate counterclockwise when viewed from shaft end.
	Coupler or hoses blocked.	Remove obstruction.
	Mechanical failure.	Disassemble tool and inspect for damage.
Tool runs backwards.	Pressure and return hoses reversed, reversing flow direction.	Correct for proper flow direction. Brush/disc should rotate counterclockwise when viewed from shaft end.
	Reversing spool incorrectly assembled.	Refer to SERVICE INSTRUCTIONS.
Brush/disc wheel comes to abrupt stop after release of trigger (land use).	Mechanical failure.	Disassemble tool and inspect for damage.
	Check valve in trigger spool not functioning correctly.	Replace trigger spool assembly. Check valve not serviceable.

SPECIFICATIONS

Capacity	3/4-16 Spindle Shaft
Weight	15 lbs/6.8 kg
Length (With Floatation Collar)	14-3/4 in./37.5 cm
Width (Without Handle)	8 in./20.5 cm
Pressure	1000-2500 psi/70-176 bar
Flow Range	4-12 gpm/15-45 lpm
Optimum Flow	2200 rpm at 10 gpm/38 lpm
Porting	#8 SAE o-ring
Connect Size and Type at Hose Whip Ends	1/2 Male Pipe
Hose Whips	Yes
Motor	Integral

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, except for cutting parts, steels and other parts not manufactured by Stanley (such as impact mechanisms, alternators, regulators and hoses).

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

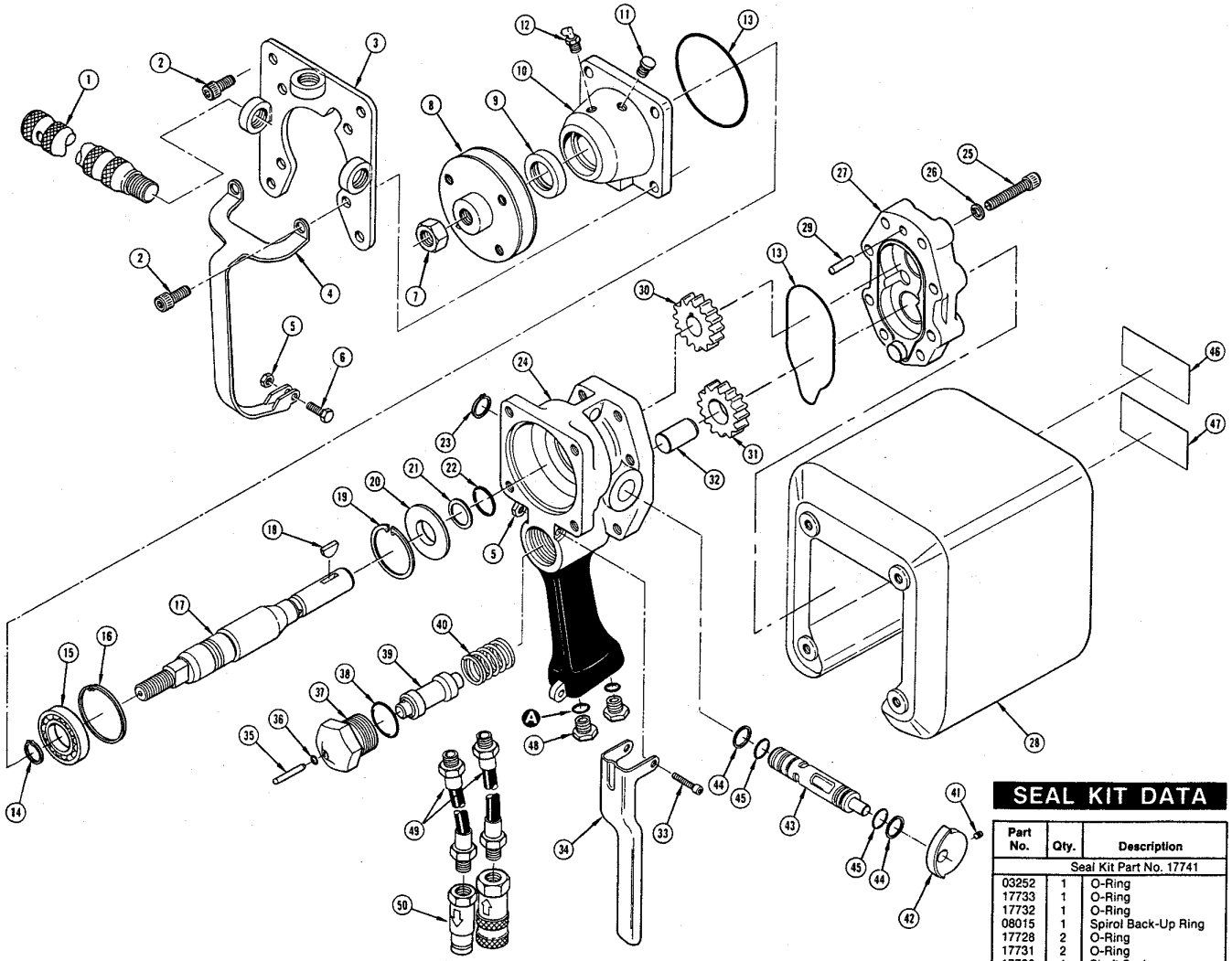
Stanley reserves the right to replace or repair only those parts which under our examination prove to have been defective at the time of purchase.

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



SEAL KIT DATA

Part No.	Qty.	Description
		Seal Kit Part No. 17741
03252	1	O-Ring
17733	1	O-Ring
17732	1	O-Ring
08015	1	Spirol Back-Up Ring
17728	2	O-Ring
17731	2	O-Ring
17736	1	Shaft Seal
17739	2	O-Ring
09396	1	Contour Back-Up Ring
17730	1	O-Ring

PARTS LIST

Item No.	Part No.	Qty.	Description
1	17699	2	Handle, 9 in. Long
2	13815	8	Capscrew, 5/16-18 x 1 in.
3	17718	1	Floatation Bracket
4	12285	1	Trigger Guard
5	07724	2	Nut, ESNA #10
6	12287	1	Capscrew, 10-24 x 1 in. Hex Hd STNLS
7	17690	1	Spindle End Nut
8	17701	1	Brush/disc Adapter Plate (Shipped Loose)
9	17736	1	Shaft Seal, J Crane "T" #112-175-12-140421⊙
10	17705	1	Bearing Carrier
11	00961	1	Pipe Plug, 1/8 SST
12	18088	1	Grease Fitting, 1/8 NPT, 85SST
13	17739	2	O-Ring, 3-1/4 x 3-3/8 x 1/16 -042⊙
14	17737	1	Retaining Ring, #5100 -118 SST
15	17738	1	Ball Bearing, #6206 SST
16	17740	1	Retaining Ring #5000 -244 SST
17	17697	1	Spindle Shaft
18	00772	1	Woodruff Key #605
19	00166	1	Retaining Ring, 1.85 Internal
20	07987	1	Back-Up Washer
21	09396	1	Back-Up Ring Contour, 7/8 x 3/32 -118⊙
22	17730	1	O-Ring, 7/8 x 1-1/16 x 3/32 -118⊙
23	09275	1	Retaining Ring, .750 External, STNLS
24	12286	1	Main Housing Assy
25	01870	8	Capscrew, 3/8-16 x 1-3/4 Hex Soc Hd STNLS
26	00812	8	Lockwasher, 3/8 STNLS
27	17721	1	Motor Cap Assy (Includes Items 28 and 29)
28	17719	1	Floatation Collar
29	08013	1	Dowel Pin, 5/16 in. Dia x 1 in. Long
30	17700	1	Drive Gear
31	17725	1	Idler Gear Assy
32	07991	1	Idler Shaft
33	00786	1	Capscrew, 10-24 x 1-3/4 Soc Hd STNLS
34	12283	1	Trigger
35	06634	1	Needle Roller 3/16 in. Dia x 1 in. Long
36	17733	1	O-Ring, 3/16 x 5/16 x 1/16 -008⊙
37	08000	1	Spool Cap
38	17732	1	O-Ring, 1.171 x 1.403 x .116 -916⊙
39	13781	1	Spool Assy, OC
40	08988	1	Spring
41	00580	1	Set Screw 1/4-20 x 1/4 Hex Soc Hd STNLS
42	17061	1	Valve Keeper
43	08002	1	Reversing Spool
44	08015	2	Back-Up Ring -16 Spirol⊙
45	17728	2	O-Ring, 5/8 x 3/4 x 1/16 -016⊙
46	17734	1	Name Tag
47	03788	1	GPM Sticker, 4-12 GPM
48	06345	2	Plastic Plug
49	17742	1	Hose Assembly
50	03974	1	Coupler Set

NOTE: Use part number and name when ordering.

⊙ Denotes part in seal kit.

Ⓐ Supplied as Part of Item

STANLEY®
helps you do things right

Stanley Hydraulic Tools
Division of The Stanley Works
3810 S.E. Naef Road
Milwaukie, Oregon 97267
Phone: 503/659-5660
Telex: 360771
Fax: 503/652-1780