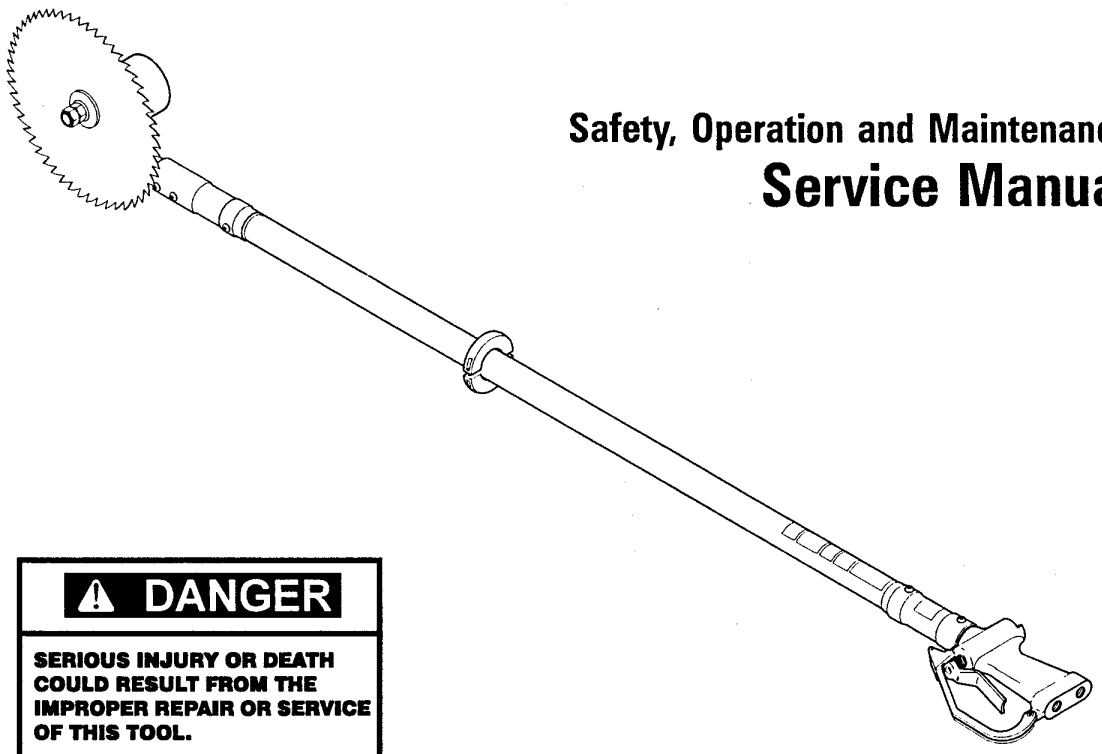
CR27

Hydraulic Circle Saw
with Blade Brake



Safety, Operation and Maintenance
Service Manual

⚠ DANGER

SERIOUS INJURY OR DEATH COULD RESULT FROM THE IMPROPER REPAIR OR SERVICE OF THIS TOOL.

REPAIRS AND / OR SERVICE TO THIS TOOL MUST ONLY BE DONE BY AN AUTHORIZED AND CERTIFIED DEALER.

STANLEY®

Stanley Hydraulic Tools
3810 SE Naef Road
Milwaukie, OR 97267-5698 USA
Phone: (503) 659-5660
Fax: (503) 652-1780

OPS/MAINT USA VERSION
30672 06/98 Ver 2

CONTENTS

SERVICING THE CR27 CIRCLE SAW: This manual contains safety, operation, and maintenance instructions. Stanley Hydraulic Tools recommends that servicing of hydraulic tools, other than routine maintenance, must be performed by an authorized and certified dealer. Please read the following warning.

⚠ DANGER

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REPAIRS AND / OR SERVICE TO THIS TOOL MUST ONLY BE DONE BY AN AUTHORIZED AND CERTIFIED DEALER.

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 general 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 models CR27 Hydraulic Circle Saw will provide 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 circle saw and hoses before operation. Failure to do so could result in personal injury or equipment damage.

- Operator must start in a work area without bystanders. The operator must be familiar with all prohibited work areas such as excessive slopes and dangerous terrain conditions.
- 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.
- Always wear safety equipment such as goggles, ear and head protection, and safety shoes at all times when operating the tool.
- 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 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.
- Do not operate a damaged, improperly adjusted, or incompletely assembled circle saw.
- Do not inspect, clean or replace the saw blade while the hydraulic power source is connected. Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury.
- Never wear loose clothing that can get entangled in the working parts of the tool.
- Keep all parts of your body away from the rotating saw blade.
- Do not overreach. Maintain proper footing and balance at all times.
- Keep the saw blade off all surfaces when starting the circle saw.
- Without the use of non-conductive accessories, this tool is not for use near energized electric lines. Failure to comply with this warning could result in serious personal injury.
- Do not reverse saw blade rotation direction by changing fluid flow direction.
- To avoid personal injury or equipment damage, all tool repair, maintenance and service must only be performed by authorized and properly trained personnel.

- Never cock, jam or wedge the saw blade during operation.
- Eye injury, and cutting or severing of body parts is possible if proper procedures are not followed.

SAW BLADE SAFETY

- Ensure that the saw blade is correctly mounted and tightened before use.
- Ensure that the direction of rotation of the saw blade is as prescribed in this manual.
- Operate the saw at "no load" for 30 seconds in a safe position and ensure there is no excessive vibration or other defects detected. If considerable vibration or other defects are detected, stop operation of the tool immediately and determine the cause. Do not use the tool until the defect is corrected.
- If the tool is dropped with a saw blade installed, the saw blade should be examined throughly before use.
- Only use saw blades manufactured by Stanley Hydraulic Tools. Stanley assumes no responsibility for failure in equipment, accidental damage, or accidental injury as a result of the use of saw blades not manufactured by Stanley Hydraulic Tools.
- Always assure the saw blade is sharp. Do not try to use the tool with a dull saw blade.

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.

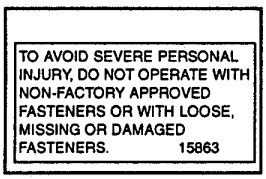
TOOL STICKERS AND TAGS

The safety related stickers and tags attached to the saw prior to shipment from the factory are shown below and on the next page.

The pressure and flow rates specified must never be exceeded. All stickers and tags must be read and understood prior to operating the tool.

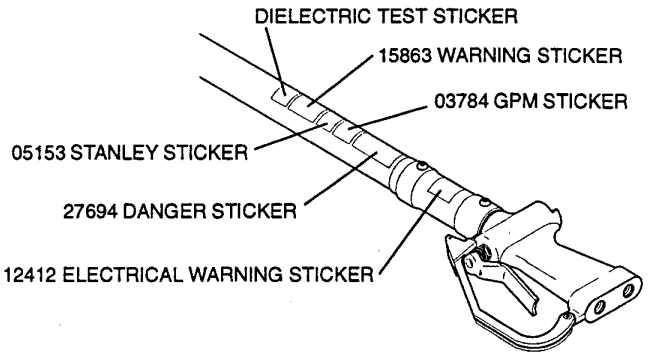
The information listed on these stickers and tags must be legible at all times. Always replace those that have become worn or damaged. Replacements are available from your Stanley distributor.

DIELECTRIC CERTIFICATION STICKER
(shown approximate actual size)



15863 FASTENER WARNING STICKER
(shown approximate actual size)

TOOL STICKERS AND TAGS continued



CAUTION

5-7 GPM/19-26 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.

03784

GPM/PRESSURE STICKER
P/N 03784
(shown actual size)

DANGER

THE SAW BLADE OF THE CR27 WILL CONTINUE TO ROTATE FOR UP TO 15 SECONDS OR MORE AFTER RELEASING THE ON/OFF TRIGGER. DURING THIS "COAST DOWN" TIME, CONTACT WITH THE BLADE OF THE CR27 MAY RESULT IN SEVERE PERSONAL INJURY.

AFTER RELEASING THE ON/OFF TRIGGER, SAW OPERATORS MUST BE CERTAIN THAT THE BLADE HAS COME TO A COMPLETE STOP BEFORE PLACING THE SAW ON THE GROUND, LOWERING THE SAW INTO THE TRUCK'S BUCKET, STORING THE SAW OR CONTACTING THE BLADE IN ANY WAY. FAILURE TO OBSERVE THESE PRECAUTIONS MAY RESULT IN SEVERE PERSONAL INJURY.

OTHER WORKERS AND BYSTANDERS MUST STAY CLEAR OF THE WORK AREA TO AVOID SEVERE PERSONAL INJURY RESULTING FROM CONTACT WITH THE SAW BLADE AS WELL AS FALLING LIMBS, BRANCHES AND OTHER DEBRIS.

DANGER STICKER p/n 27694
(shown approximate actual size)

DANGER

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 for work on or around electric lines.

ELECTRICAL DANGER STICKER p/n 12412
(shown approximate actual size)

The safety tag (p/n 15875) 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 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.

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 PRESSURING 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 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 SIDE

15875

SAFETY TAG P/N 15875 (shown smaller than actual size)

HYDRAULIC HOSE REQUIREMENTS

HOSE TYPES

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

❶ 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.

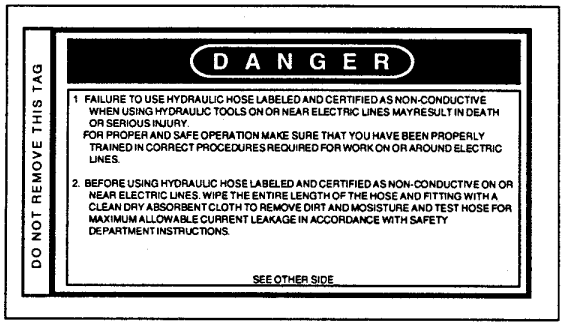
Hoses ❷ and ❸ listed above are **conductive** and **must never** be used near electrical conductors.

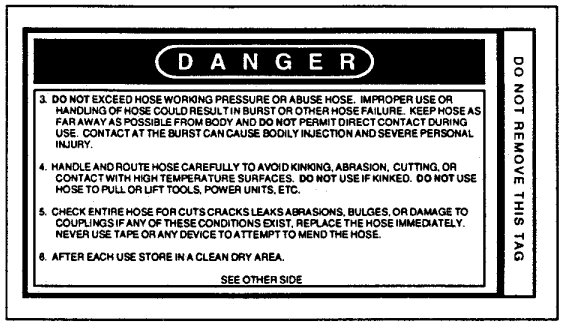
To help ensure your safety, the following DANGER tags are attached to all hose purchased from Stanley Hydraulic Tools. DO NOT REMOVE THESE TAGS.

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.

❶ CERTIFIED NON-CONDUCTIVE HOSE

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

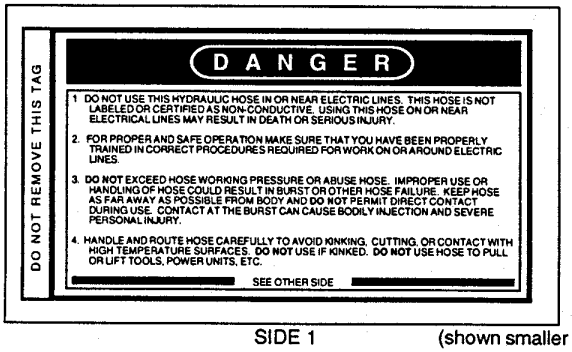


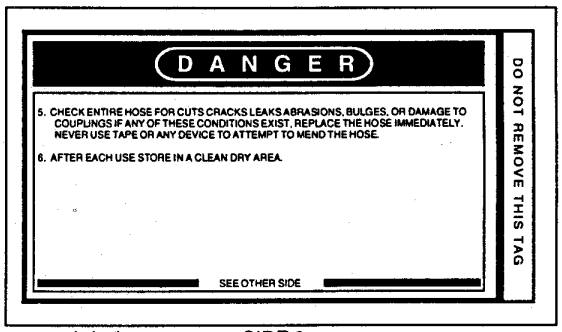


SIDE 1 (shown smaller than actual size) SIDE 2

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

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





SIDE 1 (shown smaller than actual size) SIDE 2

HOSE PRESSURE RATING

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

HYDRAULIC REQUIREMENTS

IMPORTANT

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

• Always store an idle saw in a clean dry space, safe from damage or pilferage.

• Do not exceed the rated limits or use the saw for applications beyond its design capacity.

• Always keep critical tool markings, such as lables 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.

• Permit only experienced personnel to perform tool repair.

• Be sure to wipe all couplers clean before connecting. Use only lint-free cloths.

• The hydraulic circuit control valve must be in the "OFF" position when coupling or uncoupling the saw. Failure to do so may result in damage to the quick couplers and cause overheating of the hydraulic system.

• Check fastener tightness often and before each use daily.

HYDRAULIC SYSTEM REQUIREMENTS

• The hydraulic system should provide a flow of 5-7 gpm/19-26 lpm at an operating pressure of 1000-2000 psi/70-140 bar. Recommended relief valve setting is 2100-2250 psi/145-155 bar.

• The system should have no 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 enough 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. Recommend using filter elements 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. Petroleum base hydraulic fluids with antiwear properties and a viscosity index over 140 ssu/28 centistokes will meet the recommended requirements 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.

• Quick disconnect couplings must conform to NFPA T3.20,15/HTMA specifications.

PREOPERATION PROCEDURES

• PREPARATION FOR INITIAL USE

Each unit as shipped has no special unpacking or assembly requirements prior to usage. Inspection to assure the unit was not damaged in shipping and does not contain packing debris is all that is required. After installation of a saw blade a unit may be put to use.

• CHECK HYDRAULIC POWER SOURCE

1. Using a calibrated flowmeter and pressure gauge, check that the hydraulic power source develops a flow of 5-7 gpm/19-26 lpm at 1000-2000 psi/70-140 bar.

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

3. Check that the dual spool valve is set to the hydraulic system type (open-center (OC) or closed-center (CC) operation).

• CHECK TOOL

1. Make sure all tool accessories are correctly installed. Failure to install tool accessories properly can result in damage to the tool or personal injury.

2. There should be no signs of leaks.

3. The tool should be clean, with all fittings and fasteners tight.

• CHECK TRIGGER MECHANISM

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

• SETTING THE DUAL SPOOL FOR O.C. (OPEN-CENTER) OR C.C. (CLOSED-CENTER) OPERATION

IMPORTANT

This tool is furnished with a on-off spool commonly referred to as a "dual spool" which permits adjustment so the tool may be operated on either a open-center hydraulic system or a closed-center hydraulic system. The dual spool is normally set to the open-center (OC) position at time of manufacture. The dual spool can also be disabled so that the tool may be set to open-center only operation or closed-center only operation. For more details, please refer to the following instructions.

SETTING FOR OPEN-CENTER (OC) OR CLOSED-CENTER (CC) OPERATION

To set the tool for open-center (OC) system operation turn the selector screw located in the top of the valve spool fully out (counter-clockwise) until it hits the stop.

To set the tool for closed-center (CC) system operation turn the selector screw located in the top of the valve spool fully in (clockwise) until it bottoms.

TO DISABLE DUAL SPOOL OPERATION AND CONVERT TO OPEN-CENTER ONLY OPERATION

Turn the selector screw located in the top of the valve spool fully out (counter-clockwise) until it hits the stop.

2. Insert the small plug from the kit (furnished with the tool) into the hole located in the top of the selector screw. Tap the plug down using a small punch and hammer. DO NOT USE ANY ADHESIVES.

TO DISABLE DUAL SPOOL OPERATION AND CONVERT TO CLOSED-CENTER ONLY OPERATION

1. Turn the selector screw located in the top of the valve spool fully in (clockwise) until it bottoms.

2. Insert the small plug from the kit (furnished with the tool) into the hole located in the top of the selector screw. Tap the plug down using a small punch and hammer. DO NOT USE ANY ADHESIVES.

• BLADE INSTALLATION

1. Handle the saw blade with care. The cutting edges are sharp and careless handling could result in injury.

2. Install the blade over the motor shaft and onto the fixed collar so that the points of the teeth on the blade are facing clockwise as viewed from the front of the motor (see figure 1).

3. Install the moveable collar followed by the collet nut (see figure 2.) Tighten the collet nut hard (not wrist tight).

4. Install the locking nut with internal taper facing toward the collet nut and tighten it hard against the collet nut.

5. As a final tightening procedure, with a wrench on each of the nuts, tighten the locking nut one half wrench flat further.

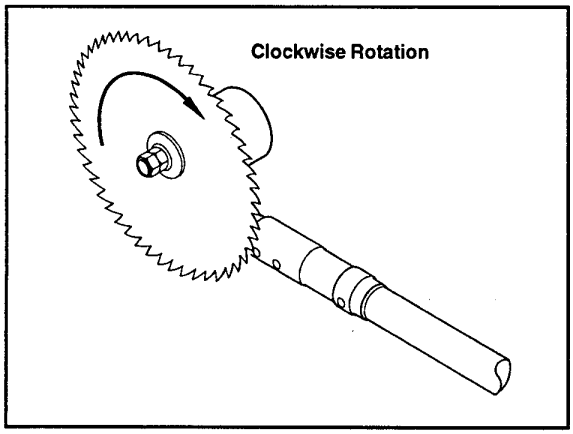


Figure 1. Correct Rotation Direction

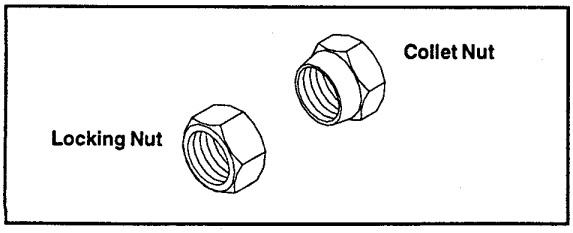


Figure 2. Collet Nut & Locking Nut

IMPORTANT

READ AND BECOME FAMILIAR WITH THE SECTIONS IN THIS MANUAL ON SAFETY PRECAUTIONS, TOOL STICKERS AND TAGS, HYDRAULIC HOSE REQUIREMENTS, HYDRAULIC REQUIREMENTS, AND PREOPERATION PROCEDURES BEFORE USING THIS PRODUCT.

• 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 hose couplers on the saw. It is a good practice to connect the return hose first and disconnect it last to minimize or avoid trapped pressure within the saw motor.

3. Observe flow indicators stamped on hose couplers to be sure that oil will flow in the proper direction. The female coupler is the inlet coupler. **NOTE: The pressure increase in uncoupled hoses left in the sun may result in making them difficult to connect. When possible, connect the free ends of operating hoses together.**

OPERATING PROCEDURES

- Observe all safety precautions.
- Do not operate a circle saw unless you have been specifically trained to do so.
- Keep all parts of the body away from the saw blade during operation of the tool.
- Carry the saw with the unit de-energized and the blade away from the body.
- Always connect the hoses to the tool hose couplers before energizing the power source.
- Do not operate a circle saw that is damaged, improperly adjusted or is not completely and securely assembled.

• Keep the saw and handles clean and free of oil and contaminates.

• Do not hang the saw on utility wires or cables.

• Do not leave the saw hanging in a tree.

• Do not leave cut branches in a tree.

• Branches bent under tension are considered hazardous.

• Do not allow binding of the saw blade.

• The saw blade will continue to spin for up to 5 seconds or more after releasing the ON/OFF trigger. During this "coast down" time, contact with the saw blade may result in severe personal injury. Refer to page 2. On early model saws the "coast down" time will be up to 15 seconds.

• Use extreme caution when sawing small size brush and saplings. Slender material may catch in the saw blade and be thrown toward the operator.

• Keep the saw blade away from all surfaces when starting rotation of the blade.

• Do not reverse blade rotation direction by changing oil flow direction. The saw is designed to operate in only one direction.

• Do not use the saw around energized transmission lines.

• Do not inspect, clean or repair the saw with the power source operating or with operating pressure at the saw. Accidental engagement of the tool can cause serious Injury.

• Do not operate the saw at oil temperatures above 140° F/60° C. Operation at higher temperatures can cause higher then normal temperatures at the tool which can cause operator discomfort.

• After releasing the ON/OFF trigger, be certain that the saw blade has come to a complete stop before placing the saw on the ground, lowering the saw into the truck's bucket, storing the saw or contacting the blade in any way. Failure to observe these precautions may result in severe personal injury.

• The saw operator must keep other workers and bystanders clear of the work area, including the area into which cut limbs or debris fall. Failure to heed this precaution can result in severe personal injury.

• MAKING CUTS

⚠ WARNING

The following are general wood cutting procedures and techniques. Differences in the terrain, vegetation, and type of wood will make this information more or less valid for particular areas. For advice on specific wood cutting problems or techniques for your area, consult your local Stanley representative or your county agent. They can often provide information that will make your work safer and more productive.

1. Move the hydraulic circuit control valve to the "ON" position to pressurize the circuit.

2. Maintain a firm grip on the saw handle. While maintaining firm footing and balance, position the saw blade near the material to be cut.

3. Squeeze the ON/OFF valve handle trigger and allow the saw blade to reach FULL speed.

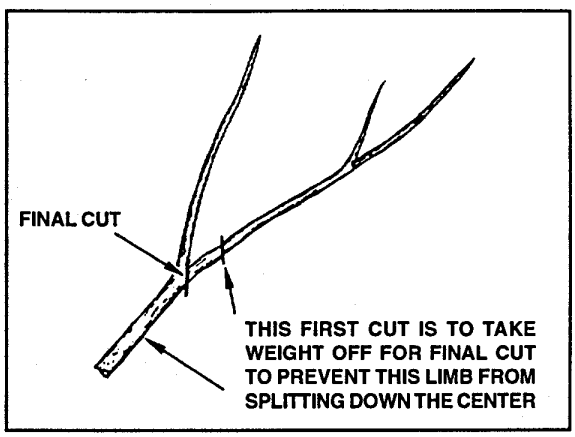


Figure 3. Flush Cutting a Limb Having a Tendency to Split or Tear.

IMPORTANT

The saw blade must reach FULL speed before attempting a cut.

4. In sawing limbs which have a tendency to split or tear when making a single saw flush cut, (as in figure 3), it is advisable to make more than one cut. The first cut is made a few inches from the point of the flush cut. removing the weight of the limb being trimmed out and leaving a short stub. The stub is then flushed off as described in figure 4. Whenever practical, the cut shall be treated with tree paint if it is larger than 1 inch in diameter. This technique will

avoid breaking the lateral which you are trying to save or splitting the remaining limb down the center as the flush cut is made.

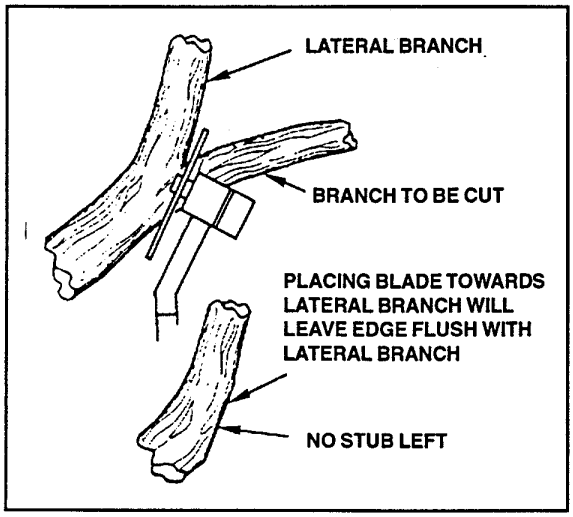


Figure 4. Flush Cut

⚠ WARNING

Do not cut material that is directly overhead. When it falls it may cause operator injury.

5. Watch the saw reaction to making a cut. Control the movement of the saw.

6. Release the ON/OFF trigger to stop saw blade rotation.

7. Reposition the saw to make the next cut and continue operating the saw as stated above.

⚠ WARNING

After releasing the ON/OFF trigger, saw operators must be certain that the saw has come to a complete stop after a few seconds or more of the blade "coast down" period before placing the saw into the truck's bucket, storing the saw or contacting the blade in any way. Failure to observe this warning may result in severe personal injury.

• AFTER OPERATION

1. Wipe the saw thoroughly with a clean dry or slightly oiled cloth.

2. Clean tree pitch and residue from the blade. Handle the blade with care to avoid getting cut by the sharp teeth.

3. Check all fasteners for tightness.

4. When the saw is not in use, store horizontally in a clean dry space and protected from damage.

5. Protect the blade teeth and keep the teeth sharp. A sharp blade will cut cleaner and faster.

• BLADE CARE

Every day visually check the blade for cracks and warpage: cracks will lead to a break and "out-of-flat " will cause excessive vibration. Make sure the spindle locknut is tight.

When sharpening, never use a flat file which may leave a square corner in the gullet. Because of high speed vibration, this becomes a point from which a crack will start.

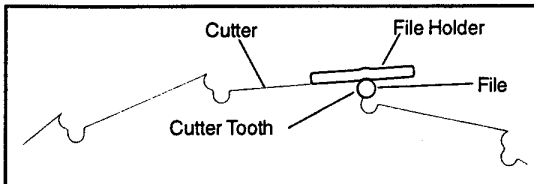
Do not let gum, sap or dirt build up underneath the cutting edges. This adds undue friction and reduces cutting efficiency due to loss of clearance.

Inspection of the cutting teeth should be made often during each day's use. It is faster to touch up the teeth with a few strokes of the file than to allow the teeth to get dull. Dull teeth cause loss of cutting capacity and too much friction. A sharp spare blade is a good back-up in case of trouble.

• BLADE SHARPENING

BLADE TEETH

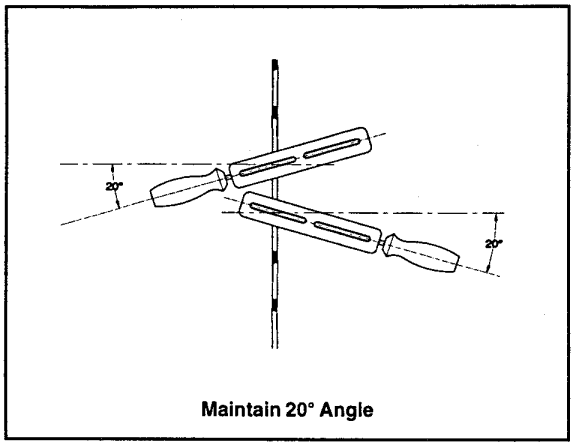
Using a file holder with a 7/16" round file (Stanley p/n 11299), place the file holder flat on top of the cutter with the file against the cutter tooth.



Place File Holder Flat on Top of Cutter

Maintain a 20° angle and always file outwards on each right or left cutter tooth. File only with a slight pressure against the cutter tooth (not on top of the cutter) during the forward stoke. Release pressure as you pull the file back. The file will only cut during the forward stroke.

While filing, always try to keep the file holder perpendicular to the side of the blade. Try not to move the file holder up or down or move the file holder to the setting of the tooth.



Maintain 20° Angle

TOP OF CUTTERS

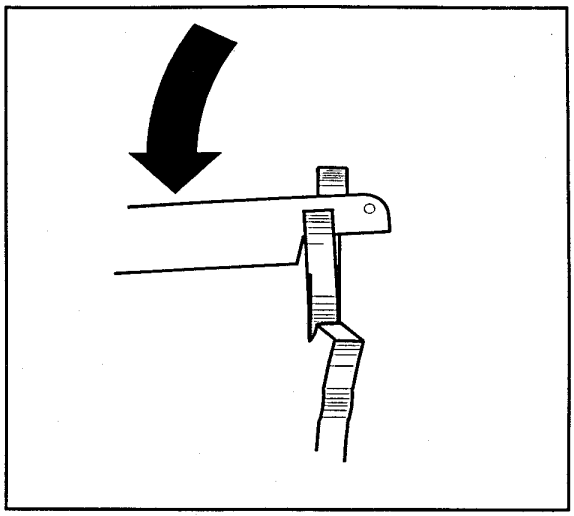
The top of each cutter is factory ground to ensure the best cutting performance. Normally, the tops of cutters will not require filing unless the edge is badly worn or damaged.

If the top of a cutter requires filing, use a smooth flat file to give the cutter its original shape. After filing, ensure that all cutters have the same length and profile.

SETTING TOOTH ANGLE

A sharp outside corner and an exact angle setting will give maximum cutting performance. Special setting tool (Stanley p/n 34653) is required to verify or properly set the angle of each cutter tooth at 1mm or 0.040".

Match one of the grooves in the setting tool to the blade thickness. Place the setting tool over the cutter near the cutter tooth and bend the tooth until the angle on the setting tool touches the side of the blade. Do not over set! Over setting will cause rough cutting and vibration which may result in stress cracks and eventual blade failure.



Setting Cutter Tooth Angle

COLD WEATHER OPERATION

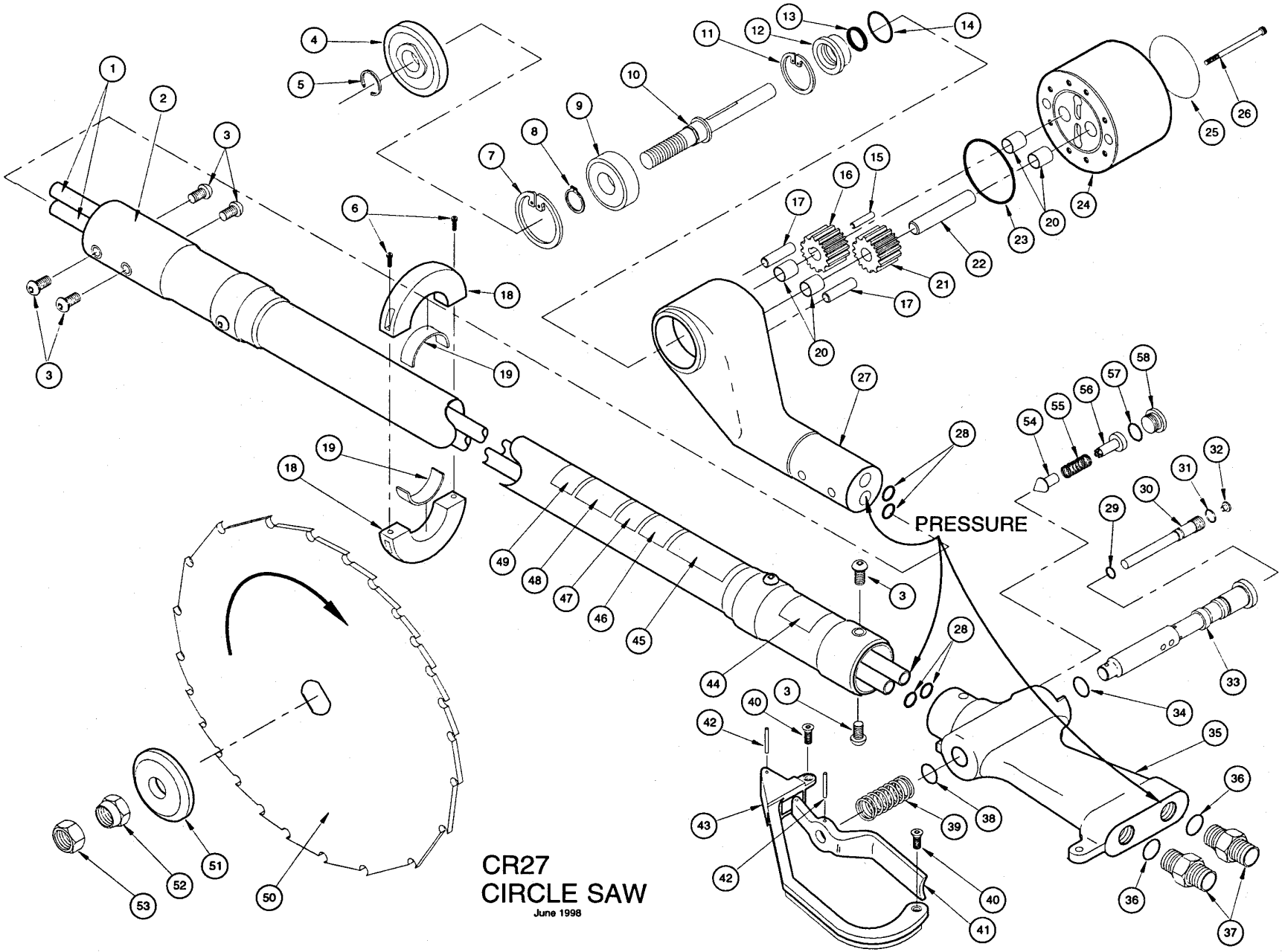
If the saw is to be used during cold weather, preheat the hydraulic fluid at low engine speed. When using the normally recommended fluids, fluid temperature should be at or above 50° F/ 10° C (400 ssu/82 centistokes) before use.

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 saw, always check that the hydraulic power source is supplying the correct hydraulic flow and pressure to the saw 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	POSSIBLE CAUSE	SOLUTION
Tool will not operate.	Hydraulic system not engaged or running.	Engage or start hydraulic system.
	Hydraulic system control valve "OFF".	Turn the system control valve "ON".
	Tool not connected to the Hydraulic system.	Connect tool to the system.
Trigger and valve spool stick.	Damaged trigger guard.	Have repaired by authorized dealer.
	High back pressure.	Determine cause of high back pressure in return line and remove restriction,
	Tool reverse plumbed to the system.	Correctly connect the pressure and return lines,
	Valve spool or spool bore scored by contaminated hydraulic fluid.	Have repaired by authorized dealer.
Saw cuts poorly.	Blade is dull.	Replace with sharp blade.
	Saw is running backwards.	Check direction of rotation, Correct rotation is counter clockwise as viewed from the motor side of the saw blade.
	Blade installed backwards.	Install the blade correctly. Blade teeth point in direction of rotation, counter clockwise as viewed from the motor side of the saw blade.
Saw slows excessively under load.	System relief vlave set too low.	Check system relief and adjust relief valve to crack open at 2100 psi.
	Tool motor worn.	Have inspected and repaired by authorized dealer.
Hydraulic oil leaks from motor shaft.	Motor shaft seal worn or failed.	Have repaired by authorized dealer.
Hydraulic oil leaks between valve handle and outer tube handle.	Oil tube seals worn or oil tubes worn.	Have repaired by authorized dealer.



CR27
CIRCLE SAW

June 1998

CR27 CIRCLE SAW PARTS LIST

Item No	Part No	Qty	Description
1	00042	2	Oil Tube Assy
2	24829	1	Outer Tube Assy
3	18089	6	Capscrew, Buttonhead, 1/4-20 x 3/8
4	00227	1	Fixed Collar
5	00103	1	Retaining Ring
6	07407	2	Capscrew, Hex Socket Head, 10-32 x 3/4
7	00118	1	Retaining Ring
8	00008	1	Retaining Ring
9	00007	1	Ball Bearing
10	24842	1	Motor Shaft
11	04856	1	Retaining Ring
12	19215	1	Seal Liner •
13	00173	1	Quad Ring •
14	00171	1	O-ring •
15	03227	1	Needle Roller
16	04106	1	Drive Gear
17	00289	2	Dowel Pin
18	07305	2	Hand Guard
19	11458	2	Liner
20	04041	4	DU Bushing
21	04105	1	Idler Gear
22	07612	1	Idler Shaft
23	00020	1	O-ring •
24	19216	1	Gear Housing
	19226	1	**Gear Housing Assy (incld items 17, 20 & 24)**
25	24827	1	Name Tag
26	00753	8	Capscrew, Hex Socket Head, 10-24 x 1-1/4
27	31689	1	Front Bearing Housing
28	16668	4	O-ring, 7/16 x 9/16 x 1/16 -017 •
	31700	1	**Motor Assy (incld items 7 thru 17, & 20 thru 28)**
29	00026	1	O-ring, 3/16 x 5/16 x 1/16 -008 •
30	19875	1	Selector Screw
31	16070	1	Retaining Ring
32	22807	1	Plug (*Furnished in 26414 Lock-Out Kit*)
33	31633	1	Valve Spool
34	07626	1	O-ring, 1/2 x 5/8 x 1/16 •
35	31630	1	Valve Handle
36	01605	2	O-ring (incld with item 37)
37	00936	2	Adapter
38	07627	1	O-ring, 5/8 x 3/4 x 1/16 •
39	34299	1	Spring
40	16307	2	Capscrew, Hex Soc Flat Hd, 1/4-20 x 3/4
41	19879	1	Trigger
42	01534	2	Roll Pin
43	19877	1	Trigger Guard
44	12412	1	Electrical Warning Sticker
45	27694	1	Danger Sticker
46	03784	1	GPM Sticker
47	05153	1	Stanley Sticker
48	15863	1	Warning Sticker
49	N/A	1	Dielectric Test Sticker
50	00425	1	Saw Blade
51	00125	1	Moveable Collar
52	24853	1	Collet Nut
53	24850	1	Locking Nut
54	31186	1	Poppet
55	34303	1	Spring
56	34257	1	Poppet Stop
57	03364	1	O-ring
58	03709	1	Plug

SEAL KIT DATA

Seal Kit Part No. 29829

Item No	Part No	Qty	Description
12	19215	1	Seal Liner
13	00173	1	Quad Ring
14	00171	1	O-ring
23	00020	1	O-ring
28	16668	4	O-ring
29	00026	1	O-ring
34	07626	1	O-ring
36	01604	2	O-ring
38	07627	1	O-ring

• Denotes part in seal kit

NOTE: Use Part Number and Part Name when ordering.

SERVICE INSTRUCTIONS

I. CIRCLE SAW DISASSEMBLY

A. MOTOR DISASSEMBLY

Before proceeding with motor disassembly, the saw blade must first be removed as follows.

Place wrenches on the collet nut (52) and the locking nut (53). Loosen and remove the locking nut. Grip the saw blade (50) with thick leather gloves or vice grip pliers and loosen and remove the collet nut. Remove the moveable collar (51) and the saw blade.

1. Remove 8 capscrews (26).

2. Using a flat-blade screwdriver or similar tool, gently pry the gear housing (24) away from the front bearing housing (27). Lift the gear housing straight up. **Do Not** tilt the housing or pry on the flat surface inside of the surrounding groove. For prying, only use the groove provided at the split between the parts to prevent scratches on the inner mating surfaces.

3. Remove the two gears (16 & 21), needle roller key (15), and the idler shaft (22).

4. Remove the large face seal o-ring (23) while being careful not to damage the o-ring groove or surrounding surface.

5. While protecting the motor surface of the front bearing housing from damage, remove the retaining ring (7) from around the bearing (9). Hold the housing on its side and tap lightly on the small diameter end (gear side) of the motor shaft (10) to remove it and the bearing from the front of the housing.

6. To remove the bearing from the shaft, remove the retaining ring (8) and then press on the threaded end of the motor shaft while supporting the outer race of the bearing. Discard the old bearing.

7. Remove the retaining ring (11) at the bottom of the bearing bore in the front bearing housing to service the shaft seal. Remove the seal gland (12) using the appropriate o-ring service tools to pry it out of its bore. Take care to avoid damaging the seal surfaces. Note seal orientation. Remove the o-ring (14) from the outside of the seal gland. Remove the quad ring (13) from the inside of the seal gland.

8. The four bushings (20) can be removed using p/n 11930 collet from p/n 05064 bearing puller kit.

IMPORTANT

DO NOT REMOVE THE FRONT BEARING HOUSING (27) FROM THE OUTER TUBE ASSEMBLY (2) UNLESS IT IS NECESSARY TO PERFORM SERVICING OF OTHER COMPONENTS. IF REMOVAL OF THE FRONT BEARING HOUSING IS DEEMED NECESSARY, REFER TO THE INSTRUCTIONS LATER IN THIS MANUAL TITLED REMOVING THE FRONT BEARING HOUSING FROM THE OUTER TUBE ASSEMBLY.

B. INSPECTION AND CLEANING

Inspect and clean all parts as follows:

Cleaning

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

Gear Housing

The chamber bores and bottoms around the shaft bushings should be polished and not rough or grooved. If the bushing bores are yellow-bronze, replace them and investigate the cause of wear.

The flat surfaces around the chamber and bolt holes should be flat and free of nicks or burrs that could cause misalignment or leaks.

Bushings

The inside of the bushings should be gray with some bronze showing through. If significant yellow-bronze shows, replace the bushings. Inspect motor shaft for corresponding wear and replace as required.

Gears

The drive and idler gears should have straight tips

without nicks; square tooth ends and a smooth even polish on the teeth and end faces. Check for cracks between the drive gear keyway and gear tooth root. Replace the gear if cracks are present.

FRONT BEARING HOUSING

The surface near the gears should show two interconnecting polished circles without a step. The bottom of the o-ring groove should be smooth as should the rest of the flat surface.

The bore for the shaft seal (inside diameter of the seal gland) should be smooth or oil leakage may occur. The bore in which the seal liner fits should also be smooth.

GEAR HOUSING

Shake the gear housing and the two seal check balls (not shown) should rattle. Unless there are leaks at the Allen type plugs which retain the check balls (not shown), or the check balls have jammed because of fluid contaminants, it is not necessary to remove the plugs or check balls. If these are removed, be sure the check seats (the bottom of the holes into which the balls are placed around the small oil holes) are smooth. If not, the seat can usually be fixed by cleaning and then placing the ball in the hole and tapping on the ball with an aluminum or bronze rod.

Reassemble ball and plug with the inner end of the plug **just starting** to show in the hole as viewed through the oil slot on the gear face of the housing. You can also use a wire through this hole to feel when the plug is deep enough.

Note: Use sealant/adhesive such as Loctite™ PST on the threads of the plug to seal the threads.

SHAFTS

The shaft diameter at the bearing and seal locations must be smooth. Grooves, roughness or a reduced diameter indicate fluid contamination or damaged bushings. Grit particles may have been imbedded in the bushings grinding into the hardened shaft. If abnormal shaft wear as above occurs (more than normal polishing), replace both the shaft and associated bushings.

Also check the hydraulic system for excess contamination in the fluid and for filter condition. Operating conditions may require changing from a 25-micron filter to an oversized 10-micron filter.

C. MOTOR REASSEMBLY

1. If the bushings (20) were removed from the front bearing housing (27) and the gear housing (24), install new bushings using a p/n 11918 bearing pusher.

2. Grease and carefully install the quad ring (13) into the groove on the inside of the seal gland (12). Carefully install the o-ring (14) onto the smaller outside diameter of the seal gland and install the seal gland into the bore of the front bearing housing (27). Replace the retaining ring (11).

3. To replace the bearing (9) on the motor shaft (10), support the bearing inner race and press the motor shaft (10) through the bearing inner race.

4. Place the front bearing housing on a smooth clean arbor press surface (protected from damage) with the large bearing bore facing up. Position the front bearing housing so a clearance hole exists for the insertion of the motor shaft.

5. Apply grease to the motor shaft, keyway and bushing and then insert the motor shaft through the shaft seal. Using a socket with a diameter equal to the bearing O.D., press the bearing assembly into place. Press only on the outer race. Install the bearing retaining ring (7).

6. Install the needle roller (15) in the keyway of the motor shaft. Use grease to keep the roller in place. Slide the drive gear (16) over the roller and shaft. Install the idler shaft (22) and gear (21).

7. Apply grease to the face seal o-ring groove; then install the o-ring (23).

8. Note the screw hole pattern on both housings. They will only assemble one way. With all parts aligned, carefully slide the gear housing assembly over the gears until it contacts the bearing housing assembly. **Do not force parts together.**

9. Turn the motor shaft manually to check for free rotation. Install the eight capscrews (26) and then recheck rotation.

D. REMOVING THE FRONT BEARING HOUSING, VALVE HANDLE, AND OIL TUBES FROM THE OUTER TUBE ASSEMBLY

1. Follow instructions for removing the saw blade under the section titled MOTOR DISASSEMBLY.

2. Unscrew the six capscrews (3) and set them

aside. Maintain a strong grip on the outer tube assembly (2) and pull on the front bearing housing (27). Some wiggling of the front bearing housing may be necessary in order to aid in its removal.

3. Maintain a firm grip on the outer tube assembly (2) and pull on the valve handle (35). Some wiggling of the valve handle may be necessary to aid in its removal.

4. Slide the two oil tubes (1) out of the outer tube assembly.

E. VALVE HANDLE DISASSEMBLY

1. Using a small punch, drive out the roll pin (42) that retains the valve spool (33) to the trigger (41).

2. Unscrew two capscrews (40) and set aside. Pull the trigger and trigger guard (43) away from the valve handle. Set the spring (39) aside.

3. Push the valve spool out of the valve handle.

4. Remove the plug (32) (if installed) from the selector screw (30) by prying it out with a screw driver. Remove the retaining ring (31) and unscrew the selector screw from the valve spool.

5. Remove o-rings (28, 29, 34, and 38) and discard them.

6. Unscrew and remove the O-ring plug (58).

6. Pick out the poppet stop (56), spring (55), and poppet (54).

F. OUTER TUBE & HAND GUARD

1. The outer tube assembly (2) is not serviceable and, therefore, is not intended to be disassembled.

2. The hand guard consists of liners (19) as shown in the parts drawing. If liners are replaced, install them to the hand guards (18) using Loctite™ Superbonder #416

II. ASSEMBLY

A. VALVE HANDLE REASSEMBLY

1. Inspect the selector screw (30), the valve spool (33), and the spool bore of the valve handle (35) for damage. If deep scratches or nicks are present the part or parts should be replaced. Some light surface scratching is normal. Remove any burrs found.

2. Apply grease and install o-rings (28, 29, 34, & 38).

3. Install the selector screw (30) into the valve spool (33). Install the retaining ring (31). DO NOT INSTALL THE PLUG (32). This plug is installed after setting the dual spool. See "SETTING THE DUAL SPOOL FOR O.C. OPEN CENTER OR C.C. CLOSED CENTER OPERATION" under the operation section of this manual.

4. Apply grease to the valve spool and install it into the valve handle as shown in the parts drawing.

5. Place the spring (39) over the valve spool, position the trigger (41) on the trigger guard (43) to the base of the valve spool and install the roll pin (42).

6. Position the trigger guard to the valve handle and install the capscrews (40).

7. Install the poppet (54), spring (55), poppet stop (56), and O-ring plug (58).

8. Apply grease and install two o-rings (28) into the front bearing housing (27).

9. Inspect each oil tube for damage paying particular attention to the metal areas of the tubes which are contacted by the o-rings in the valve handle and the front bearing housing. If the metal surface has been severely worn so that a groove is present, replace the tube.

IMPORTANT

OIL TUBE PRESSURE PORT LOCATIONS

SEE THE PARTS DRAWING OR FOLLOW THE INSTRUCTIONS BELOW TO LOCATE THE PRESSURE OIL TUBE PORTS. USING A PERMANENT FELT PEN MARKER, MARK EACH END OF ONE OF THE OIL TUBES. THIS TUBE WILL BECOME THE PRESSURE TUBE AND MUST BE ORIENTED WITH THE PRESSURE OIL PORTS ON THE VALVE HANDLE AND THE FRONT BEARING HOUSING AS FOLLOWS: HOLD THE VALVE HANDLE SO THAT YOU ARE VIEWING THE OIL TUBE PORTS AND THE TRIGGER GUARD IS FACING STRAIGHT DOWN TOWARD THE FLOOR. THE TOP PORT IS THE PRESSURE PORT. LAY THE FRONT BEARING HOUSING ON ITS SIDE SO THAT THE BLADE SIDE IS FACING LEFT, THE GEAR HOUSING IS FACING RIGHT AND YOU ARE ABLE TO VIEW THE OIL TUBE PORTS. THE BOTTOM PORT IS THE PRESSURE PORT.

10. Apply grease to the metal ends of the oil tubes and slide both of them into the outer tube assembly with the shorter metal ends towards the motor. Make sure the oil tubes and outer tube assembly are positioned as shown in the parts drawing.

11. Working with the valve handle first, firmly insert the marked tube into the pressure oil tube port of the valve handle. Firmly insert the unmarked tube into the other oil tube port of the valve handle. Slide the valve handle with oil tubes in place into the outer tube assembly and secure with two capscrews (3).

12. Position the front bearing housing and the oil tubes so that the marked tube is aligned with the pressure oil tube port and the other tube is aligned with the other port. Carefully slide the front bearing housing onto the oil tubes and into the outer tube assembly. Secure with four capscrews (3).

12. If the motor has not been assembled, complete the assembly using the instructions provided earlier in this manual.

13. Set the dual spool as described in the operation section of this manual. Install the plug (32), if desired, by tapping it into place. DO NOT USE ADHESIVES.

14. Test for operation and correct rotation of the motor shaft before installing the saw blade.

SAW BLADE

1. Install the saw blade as described under blade installation in the operation section of this manual.

2. Test for operation and performance.

SPECIFICATIONS

Capacity	9 in. dia. / 23 cm blade
Pressure Range	1000-2000 psi/70-140 bar
Maximum Back Pressure	250 psi/17 bar
Flow Range	5-7 gpm/ 19-26 lpm
Porting	-8 SAE O-ring
Connect Size and Type	3/8 in. NPT x -8 SAE Male Pipe Adapter
Hose Whips	No
Weight	8 lb / 3.6 kg
Overall Length	81 inches / 206 cm
Maximum Fluid Temperature	140° F/60° C

ACCESSORIES

00425	9 inch / 23 cm Saw Blade, 44 tooth
34356	9 inch / 23 cm Brushcutter Saw Blade
11299	File Holder with 7/32" Round File (for sharpening brushcutter blades)
34653	Setting Tool (for setting cutter angles on brushcutter blades)
05005	Certified Non-Conductive Dual Oil Resistant Hose, 3/8 in. dia. x 10 ft with guards

REVISION INFORMATION

SERVICE MANUAL 30672, dated 07/98, Ver 2: The service manual (this manual) provided with the CR27 Circle Saw containing a new saw blade and blade brake design. These design changes are detailed below.

1. New Valve Handle Assembly incorporating "blade brake" design.

2. New Front Bearing Housing design for the "blade brake" feature.

3. New Saw Blade design with field sharpening features. Part numbers and instructions for sharpening tools are included in this manual.

NOTE: The new valve handle or front bearing housing are not interchangeable with early CR27 Circle Saw models (models which do not contain the "blade brake' features) unless all parts are changed. i.e. To install the valve handle with "blade brake" features on saw models which do not contain "blade brake" features, the front bearing housing with "blade brake" features must also be installed.

SERVICE MANUAL 30672, dated 03/96: The service manual provided with the CR27 Circle Saw at time of introduction of the saw (no "blade brake" features).

WARRANTY

Stanley Hydraulic Tools (hereinafter called "Stanley"), subject to the exceptions contained below, warrants new hydraulic tools for a period of one year from the date of sale to the first retail purchaser, or for a period of 2 years from the shipping date from Stanley, whichever period expires first, to be free of defects in material and/or workmanship at the time of delivery, and will, at its option, repair or replace any tool or part of a tool, or new part, which is found upon examination by a Stanley authorized service outlet or by Stanley's factory in Milwaukie, Oregon to be DEFECTIVE IN MATERIAL AND/OR WORKMANSHIP.

EXCEPTIONS FROM WARRANTY

FREIGHT COSTS: Freight costs to return parts to Stanley, if requested by Stanley for the purpose of evaluating a warranty claim for warranty credit, are covered under this policy if the claimed part or parts are approved for warranty credit. Freight costs for any part or parts which are not approved for warranty credit will be the responsibility of the individual.

SEALS & DIAPHRAGMS: Seals and diaphragms installed in new tools are warranted to be free of defects in material and/or workmanship for a period of 6 months after the date of first usage, or for a period of 2 years from the shipping date from Stanley, whichever period expires first.

CUTTING ACCESSORIES: Cutting accessories such as saw blades are warranted to be free of defects in material and or workmanship at the time of delivery only.

ITEMS PRODUCED BY OTHER MANUFACTURERS: Components which are not manufactured by Stanley and are warranted by their respective manufacturers.

a. Costs incurred to remove a Stanley manufactured component in order to service an item manufactured by other manufacturers.

ALTERATIONS & MODIFICATIONS: Alterations or modifications to any tool or part. All obligations under this warranty shall be terminated if the new tool or part is altered or modified in any way.

NORMAL WEAR: any failure or performance deficiency attributable to normal wear and tear.

INCIDENTAL/CONSEQUENTIAL DAMAGES: To the fullest extent permitted by applicable law, in no event will STANLEY be liable for any incidental, consequential or special damages and/or expenses.

FREIGHT DAMAGE: Damage caused by improper storage or freight handling.

LOSS TIME: Loss of operating time to the user while the tool(s) is out of service.

IMPROPER OPERATION: Any failure or performance deficiency attributable to a failure to follow the guidelines and/or procedures as outlined in the tool's operation and maintenance manual.

MAINTENANCE: Any failure or performance deficiency attributable to not maintaining the tool(s) in good operating condition as outlined in the Operation and Maintenance Manual.

HYDRAULIC PRESSURE & FLOW: Any failure or performance deficiency attributable to excess hydraulic pressure, excess hydraulic back-pressure, or excess hydraulic flow.

REPAIRS OR ALTERATIONS: Any failure or performance deficiency attributable to repairs by anyone which in Stanley's sole judgement caused or contributed to the failure or deficiency.

MIS-APPLICATION: Any failure or performance deficiency attributable to mis-application. "Mis-application" is defined as usage of products for which they were not originally intended or usage of products in such a matter which exposes them to abuse or accident, without first obtaining the written consent of Stanley.

WARRANTY REGISTRATION: STANLEY ASSUMES NO LIABILITY FOR WARRANTY CLAIMS SUBMITTED FOR WHICH NO TOOL REGISTRATION IS ON RECORD. In the event a warranty claim is submitted and no tool registration is on record, no warranty credit will be issued without first receiving documentation which proves the sale of the tool or the tools' first date of usage. The term "DOCUMENTATION" as used in this paragraph is defined as a bill of sale, or letter of intent from the first retail customer. A WARRANTY REGISTRATION FORM THAT IS NOT ALSO ON RECORD WITH STANLEY WILL NOT BE ACCEPTED AS "DOCUMENTATION".

NO ADDITIONAL WARRANTIES OR REPRESENTATIONS

This limited warranty and the obligation of Stanley thereunder is in lieu of all other warranties, expressed or implied including merchantability or fitness for a particular purpose except for that provided herein. There is no other warranty. This warranty gives the purchaser specific legal rights and other rights may be available which might vary depending upon applicable law.

Stanley Hydraulic Tools
3810 S.E. Naef Road
Milwaukie, Oregon 97267-5698
Phone: 503/659-5660
Fax: 503/652-1780