STEALTH-12

12 GPM HYDRAULIC CHAINSAW

OPERATOR'S MANUAL

Revision 2019-12

MODEL NUMBER	MCS-H-S12
SERIAL NUMBER	
DATE OF PURCHASE	

MAXCUT INC.
111 East 34th Street
South Chicago Heights, Illinois
WWW.MAXCUTINC.COM

MADE IN U.S.A.

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1. SAFETY

1.1. INTRODUCTION

The MaxCut Stealth-12 is a sleek, mighty, and technologically advanced tool that efficiently cuts concrete, brick, decorative stone, and utility pipe. The powerful hydraulic motor facilitates cutting of precise, square corners up to 25" (64 cm) deep. We engineered the Stealth-12 with the end user in mind to deliver an ergonomic saw with optimal balance. The hose management guide and light weight design help to reduce operator fatigue. However, even a well-designed and well-built saw can malfunction or become hazardous in the hands of an inexperienced and/or untrained user. Therefore, read this manual thoroughly before operating your saw to provide maximum safety for all operating personnel, and to get the maximum benefit from your equipment.

1.2. SAFETY DEFINITIONS

A safety message alerts you to potential hazards which could injure you or others or cause property damage. The safety messages or signal words for product safety signs are **DANGER**, **WARNING**, and **CAUTION**. Each safety message is preceded by a safety alert symbol and is defined as follows:

DANGER: Indicates an imminently hazardous situation which, if not avoided, **will** cause death or serious injury. This safety message is limited to the most extreme situations.

WARNING: Indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury. It may also be used to alert against unsafe practices that may result in property-damage-only accidents.

1.3. POWER SOURCE AND CHAINSAW SAFETY LABELS

These labels warn you of potential hazards that could cause injury. Read them carefully. If a label comes off or becomes illegible, contact MaxCut, Inc. for a replacement, *www.maxcutinc.com*.

1.4. CHAINSAW SAFETY PRECAUTIONS

1.4.1. Only trained personnel shall operate the saw or perform repairs. A trained person is one who has read and thoroughly understands this instruction manual and related equipment manuals and, through training and experience, has shown knowledge regarding the safe operational procedures.

1.4.2. Sawing area must be kept clear of unauthorized personnel at all times. Place barricades or secure the area with signs and a roped boundary to prevent injury.

1.4.3. Never use the saw in an explosive atmosphere and/or near combustible material that could be ignited by a spark.

1.4.4. DO NOT use the saw if it shows any signs of damage. DO NOT use the saw if the chain continues to rotate when the power-activating trigger lever is released.

1.4.5. The chainsaw cover provides protection against contact with moving parts, ejected debris, broken chain, thrown water, and concrete slurry. Never run the saw without the cover in place.
1.4.6. Never allow anyone to stand in front of, or in line with the chain forward of the guard.
1.4.7. Always use safety footwear, a snug fitting wet suit, safety goggles or face shields, and hearing and head protection devices. Safety shoes MUST provide good footing to prevent slipping or falling down. Gloves protect the hands from debris and should be worn.
1.4.8. DO NOT use the saw when you are tired or fatigued.
1.4.9. Never operate the saw under the influence of drugs, alcohol, or medication.
1.4.10. Always carry the saw in its de-energized state.
1.4.11. Keep the saw handles dry, clean, and free of oil.
1.4.12. DO NOT start cutting without first de-energizing electrical wiring near the cutting site or imbedded in the concrete.
1.4.13. Before cutting through a wall, check both sides for possible obstructions.
1.4.14. Prior to cutting, plan your cuts to prevent pinching of the bar or injury from falling concrete.
1.4.15. Always hold the saw with both hands during operation. Use a firm grip on the handles.
1.4.16. Never exceed the flow and pressure rating of the saw, 12 GPM at 2500 psi.
1.4.17. DO NOT attempt to adjust the saw during operation.
1.4.18. Keep clothing and all parts of the body away from moving parts of the saw when connected to a power source or being used.
1.4.19. The slurry formed during cutting operations is very slick. Remove while still wet to prevent yourself or others from slipping while cutting. Slurry that has been allowed to dry is very difficult to remove.
1.4.20. Always shut off the hydraulic power and cooling water sources before disconnecting the hoses or servicing the saw.
1.4.21. Always shut off the hydraulic and cooling water sources when not using the equipment.

2. SPECIFICATIONS

2.1. INTRODUCTION

Your MaxCut Stealth-12 hydraulic hand-held chain saw is a rugged, versatile tool that makes clean, fast, precise, and straight cuts through concrete, reinforced concrete, masonry, stone, and other aggregates. As with most hydraulic tools, the hydraulic system requirements detailed in the following sections must be adhered to in order to support tool performance and longevity of equipment.

2.2. TECHNICAL DATA

ATTRIBUTE	ENGLISH	METRIC
PHYSICAL		
Weight (Power Head Only)	22.9 lbs.	10.4 kg
Length	22.3 inches	56.6 cm
Width	8.5 inches	21.6 cm
Height	10.9 inches	27.7 cm
HYDRAULIC REQUIREMENT		
Type of System	Open-center	Open-center
Flow Rate	12 gpm	45 lpm
Max Pressure	2500 psi	172 bar
Max Back Pressure *Measured at tool end of return hose*	250 psi	17 bar
Max Hose Length	100 feet	30 meters
Coupling	3/8" HTMA flush face	3/8" HTMA flush face
WATER REQUIREMENTS		
Min Flow Rate	2.5 gpm	9.5 lpm
Min Pressure	30 psi	2.1 bar
OPERATION		
Power @ 2500 psi	17.5 hp	13.0 kW
Torque @ 2500 psi	170 in-lbs	19.2 N-m
Max Speed	6500 RPM	6500 RPM
VIBRATION AND SOUND		
Vibration Level	a= 5.65 m/s^2	a= 5.65 m/s^2
Sound Pressure @ 1 Meter	88 dBA	88 dBA

2.3. RECOMMENDED HYDRAULIC OIL

Grade	ISO VG 32	ISO VG 32
Viscosity	140-225 SUS @ 100°F 40 min. SUS @ 210ºF	28-45 cSt @ 38°C 8 min. cSt @ 99ºC
Flash Point	340ºF min.	170ºC min.
Pour Point	-30ºF min.	-34ºC min.

Hydraulic oil types are too numerous to list in this manual. If you have any question concerning the type of oil suitable for your MaxCut Stealth-12 operation, please consult your local supplier or MaxCut, Inc. for details.

2.4. NAMEPLATE AND SERIAL NUMBER TAG

It is important to identify the saw completely and accurately whenever ordering spare parts or requesting assistance in service. The saw has a product nameplate that states the model and serial numbers. The saw label should appear as the sample nameplate shown in Figure 1.

Record the model, serial number, and date of purchase on front page for future reference.

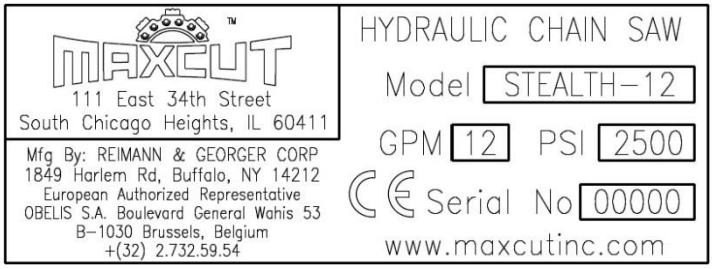


FIGURE 1
Product Nameplate Sample

3. PRE-OPERATION INSPECTION AND SET-UP

The following systems must be checked before you can use the saw safely. Running the saw with an undetected defect in any of these systems will quickly cause equipment damage.

- Hydraulic system
- Water supply
- Drive Sprocket
- Guide Bar
- Chain

3.1. CHECKING THE SYSTEM HYDRAULICS

3.1.1. Read and fully understand the operating manual for the hydraulic power source being used.

3.1.2. Always check the hydraulic power supply flow and pressure output. Never exceed the maximum hydraulic flow rate of 12 GPM (45LPM) or the maximum pressure of 2500 psi (172 bar) that are stated on the product nameplate/serial number tag. Overspeeding the chain causes increased chain wear, leading to loss of strength and possible chain breakage.

3.1.3. If the oil flow from the hydraulic power supply cannot be adjusted below the maximum flow rate, a flow divider must be installed. This will ensure the saw receives the correct flow and excess oil is returned to the tank.

3.1.4. To protect the saw from excessive pressure, the pressure relief valve of the hydraulic power source must be set at 2500 psi (172 bar). If this is not possible, a separate pressure relief valve set at 2500 psi (172 bar) must be installed in the system. If in doubt, contact your dealer.

3.1.5. The hydraulic power source must be fitted with a 10-25 micron oil filter.

3.1.6. Before making any hydraulic connections, inspect all hoses for leaks and risks of rupture as follows:

3.1.7. Inspect each hose for breaks, cracks, worn spots, bulges, chemical attack, kinks or any other damage. Never try to stop any detected leak with any body

parts. DO NOT put your face close to suspected leaks. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of hydraulic oil.

3.1.8. Replace a damaged hose immediately. Never repair the hose.

WARNING:
LIQUID UNDER HIGH PRESSURE CAN PIERCE THE SKIN, CAUSING DEATH OR SERIOUS INJURY. IN CASE OF INJURY, GET IMMEDIATE MEDICAL ATTENTION.

3.1.9. The saw uses flush-face quick-release couplings that are durable and easy to clean. Wipe the mating surfaces of the couplings with clean rag prior to making connection. They are always fitted such that the male part gives oil and the female part receives oil.

WARNING:
ENSURE HYDRAULIC HOSES ARE PROPERLY CONNECTED AND IN GOOD CONDITION.

3.2. CHECKING THE WATER SUPPLY

3.2.1. The water supply must be connected and tested before operating the saw. Check for proper water distribution by triggering the saw with the hydraulic power supply off and the chain not yet installed. You should see water coming out the water ports each on the top and bottom of the bar and around the nose sprocket. If not, use a small wire to clean the water ports, keeping in mind that the water ports are tilted forward at 45 degrees.

3.2.2. The water pressure at the saw must be a minimum of 30 psi (2.1 bar) with a minimum flow rate of 2.5 gpm (9.5 lpm). For best performance, use an in-line water pump. Permanent chain, bar, and drive and nose sprocket damage will occur if the saw is run without water, or with a water volume or pressure that is too low. This damage can include excessive chain stretching, excessive drive and nose sprocket wear, and shorter chain life.

3.3. INSPECTION AND INSTALLATION OF THE DRIVE SPROCKET

3.3.1. Disconnect hydraulic hoses from the saw and place it on a flat surface.

3.3.2. Loosen the Cover Retaining Nuts (#28) using the Scrench (#79) and remove the Cover (#26).

3.3.3. A new MaxCut Stealth-12 comes with the Drive Sprocket (DS-MC3-A1-12), Felt Gasket for the motor shaft (#71), and Snap Ring (#67) already installed.

3.3.4. When installing a used drive sprocket, inspect it for wear marks on the teeth. DO NOT use drive sprockets with wear marks deeper than 1/32" (approximately half way through the drive teeth) as shown in Figure 2. A drive sprocket worn beyond this guideline increases the risk of damaging the chain chassis.

3.3.5. Drive sprockets can be turn around to use the other side providing that the wear marks do not exceed the recommended depth.

3.3.6. To install a drive sprocket remove the Snap Ring (#67), and lift the drive sprocket from the motor shaft.

3.3.7. Install a new MaxCut Drive Sprocket (DS-MC3-A1-12) onto the motor shaft and secure with the Snap Ring (#67) as shown in Figure 3.

3.3.8. Proceed to Section 3.4 for Installation of the Guide Bar.

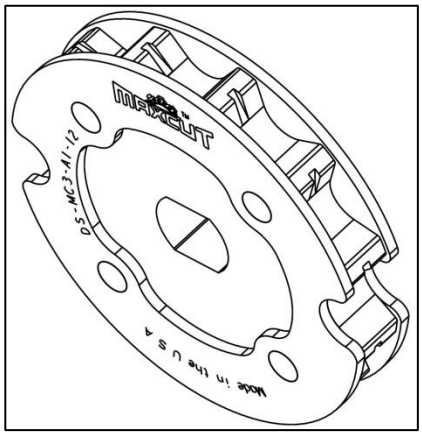


FIGURE 2
Sprocket Wear

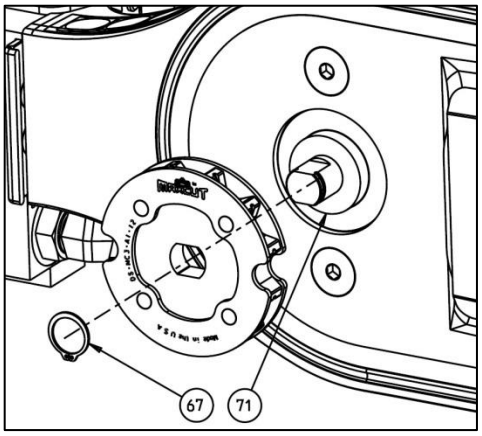


FIGURE 3
Sprocket Installation

3.4. INSPECTION AND INSTALLATION OF THE GUIDE BAR

3.4.1. Inspect the bar to ensure it is not bent or twisted.
3.4.2. As the bar rails wear down, sharp burrs are formed on the edge of the rails, which are typically referred to as wire edges. If ignored, wire edges mushroom over and affect cutting performance. Ensure that the bar rails are dressed squarely as shown in Figure 4 with the wire edges removed.
3.4.3. The bottom rail wears at a much faster rate than the top rail because of the downward motion during cutting. It is recommended that the bar be turned over on a regular basis to ensure even wear.
3.4.4. The bar rails are considered worn-out when the chain drive link contacts the bottom of the groove in the bar. It is necessary to replace the bar at this time.
3.4.5. Ensure that the nose sprocket rotates freely.
3.4.6. Check the clearance between the nose of the bar side-plates and the chain chassis. The bar must be replaced before the chain chassis begins to ride on the nose of the bar side-plates as shown in Figure 5.
3.4.7. Refer to Figure 6 for the subsequent steps related to the installation of the Guide Bar.
3.4.8. Prior to installing the bar, back out the bar adjustment Tensioner Screw (#60) all the way by turning it counter-clockwise.
3.4.9. Install the bar by aligning the Adjustment Slot of the bar over the Bar Studs (#23).
3.4.10. Align Position Hole 1 of the bar over the stud of the Tensioner Carriage (#53).
3.4.11. Proceed to Section 3.5 for the Installation of the Chain.

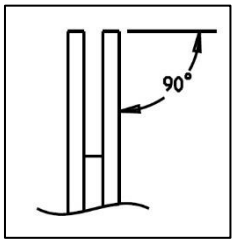


FIGURE 4
Dressed Guide Bar

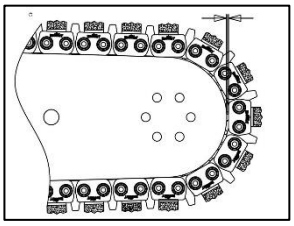


FIGURE 5
Nose Sprocket Clearance

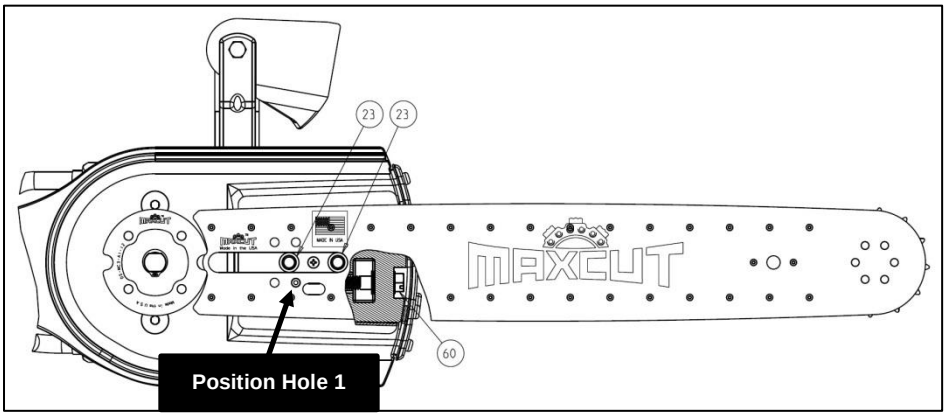


FIGURE 6
Guide Bar Installation

3.5. INSPECTION AND INSTALLATION OF THE CHAIN

3.5.1. Correct chain type selection is critical in maximizing chain life and cutting performance. However, no direct rule determines which chain type is optimum because many material factors also influence selection. Chapter 6 contains additional information on factors that affect chain life. Refer to Figure 10 in that chapter for assistance in selecting the appropriate chain.

3.5.2. Inspect the chain for cracks, missing segments or bumpers, or signs of overheating (discoloration) or other damage before mounting and before each use.

3.5.3. Inspect the chain chassis for wear. Wearing of the chain chassis is typically referred to as "chain stretch." If the bar adjustment screw cannot be tightened sufficiently to prevent the drive links from coming completely out of the groove move the Guide Bar forward so that Positon Hole 2 is engaged with the Tensioner Carriage (#53). This will provide additional adjustment for the bar and chain. If the chain still hangs below the guide bar more than ¼" replace the chain.

3.5.4. Inspect the cutting segment for wear. The segment is considered worn out when the segment height is worn to about 1/16", or when the segment and chain chassis are the same width.

3.5.5. Non-directional chains can be installed in either direction. Directional chains **MUST** be installed in the proper direction according to the manufacturer's instructions. Backward (reverse) chain installation can cause excessive vibration, rough cutting, reduced chain life, and damage to the chain.

3.5.6. Install the chain by placing it around the drive sprocket. Then, run the drive links into the top groove of the bar and wrap it around the nose sprocket.

3.5.7. Pre-tension the chain using the Scrench (#79) to tighten the Tensioner Screw (#60). Make sure the all the drive links are positioned inside the groove of the bar.

3.5.8. Replace Cover (#26) by aligning the slot on the left side with the Cover Bracket (#69) on the saw.

3.5.9. Hand-tighten the Cover Retaining Nuts (#28) in an alternating fashion until they are snug.

3.5.10. Proceed to Section 3.6 to adjust the tension of the chain.

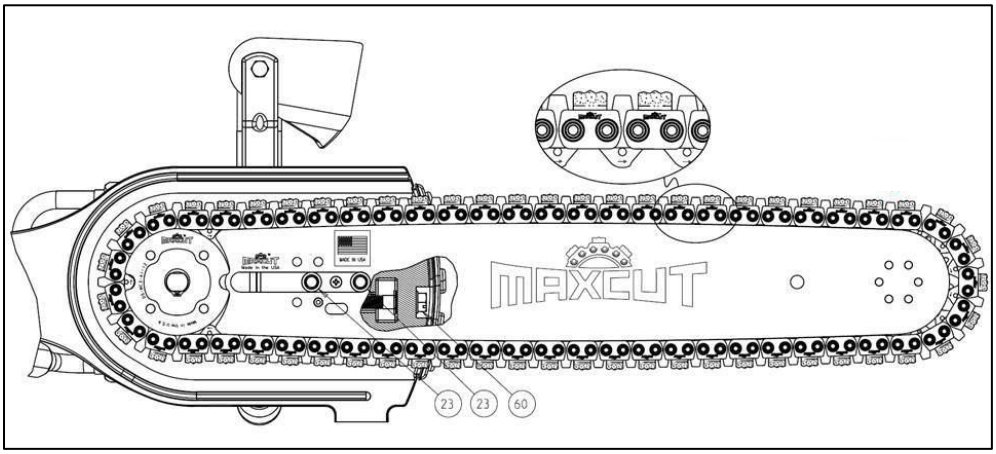


FIGURE 7
Chain Installation

3.6. TENSIONING THE CHAIN

Refer to the Figures 8 and 9 throughout the following procedure.

WARNING:
FAILURE TO DISCONNECT THE POWER SUPPLY BEFORE STARTING CAN CAUSE EQUIPMENT DAMAGE AND/OR PERSONAL INJURY.

3.6.1. If you are not continuing from Section 3.5, disconnect hydraulic hoses from the saw and place it on a flat surface.

3.6.2. Loosen the Cover Retaining Nuts (#28) using the Scrench (#79). **The Cover (#26) does not need to be removed.**

3.6.3. Turn the bar adjustment Tensioner Screw (#60) clockwise until chain is hanging approximately ¼" below the bottom of the bar. This can be easily checked using the shaft of the Scrench (#79) to measure the clearance. The shaft is ¼" so this is a quick way to confirm this.

3.6.4. Chain tension needs to be adjusted periodically before the drive links can come completely out of the groove of the bar.

3.6.5. If the Tension Screw is all the way out and the chain hangs more than ¼", move the Guide Bar forward so that Positon Hole 2 is engaged with the Tensioner Carriage (#53). This will provide additional adjustment for the bar and chain.

3.6.6. Use the Scrench (#79) to tighten the two Cover Retaining Nuts (#28).

CAUTION:
IF THE CHAIN IS TOO LOOSE DURING SAW OPERATION, THERE IS AN INCREASED RISK OF CHAIN THROWING.

WARNING:
NEVER OPERATE THE SAW WITHOUT THE COVER INSTALLED. DOING THIS CAN CAUSE PERSONAL INJURY.

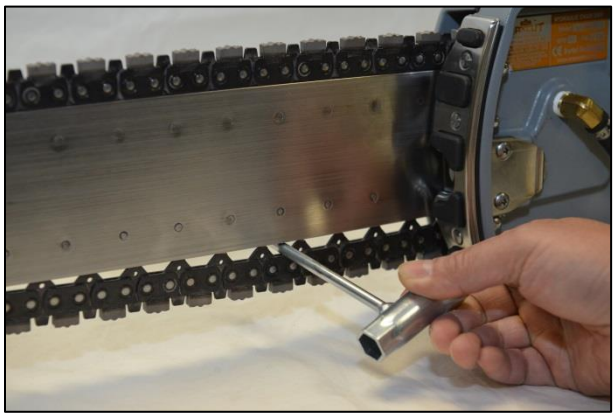


FIGURE 8
Chain Tensioning

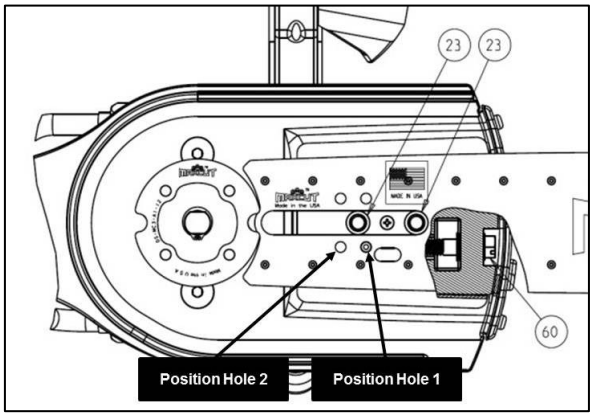


FIGURE 9
Position Hole Location

3.7. BREAKING IN A NEW CHAIN

3.7.1. Before using a new chain, the cutting segments should be dressed by cutting in an abrasive material such as cinder blocks or bricks.

3.7.2. Looking at the cutting segment closely, you should be able to see the diamond particles exposed and raised slightly higher than the surrounding surface.

3.7.3. Check the chain tension frequently during the first thirty minutes of operation of a new chain and adjust as outlined in Section 3.6.

4. OPERATION

4.1. PLANNING THE CUT

4.1.1. This saw is not insulated. DO NOT start cutting without first de-energizing electrical wiring imbedded in the concrete and near the cutting site.

4.1.2. When cutting a structural member such as a wall, ensure the cut will not weaken the structure such that it will cause a failure.

4.1.3. Plan the sequence of cuts to prevent the weight of the material being cut from pinching the bar and chain, causing it to bind. Start with the base horizontal cut and proceed with the remaining cuts.

4.1.4. The material being cut must be rigidly supported to prevent it from falling and causing personnel injury.

4.1.5. The planned line of cut can be outlined with a permanent marker for a visual guide.

4.1.6. For long vertical or horizontal cuts, the cutting line can be first scored with a groove using the nose of the bar. The groove will help guide the bar for a straight cut.

4.2. CUTTING PROCEDURE

WARNING:

THE CHAIN GUARD MUST BE IN PLACE BEFORE STARTUP AND DURING SAW OPERATION. FAILURE TO DO THIS CAN CAUSE SERIOUS PERSONAL INJURY.

4.2.1. Review all safety procedures in Chapter 1 of this manual and in the manual supplied with your hydraulic power unit.

4.2.2. Before connecting the hydraulic lines, connect water supply to the saw. Check the water ports for proper water distribution by triggering the saw. Water should be coming out of the water ports each on the top and bottom of the bar and around the nose sprocket. If not, remove chain and use a small wire to clean the water ports. Note that water ports are tilted forward at a 45° angle.

CAUTION:

NEVER RUN THE SAW WITH PLUGGED WATER PORTS. THIS CAN CAUSE OVERHEATING AND RESULTING EQUIPMENT DAMAGE.

4.2.3. Connect hydraulic lines to the saw.
4.2.4. Grasp the front handle with your left hand. Use the appropriate part of the handle for making the first cut.
4.2.5. Grasp rear handle with your right hand.
4.2.6. Disengage the Safety Release (#2) then depress (squeeze) the Throttle Trigger lever (#3) to start the saw.
4.2.7. Always operate a new chain at the rated rpm for two minutes before cutting to verify proper chain mounting and tension. The chain should be moving away from you (i.e. forward direction) at the top of the power bar. If it is not, change the position of the forward/reverse lever on the power unit, if equipped, or reverse hydraulic connections at power unit.
4.2.8. Position the saw in the appropriate place to make the desired cut.
4.2.9. When putting the chain into an existing cut, the cut must be the same width as the chain. Putting the chain into an existing cut narrower than the chain will rapidly wear the side clearance of the chain and could cause chain breakage.
4.2.10. When starting a cut, DO NOT bang the chain into the cutting medium. Jarring impacts can decrease the life and performance of the chain and bar.
4.2.11. Plan the cutting strategy before starting. Once the saw starts cutting, you cannot change direction of a cut easily. DO NOT twist the bar in the cut.
4.2.12. DO NOT apply excessive feed force. A constant chain speed is important for optimum cutting.
4.2.13. When plunge cutting, increase the opening of the cut by rocking the saw up and down. Aggressive plunge forces may cause the saw to jam when exiting the cut. If the saw does become jammed in a plunge cut, you can release the saw as described in Chapter 7.
4.2.14. Check chain tension frequently during cutting.

4.3. SHUTTING DOWN AND STORING THE SAW

4.3.1. Stop the saw by releasing the Throttle Trigger lever (#3).
4.3.2. Stop the hydraulic power source following the procedure in the respective instruction manual.
4.3.3. Clean the slurry off the saw with water before it dries.
4.3.4. Shut off water supply.
4.3.5. Disconnect the hydraulic hoses from the saw.

WARNING:

NEVER DISCONNECT ANY HYDRAULICALLY OPERATED PART OF THE SAW OR REMOVE HYDRAULIC COMPONENTS, LINES, OR FITTINGS WHILE THE POWER SOURCE IS RUNNING OR WHENEVER THE HYDRAULIC FLUID IS HOT.

4.3.6. Allow the water to drain out of the saw by pointing the nose down and triggering the valve on. If available, blow the water out of the saw with compressed air. **Spray entire saw with a light coating of oil to make cleanup easier next time. Make sure the chain, bar, and bar nose sprocket have a coating of oil to prevent rusting.**
4.3.7. Secure the saw and hydraulic power source to prevent unauthorized use.

4.3.8. Store the saw away from excessive heat or moisture. Store in a clean, dry area away from exposure to high humidity, water, other liquids, or freezing temperatures. Avoid temperatures low enough to cause condensation on the chain when moving it from storage to a higher temperature. Always handle and store chains carefully.

4.3.9. DO NOT stack material on top of the saw that may cause the chain or bar to bend or deform.

5. MAINTENANCE

5.1. GENERAL MAINTENANCE RULES

5.1.1. Hydraulic fluid can become contaminated after extended periods of use which can cause restrictions in the system. Check to see that the fluid is clean, and change at recommended intervals to extend saw's life. Refer to the respective manual for maintenance information on the hydraulic power source.

5.1.2. Proper maintenance of the saw and related equipment requires timely adhering to all the guidelines given in this chapter. Proper maintenance is required to maintain the system in good condition and free of defects.

5.1.3. Review and follow all the safety rules given in Chapter 1 before attempting any maintenance.

5.1.4. Only authorized personnel should be allowed in the maintenance area. Authorized personnel are the trained people as defined below and their supervision.

5.1.5. Repairs must be made only by trained personnel. A trained person is one who has read and thoroughly understands this instruction manual and related equipment manuals and, through training and experience, has shown knowledge regarding the safe operational procedures.

CAUTION:
BEFORE STARTING ANY MAINTENANCE, DISCONNECT SAW FROM HYDRAULIC POWERSOURCE TO PREVENT ACCIDENTAL STARTUP.

WARNING:
DURING ANY MAINTENANCE OR REPAIR PROCEDURES, DO NOT ATTEMPT ANY SAWING. THIS CAN CAUSE EQUIPMENT DAMAGE AND/OR PERSONAL INJURY.

5.2. GUIDE BAR MAINTENANCE

5.2.1. Ensure the bar and nose sprocket has a light coat of oil to prevent rusting.

5.3. CHAIN MAINTENANCE

5.3.1. Inspect the chain before mounting and before each use.

5.3.2. Ensure there are no missing segments or bumpers.

5.3.3. Ensure there are no signs of cracking, overheating, or other damage.

5.3.4. Check the wear of the chain chassis, typically referred to as "chain stretch", by tensioning the chain as described in Section 3.6. The chain chassis is

considered worn out or excessively "stretched" if the chain cannot be tensioned sufficiently to prevent the drive links from coming completely out of the groove. Discard the chain.

5.3.5. Check the segment wear. The segment is considered worn-out when the height is worn down to about 1/16", or when the segment width is the same as the chain chassis.

5.3.6. After each use clean the slurry and debris off the chain; then apply a light coating of oil to prevent rusting.

5.4. POWERHEAD MAINTENANCE

5.4.1. After using saw inspect all hardware and tighten fasteners as needed.

5.4.2. Inspect the Felt Washer (#71) to ensure it is integral, replace if damaged.

5.4.3. Maintain the Tensioner Assembly by removing the Guide Bar Wear Plate (#24). Clean the slot, Tensioner Carriage (#53), and Tensioner Screw (#60). Apply new grease to the entire assembly and replace the Wear Plate (#24) as shown in Section 8.1.

5.4.4. Remove Spool Cover (#12) and lubricate Spool Linkage (#9) and associated pivot points.

5.4.5. Inspect, clean, and lubricate Bar Studs (#23).

5.4.6. Inspect Bumper Pad (#58) and replace when it becomes worn.

6. FACTORS AFFECTING CHAIN LIFE

Optimum performance from your chain saw will depend largely on selecting the proper chain for the application. If the cutting medium is too soft for the chain rating used, you may get fast chain wear. If the cutting medium is too hard for the chain rating used, you will get segment glazing and/or very poor cutting performance. This chapter is a guide in making the proper chain selection.

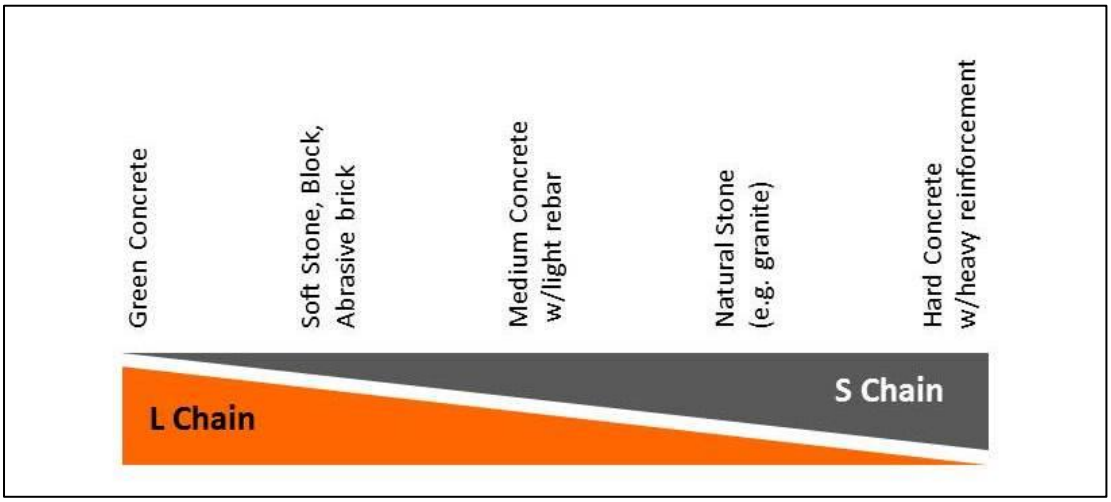


FIGURE 10
Chain Selection Guide

6.1. HOW DIAMOND SEGMENTS WORK

Cutting concrete, stone, and other hard, brittle materials is a grinding or abrading action. Cutting segments are composed of hard, abrasion resistant diamond particles distributed randomly in a metal matrix. The diamonds abrade or scratch out particles of

the hard substrates during the cutting operation. Even though diamond is the hardest substance known to man, it does wear out or break down. New diamonds are exposed as the metal bond wears away. Abrasive particles will wear down a metal bond faster than hard, brittle particles.

6.2. MATERIAL FACTORS AFFECTING CHAIN LIFE

There are several material factors that affect the performance and life of diamond segmented chain. Six major factors are summarized as follows:

6.2.1. Aggregate Hardness – There are many different types of rocks used as concrete aggregate. Some aggregates are very hard like flint and some are very soft like limestone. A general rule is that the harder the aggregate, the softer the segment bond that is needed. Another general rule is that the harder the aggregate, the slower the chain will cut. A common way of measuring aggregate hardness is the Moh's Scratch Test.

MOH'S SCALE
HARDNESS CRITERIA

STANDARD	SCALE	HARDNESS CRITERIA
DIAMOND CORUNDUM TOPAZ	10 9 8	Very hard aggregates (flint, chert, some basalt, some quartz, some trap rock)
QUARTZ FELDSPAR APATITE	7 6 5	Hard aggregates (some quartz, some granite, some basalt, some river gravel, some trap rock) Medium hard aggregates (some granite, some river rock)
FLUORITE CALCITE GYPSUM TALC	4 3 2 1	Medium aggregates (dense limestone, sandstone, dolomite, marble) Medium soft aggregates (soft limestone)

6.2.2. Aggregate Size - As the rock size increases, cutting generally will be slower and the chain life will decrease. Common U.S. aggregate sizes are sieved at 1-1/2", 1", 3/4", and 3/8".

6.2.3. Size and Quantity of Reinforcing - Steel reinforcing critically affects diamond chain life. Quantifying the amount of reinforcing can generally be divided into two levels:

Heavy

- 5/8" (16 mm) diameter or larger with any center distance
- 1/2" (13 mm) diameter or larger with less than 4" (100 mm) center distance
- Pre-stressed cable/wire

Light

- 1/2" (13 mm) diameter with greater than 4" (100 mm) center distance
- 3/8" (10 mm), 1/4" (6 mm) or smaller diameter with any center distance

Steel reinforcing creates large impact forces on both the diamonds and the chain chassis, reducing both the segment life and chain life. Generally, as the ratio of steel in the concrete cross section increases, the performance and chain life are greatly reduced. When steel is encountered while cutting, the feed force should be reduced.

6.2.4. Sand Shape - Angular types of sand such as manufactured (crushed) and bank sand are more abrasive than rounded sand such as river or wind-blown sand. Angular sands decrease both the segment life and chain life. The diamond segment bond is abraded at a higher rate. Sharp, fine sand increases the wear on the chain chassis, especially if the sand penetrates the rivet joints. **Proper water flow rate is critical in maximizing chain life in abrasive conditions.** Generally, a harder segment bond is desired for abrasive conditions.

6.2.5. Compressive Strength of Concrete - Strength of concrete is a combination of many factors and is usually measured in pounds per square inch (psi). Even though the compressive strength does not indicate the aggregate hardness, there is a relationship between the compressive strength and the hardness of the concrete. A general rule is that the higher the compressive strength, the harder the concrete. Generally, higher strength concretes decrease expected chain life.

COMPRESSIVE STRENGTH

CONCRETE HARDNESS	CONCRETE STRENGTH (PSI)	TYPICAL APPLICATIONS
Very Hard	8000 or more	Nuclear Plants
Hard	6000-8000	Bridges, Piers
Medium	4000-6000	Roads
Soft	3000	Sidewalks, Patios

6.2.6. Green or Cured Concrete - A very important material factor is the cure time of the concrete. Green concrete is fresh poured, typically less than 24 hours. It is more abrasive because the sand is not fully bonded with the cement and coarse aggregate. Chain life is decreased in both the chassis joints and diamond segments. A harder segment bond is desired for abrasive conditions.

6.3. OPERATIONAL FACTORS AFFECTING CHAIN LIFE

There are eight operational factors affecting chain life which are summarized as follows:

6.3.1. Water Flow Rate - **The water flow rate to the chain is a critical factor in both the segment life and chain life.** Water is the system coolant and flushing agent for grit and particulate. It is important to note that the required water flow is the flow to the chain and not the flow from the hose or water supply. Water leaks or plugged water orifices may actually decrease the flow to the chain. The minimum water flow to the chain is 2.5 gpm from the guide bar at a minimum pressure of 30 psi. It is recommended to use higher water pressure if possible for abrasive conditions.

Insufficient water supply decreases chain life two (2) ways:

- Chassis wear or "stretch" is increased, resulting in wearing out of the chassis rivets and/or drive link holes.
- Segment bond wear is increased due to the abrasive slurry not being flushed out.

6.3.2. Mode of Cutting
- Plunge vs. Slab - Plunge cutting increases diamond segment wear because both impact and loading increase. Depending on the ratio of plunges and the cutting depth, chain life can be reduced.
- Buried nose vs. Through cut - When cutting with the bar nose buried in the cut, the slurry increases the wear on both the chain and segment. It can be expected that both the segment life and chain life will be decreased.

6.3.3. Direction of Cutting (Horizontal vs. Vertical) - Cutting horizontally decreases chain life. When cutting vertically (up or down), feed load is applied mainly to the top diamond surface. Cutting horizontally applies downward load to the diamond top and gravitational load to the diamond side from the tool weight. This side load creates non-uniform side wear on the segment and can eventually cause side clearance loss.

6.3.4. Cutting Technique (Impact vs. Smooth) - Impacting the cutting surface with the chain decreases the chain life. Impact forces create excessive stress and wear in the chain components. Impact forces also dull the diamond segments, decreasing the segment life and performance.

6.3.5. Rotational Speed - Optimum cutting performance is achieved when operating with a hydraulic input of 12 GPM (6500 RPM). Operating with a hydraulic input excess of 12 GPM will decrease the life of both the segment and chain.

6.3.6. Excessive Feed Force - Excessive feed force dulls the diamond segments, decreasing the segment life and performance.

6.3.7. Chain Tension - Improper chain tension increases chassis wear in the rivets and/or drive link holes, possibly "stretching" the chain beyond its usable pitch diameter.

6.3.8. Improperly Maintained Bar and/or Drive Sprocket - Improperly maintained bar rails, nose sprocket, and/or drive sprocket can increase the chain chassis wear, causing premature "stretching" and possibly uneven segment wear.

6.4. CHAIN END-OF-LIFE MODES

There are three different end-of-life conditions that can occur, depending on a specific combination of factors as discussed in Sections 6.2 and 6.3. These conditions are as follows:

6.4.1. Wear Out of Diamond Top Surface - This condition occurs when the diamond segment height is worn down to about 1/16" (0.0625" or 1.5 mm) remaining.

6.4.2. Loss of Diamond Side Clearance - This condition occurs when the diamond side surfaces are worn at a rate higher than the diamond top surfaces. The resulting end-of-life condition is a diamond segment width of about 0.187" (4.7 mm).

6.4.3. Wear Out of Chain Chassis - This condition is characterized by worn chain rivets and chain drive link holes, and appears as "stretch." This mode leaves a portion of the diamond segment unused. Excessive "stretch" is evident when the drive links can come completely out of the groove after tensioning the chain mounted on the bar.

7. TROUBLESHOOTING

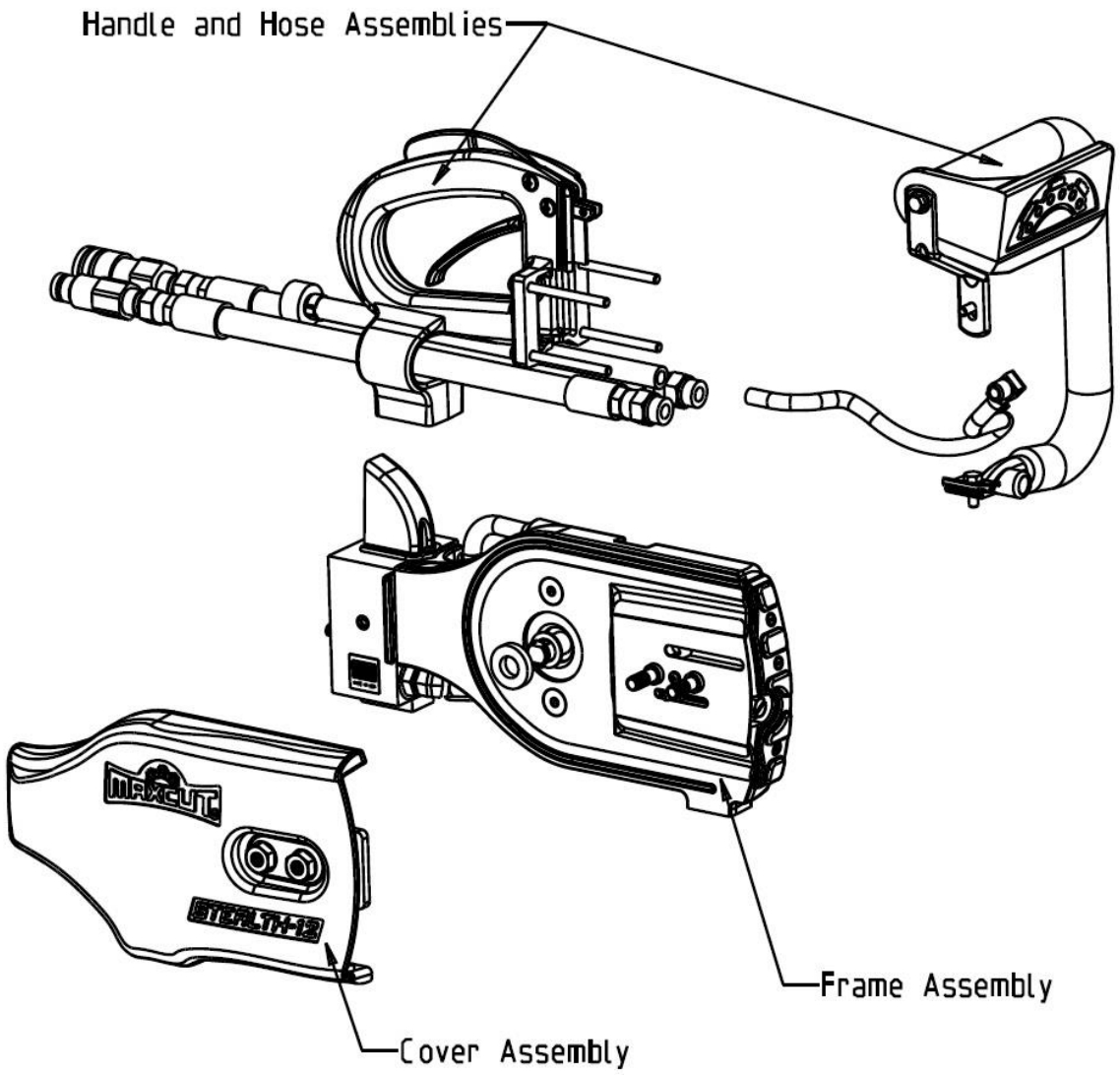
The following chart is intended to assist with troubleshooting the MaxCut Stealth-12. While not all inclusive, the chart outlines the most common causes of a problem and the recommended course of action. Consult your hydraulic power supply manual for troubleshooting that part of your system.

SYMPTOM	CAUSE	CORRECTIVE ACTION
Saw will not cut straight.	Operator feed force not applied directly over centerline of bar.	Move hand closer to centerline of bar.
	Frame is bent.	Repair or replace frame.
	Uneven bar rail wear.	Dress rails square or turn bar over as described in Section 3.4. Replace bar.
	Uneven chain segment profile.	Redress segment by cutting in an abrasive medium such as concrete, cinder blocks, or bricks.
	Operator unable to maintain a level and straight saw position.	Use an attached guide on wall (i.e., 2 x 4, wood rails). Use a precut slot in the wall the full length of desired cut to be made.
	Bent or twisted bar.	Replace bar.
Premature chain stretch.	Insufficient water supply.	Plugged bar water ports: (a) Clean ports with #10 wire. (b) Check and verify that water supply is clean. (c) Install inline water filter. (d) If unable to maintain a minimum water pressure of 30 psi (3.5 bar) with a minimum flow rate of 2.5 gpm (9.5 lpm), use an inline water pump.
	Hydraulic flow is exceeding rated saw gpm (lpm).	Adjust power supply or use a flow divider to limit hydraulic flow to rated saw gpm (lpm).
	Loose chain tension.	Maintain the chain tension as described in Section 3.6.
	Excessive groove worn in drive sprocket.	Replace drive sprocket. Minimize impacting when cutting steel.

	Improper operator technique.	Minimize rapid chain stops, such as jamming.
Excessive vibration and rough cutting.	Loose chain tension.	Maintain chain tension as described in Section 3.6.
	Loose Cover Retaining Nuts.	Tighten bolts as described in Section 3.6.
	If a directional chain is installed backwards.	Inspect chain as described in Section 3.5 before re-installing.
	Worn bar nose sprocket.	Replace guide bar.
	Worn drive sprocket.	Replace drive sprocket.
	Excess feed force when cutting rebar.	Reduce feed force.
Bar nose sprocket does not turn	Nose bearings worn and are jammed between inner and outer race.	Replace guide bar.
	Bent or twisted bar.	Replace guide bar.
Saw cuts slowly	Loss of diamond segment side or top clearance.	Replace chain.
	Chain segment dulled because of continuous use in hard material or steel.	Redress segment by cutting in abrasive material such as concrete building block or brick. Choose the right chain for the cutting condition as outlined in Section 6.
	Wire edged bar rails.	Dress the top and sides of the bar rails squarely with a grinder or belt sander. See Section 3.4.
	Hydraulic flow is below saw rated GPM flow.	Adjust hydraulic power source to 12 gpm.
	Hydraulic pressure relief is set below 2500 psi.	Adjust hydraulic power source.
	Drive sprocket slipping on drive shaft.	Replace drive sprocket.

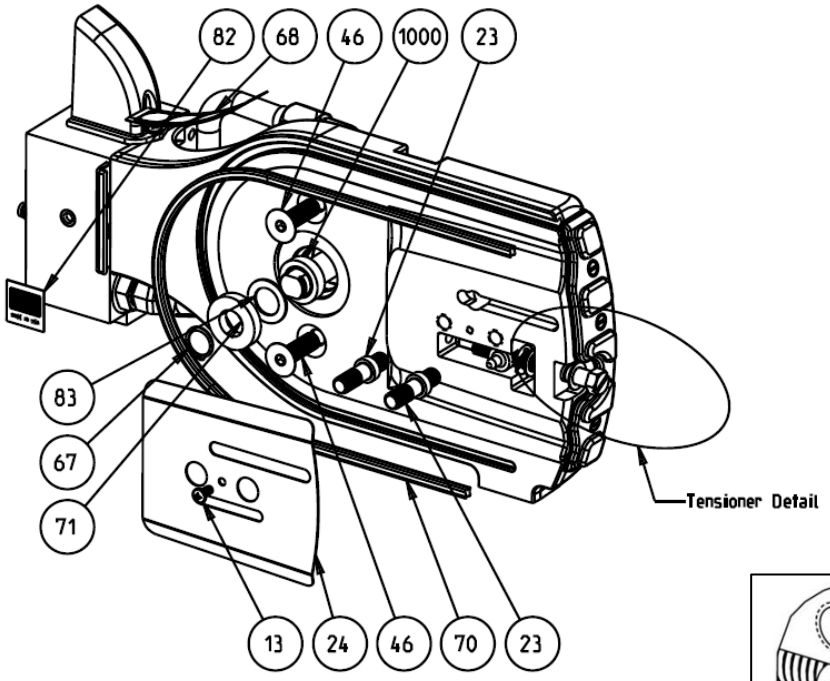
	Chain tension too tight or too loose.	Adjust chain tension as outlined in Section 3.6.
	Chain slipping through worn teeth on drive sprocket.	Install new drive sprocket. See Section 3.3.
	Hydraulic hoses too long or too small in diameter.	Select the shortest hose that is feasible. The maximum hose length for 1/2" hose is 100 feet.
	Hydraulic oil leaking on chain.	Check the following locations for leaks: (a) Quick disconnect fittings. (b) Saw control valve assembly. (c) Saw motor hydraulic fittings. (d) Saw motor shaft. (e) O-ring leak at valve spool assembly which controls both oil and water flow—replace O-ring. Adjust or replace appropriate part.
Saw wedged tightly in plunge cut.	Excessive feed force when exiting back side of plunge cut.	Turn off power supply; then loosen chain tension and remove saw from cut.
Saw is binding in the cut.	Bar is bent or twisted.	Replace bar.
	Frame is bent.	Repair or replace frame.
	Saw not cutting a straight line.	Refer to "Saw Will Not Cut Straight" part of troubleshooting chapter.
	Side clearance of chain worn.	Replace chain.
	Wire edged bar rails.	Dress top and sides of the bar rails squarely with a grinder or belt sander. See Section 3.4.

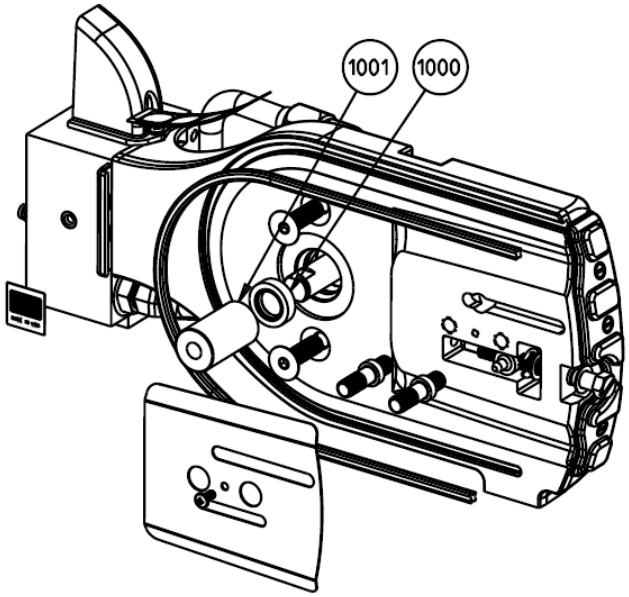
8. PARTS LISTS

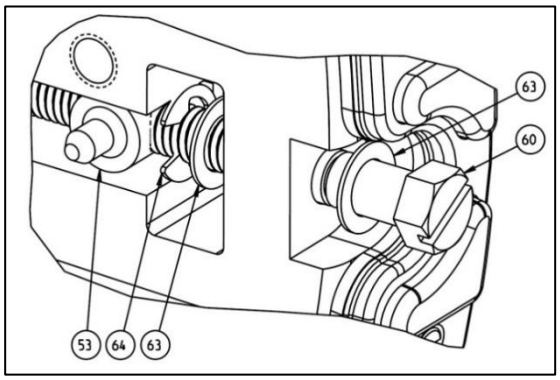


DESCRIPTION	SECTION	PAGE
Frame Assembly	8.1	24-25
Cover Assembly	8.2	26
Handle and Hose Assemblies	8.3	27-28
Scrench Tool	8.4	29

8.1. PARTS LIST - FRAME ASSEMBLY

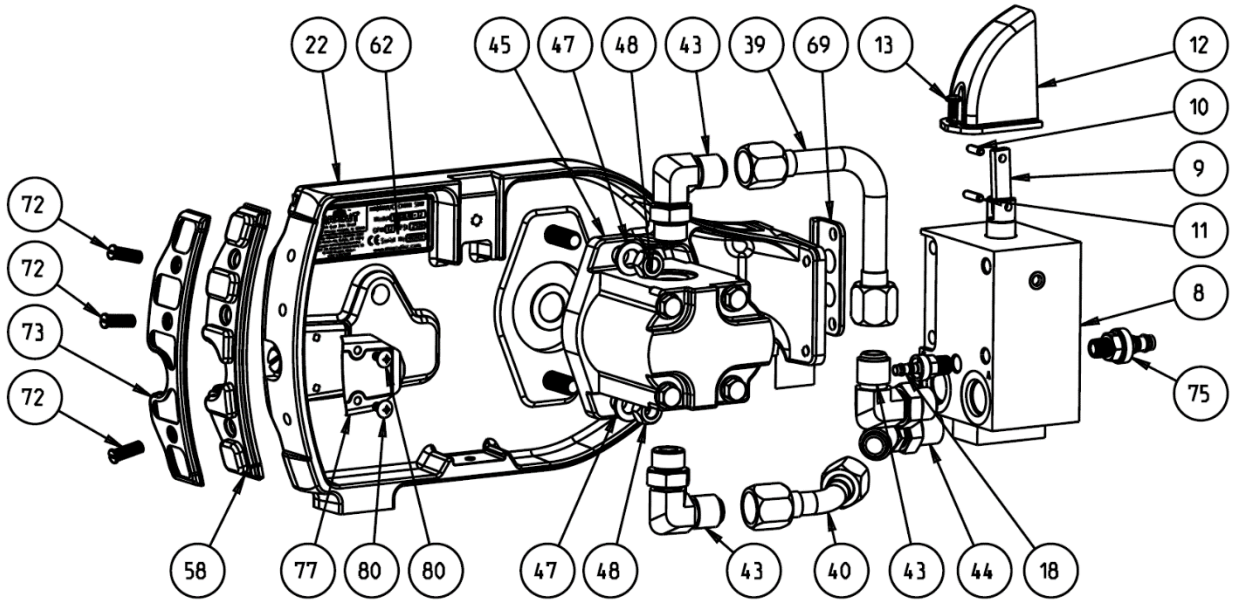






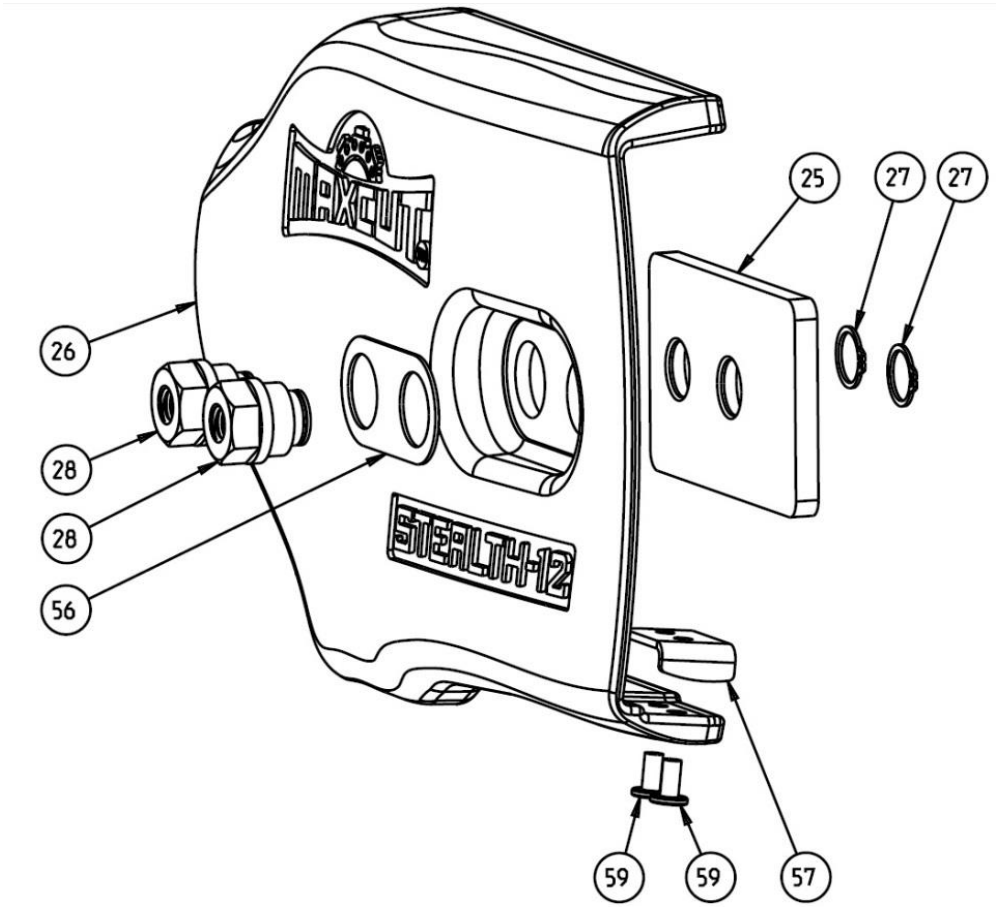
ITEM NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
13	90060	1	Screw - 8-32 x 3/8"
23	20010	2	Bar Stud
24	10080	1	Wear Plate - Guide Bar
46	90130	2	Screw - 3/8-16 FHCS x 1.25"
53	20030	1	Tensioner Carriage
60	20040	1	Tensioner Screw
63	90170	2	Tensioner Washer - 0.390" ID x 0.625" OD
64	90180	1	Tensioner E-Clip
67	90190	1	Snap Ring - To Retain Sprocket (5/8" Shaft Size)
68	70040	1	Personal Protection Equipment (PPE) Label
70	90200	1	X-Profile O-ring - 3/16" Cord Stock (~21.5" Length)
71	30200	1	Felt Washer (5/8" ID)
82	70010	1	"Made in USA" Label
83	10170	1	Support Washer
1000	30210	1	Shaft Seal
1001	30220	1	Support Washer Install Tool

PARTS LIST - FRAME ASSEMBLY (Continued)



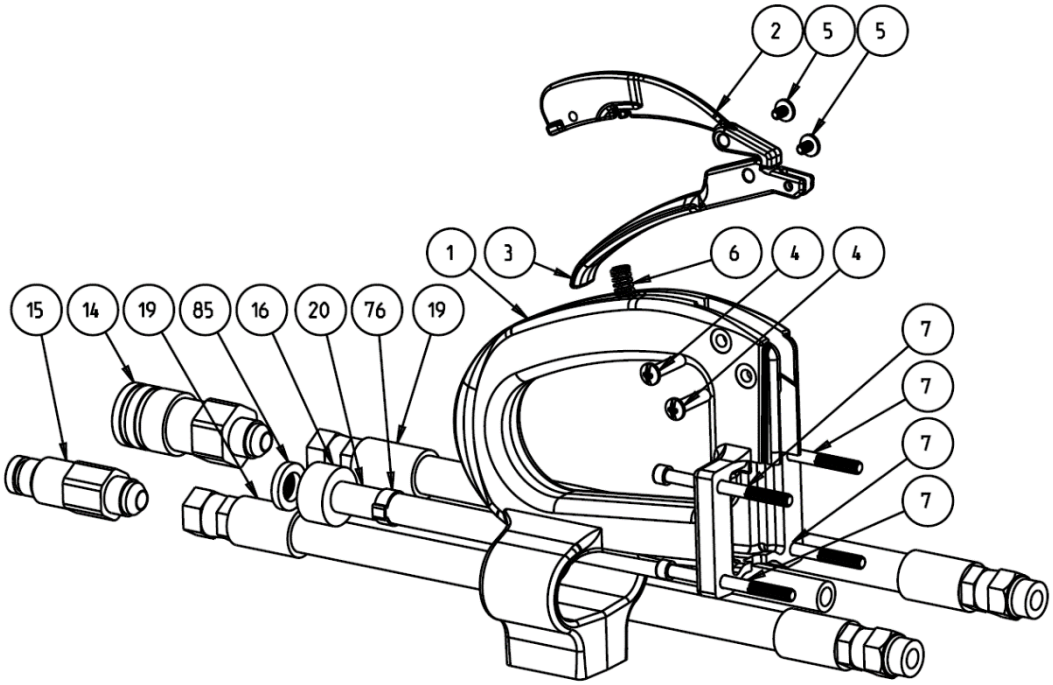
ITEM NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
8	30030	1	3-Port Hydraulic Valve
9	10040	1	Spool Linkage
10	90040	1	Roll Pin - 5/32" x 1/2" Long - Upper
11	90050	1	Roll Pin - 5/32" x 5/8" Long - Lower
12	40010	1	Spool Cover
13	90060	1	Screw - 8-32 x 3/8"
18	30070	1	Water Hose Fitting - 1/4" barb x 1/8" NPT, straight
22	80040	1	Saw Frame
39	30010	1	Hydraulic Flared Tube - Supply, Valve to Motor
40	30020	1	Hydraulic Flared Tube - Return, Motor to Valve
43	30140	3	Fitting - Hydraulic, Male JIC-8 to Male SAE-8 O-ring, 90°
44	30150	1	Fitting - Hydraulic, Male JIC-8 to Male SAE-8 O-ring, 45°
45	30160	1	Motor
47	90140	2	Washer - 3/8" ID
48	90150	2	Nut - 3/8-16 Nylon Lock
58	50010	1	Bumper – Rubber
62	N/A	1	Serial Number Tag
69	10100	1	Cover Bracket
72	10140	3	Bumper Screw
73	10110	1	Bumper Frame
75	30180	1	Water Hose Fitting - 3/8" barb x 1/8" NPT, straight
77	10120	1	Scrench Clip
80	90220	2	8-32 x 3/8 Philips Truss Machine Screw (Stainless Steel) **Interchangeable with Item #13**

8.2. PARTS LIST – COVER ASSEMBLY



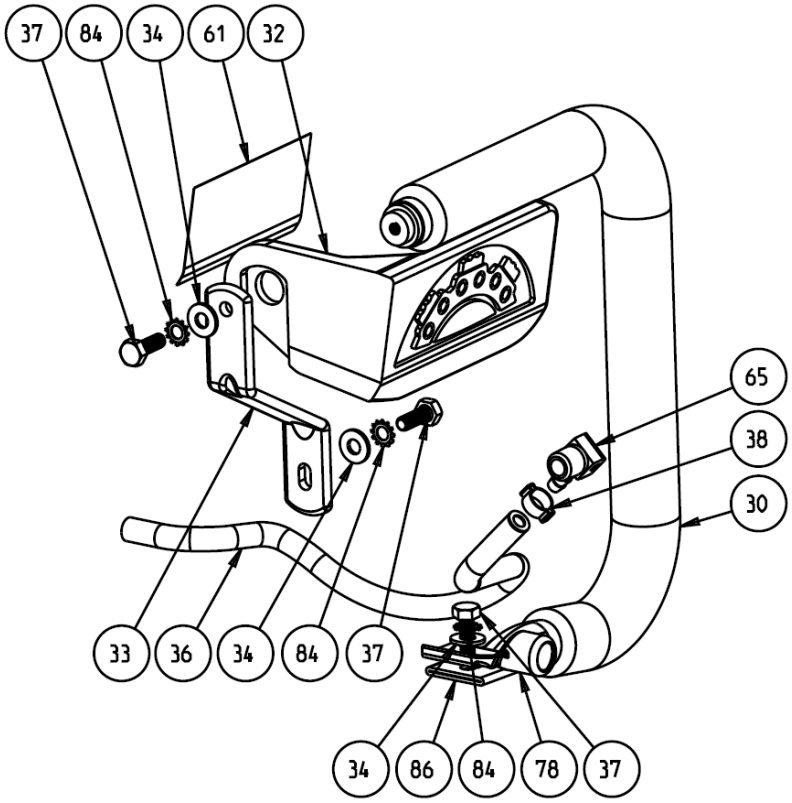
ITEM NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
25	10020	1	Clamping Plate - Guide Bar
26	80050	1	Cover
27	90070	2	Snap Ring - Cover Retaining Nut, 9/16" Shaft Size
28	20020	2	Cover Retaining Nut
56	10070	1	Washer Plate
57	10050	1	Strike Plate
59	90160	2	Rivet (strike plate) 3/16" x 3/8"L

8.3. PARTS LIST – HANDLE AND HOSE ASSEMBLIES



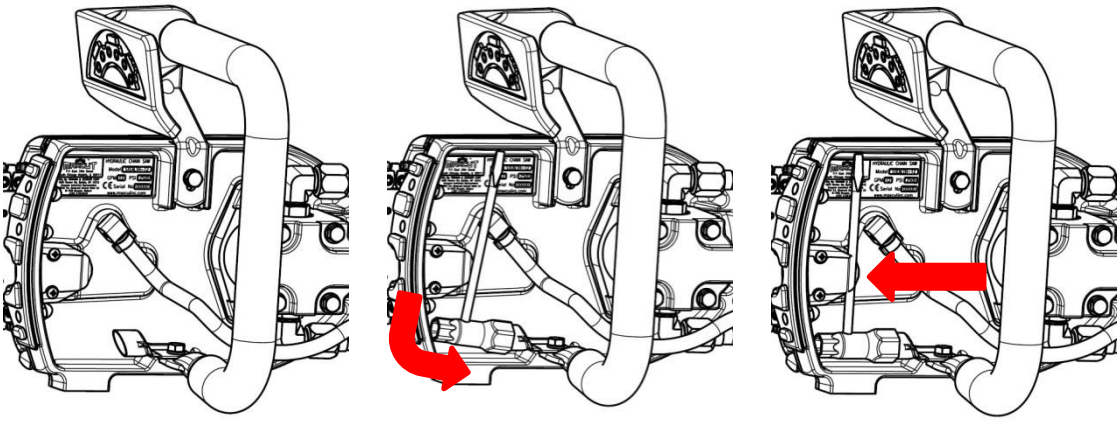
ITEM NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
1	80010	1	Rear Handle
2	80020	1	Safety Release
3	80030	1	Throttle Trigger
4	90010 (4&5 together)	2	Barrel Nut (1/4" OD x 1", 10-24 THD)
5	90010 (4&5 together)	2	Screw - For Barrel Nut (10-24 THD, Included with Barrel Nut)
6	90020	1	Spring (Safety Release)
7	90030	4	Screw - 1/4-20 x 3" SHCS
14	30040	1	Quick Disconnect Fitting – Supply (Female 3/8" body x Male JIC-8)
15	30050	1	Quick Disconnect Fitting - Return (Male 3/8" body x Male JIC-8)
16	30060	1	Water Inlet Fitting (GHT x 3/8" hose barb)
19	30080	2	Hydraulic Hose - Supply and Return (Starflex 3000 -08 x 12")w/ 1/2" JIC Swivel)
20	30090	1	Hose - Water Inlet (3/8" ID x 13")
76	30190	1	Hose Clamp (11/16" ID for 3/8" hose)
85	30230	1	Inlet Water Hose Screen

PARTS LIST – HANDLE AND HOSE ASSEMBLIES (Continued)

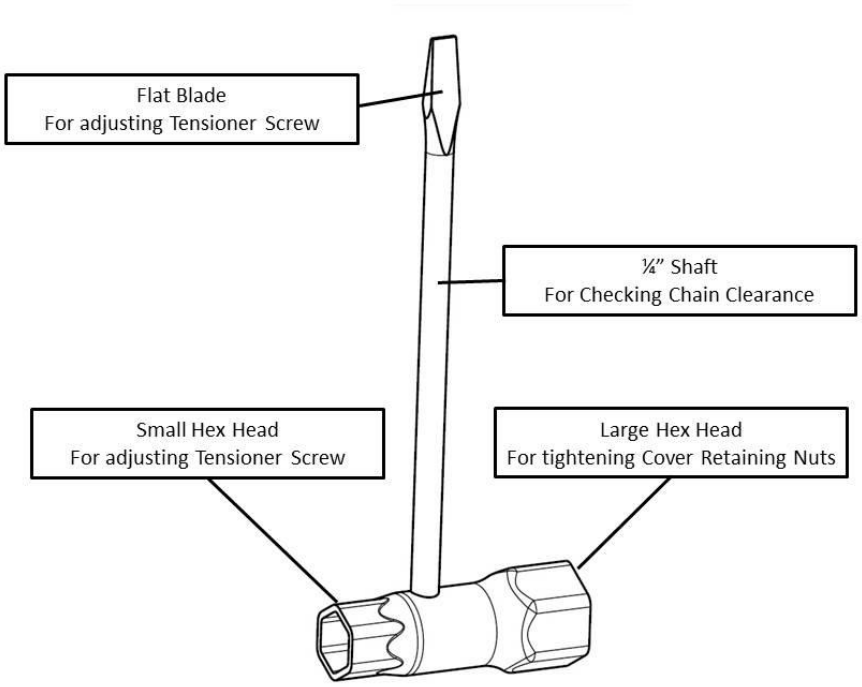


ITEM NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
30	90080	1	Foam - For Tube Handle
32	40020	1	Hand Guard
33	10060	1	Bracket - Handle to Saw Frame
34	90090	3	Washer - 1/4" ID
36	30110	1	Hose - Water from Valve to Saw Body (1/4" ID x 10.5")
37	90110	3	Screw - 1/4-20 x 3/4" Lg
38	90120	1	Hose Clamp (7/16" ID for 1/4" hose)
61	70020	1	Warning Label
65	30170	1	Water Hose Fitting - Saw Body In (1/4" barb x 1/4" NPT, 90°)
78	10130	1	Scrench Hub
84	90240	3	Star Washer - ¼" ID
86	10180	1	Tube Handle Assy

8.4. PARTS LIST – SCRENCH TOOL



Stowing the Scrench Tool – Step by Step



ITEM NUMBER	PART NUMBER	QUANTITY	DESCRIPTION
77	10120	1	Scrench Clip
78	10130	1	Scrench Hub
79	10160	1	Scrench
80	90220	2	8-32 x 3/8 Philips Truss Machine Screw (Stainless Steel) Interchangeable with Item #13

LIMITED PRODUCT WARRANTY

MAXCUT, Incorporated

A. LIMITED WARRANTY

MaxCut Incorporated (the "Manufacturer") warrants to the original purchaser (the "Buyer") that all MaxCut, Inc. products shall be free of defects in material and workmanship for a period of one (1) year from date of original purchase.

B. MANUFACTURER'S OBLIGATIONS

The Manufacturer's sole obligation under this Limited Warranty is the repair or, at the Manufacturer's discretion, the replacement of parts found to be defective. Parts and equipment must have authorization from the Manufacturer prior to return to the Manufacturer or repair by an authorized service person. Costs of transportation and other expenses connected with replacing or repairing parts are not covered under this Limited Warranty.

C. PARTS MANUFACTURED BY OTHERS

This Limited Warranty does not cover any parts manufactured by others. Such parts are subject to the warranty, if any, of their respective manufacturers, and are to be repaired only by a respective authorized service person for such parts. The Manufacturer shall have no obligation to undertake repairs of parts manufactured by others.

D. NO SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES

IN NO EVENT SHALL THE MANUFACTURER BE LIABLE TO THE BUYER OR ANY OTHER PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL LOSSES OR DAMAGES CONNECTED WITH THE USE OF THE PRODUCT UNDER THIS LIMITED WARRANTY. SUCH DAMAGES FOR WHICH THE MANUFACTURER SHALL NOT BE RESPONSIBLE INCLUDE, BUT ARE NOT LIMITED TO, LOST TIME AND CONVENIENCE, LOSS OF USE OF THE PRODUCT, THE COST OF A PRODUCT RENTAL, COSTS OF GASOLINE, TELEPHONE, TRAVEL, OR LODGING, THE LOSS OF PERSONAL OR COMMERCIAL PROPERTY, AND THE LOSS OF REVENUE.

E. NO LIABILITY IN EXCESS OF PURCHASE PRICE

IN NO EVENT SHALL THE MANUFACTURER'S OBLIGATIONS UNDER THIS LIMITED WARRANTY EXCEED THE PURCHASE PRICE OF THE PRODUCT.

F. NO EXTENSION OF STATUTE OF LIMITATIONS

ANY REPAIRS PERFORMED UNDER THIS WARRANTY SHALL NOT IN ANY WAY EXTEND THE STATUTES OF LIMITATIONS FOR CLAIMS UNDER THIS LIMITED WARRANTY.

G. WAIVER OF OTHER WARRANTIES

THE EXPRESS WARRANTIES SET FORTH IN THIS LIMITED WARRANTY ARE IN LIEU OF AND EXCLUDE ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

H. PROCEDURE FOR WARRANTY PERFORMANCE

If the product fails to perform to the Manufacturer's specifications, the Buyer must provide the Manufacturer with the applicable model and serial numbers, the date of purchase, and the nature of the problem.

I. ADDITIONAL EXCLUSIONS FROM THIS LIMITED WARRANTY.
THIS LIMITED WARRANTY DOES NOT COVER ANY OF THE FOLLOWING:

1. Equipment which has been abused, damaged, used beyond rated capacity, or repaired by persons other than authorized service personnel.
2. Damage caused by acts of God which include, but are not limited to, hailstorms, windstorms, tornadoes, sandstorms, lightning, floods, and earthquakes.
3. Damage under conditions caused by fire or accident, by abuse or by negligence of the user or any other person other than the Manufacturer, by improper installation, by misuse, by incorrect operation, by "normal wear and tear", by improper adjustment or alteration, by alterations not completed by authorized service personnel, or by failure of product parts from such alterations.
4. Costs of repairing damage caused by poor or improper maintenance, costs of normally scheduled maintenance, or the cost of replacing any parts unless done as the result of an authorized repair covered by the one (1) year Limited Warranty.
5. Costs of modifying the product in any way once delivered to the Buyer, even if such modifications were added as a production change on other products made after the Buyer's product was built.

J. NO AUTHORITY TO ALTER THIS LIMITED WARRANTY

No agent, representative, or distributor of the Manufacturer has any authority to alter the terms of this Limited Warranty in any way.