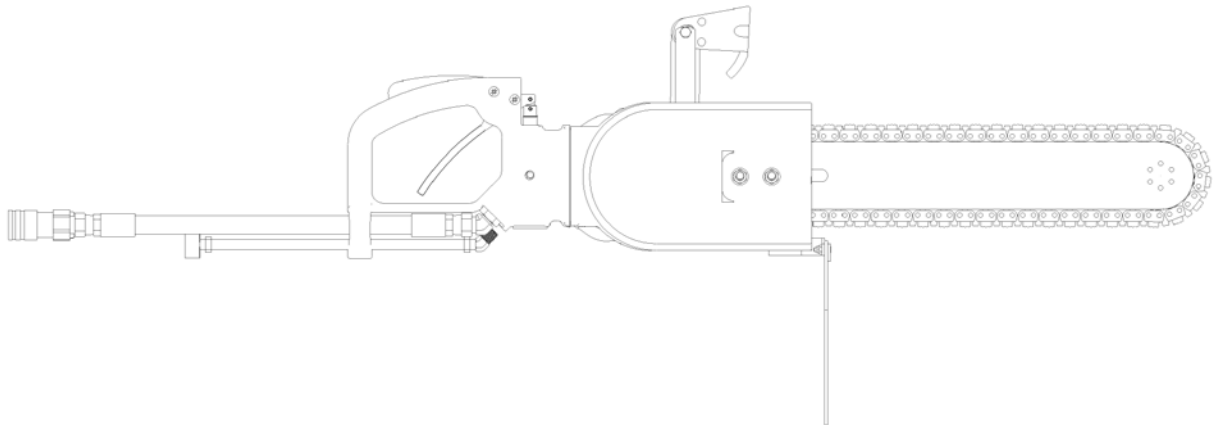




C120 HYDRACUTTER INSTRUCTIONS



REIMANN & GEORGER CORPORATION
CONSTRUCTION PRODUCTS
P/N 6129006

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1 SAFETY

1.1 INTRODUCTION

Your Reimann & Georger Corporation C120 HydraCutter has been engineered to provide sawing performance, long term economics and safety advantages that no other type can match. 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 and related equipment manuals 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 SAW 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 Reimann & Georger Corporation for a replacement.

1.4 C120 SAW SAFETY RULES

1. Only trained personnel shall operate the saw or do 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.
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 personnel injury.
3. Never use the saw in an explosive atmosphere and/or near combustible material that could be ignited by a spark.
4. Do not use a saw that shows any signs of damage. Do not use the saw if the chain does not stop rotating when the power-activating trigger lever is released.
5. The guard provides protection against contact with moving parts, ejected debris, broken chain, thrown water and concrete slurry. Never run the saw without the chain guard in place.
6. Never run saw for any extended periods with water supply turned off. Excessive wear to bar and chain will result.
7. Never allow anyone to stand in front of, or in line with, the chain forward of the guard.
8. **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 chips and should be worn.
9. Do not use the saw when you are tired or fatigued.
10. Never operate the saw under the influence of drugs, alcohol, or medication.

11. Always carry the saw in its de-energized state.
12. Keep the saw handles dry, clean, and free of oil or fuel.
13. Do not start cutting without first de-energizing electrical wiring near the cutting site or imbedded in the concrete.
14. Before cutting through a wall, check both sides for possible obstructions.
15. Prior to cutting, plan your cuts to prevent pinching of the bar or personnel injury from falling concrete.
16. Always hold the saw with both hands during operation. Use a firm grip on the handles.
17. Never exceed the flow and pressure rating of the saw which is 12gpm at 2500 psi.
18. Do NOT attempt to adjust the saw during operation.
19. Keep clothing and all parts of the body away from moving parts of this saw when connected to a power source or being used.
20. 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.
21. Always shut off the hydraulic power and cooling water sources before disconnecting the hoses or servicing the saw.
22. Always shut off the hydraulic and cooling water sources when not using the equipment.

2 SPECIFICATIONS

2.1 INTRODUCTION

Your Reimann & Georger Corporation C120 HydraCutter hydraulic hand-held chainsaw 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 met but not exceeded to support tool performance and longevity of equipment.

2.2 TECHNICAL DATA

The following specifications apply to the C100 HydraCutter.

	ENGLISH	METRIC
Tool Physicals		
Weight	23 lbs.	(10.5 kg.)
Bar Size (10 in. bar)	17.5 in. x 2.813 in.	(44.5 x 7.15 cm)
Bar Size (15 in. bar)	20.5 in. x 2.813 in.	(52.1 x 7.15 cm)
Bar Size (20 in. bar)	25.25 in. x 2.813 in.	(64.1 x 7.15 cm)
Bar Size (25 in. bar)	30.625 in. x 2.813 in.	(77.8 x 7.15 cm)
Bar Size (30 in. bar)	35.375 in. x 2.813 in.	(89.9x 7.15 cm)
Dimensions (with 10 in. bar)	45 x 10.25 x 12 in.	(114.3 x 26.04 x 30.5 cm)
Dimensions (with 15 in. bar)	48 x 10.25 x 12 in.	(121.9 x 26.04 x 30.5 cm)
Dimensions (with 20 in. bar)	52.5 x 10.25 x 12 in.	(133.4 x 26.04 x 30.5 cm)
Dimensions (with 25 in. bar)	58 x 10.25 x 12 in.	(147.3 x 26.04 x 30.5 cm)
Dimensions (with 30 in. bar)	62.5 x 10.25 x 12 in.	(158.8 x 26.04 x 30.5 cm)
Depth of Cut (with 10 in. bar)	12 in.	(305 mm)
Depth of Cut (with 15 in. bar)	15 in.	(381 mm)
Depth of Cut (with 20 in. bar)	20 in.	(508 mm)
Depth of Cut (with 25 in. bar)	25 in.	(635 mm)
Depth of Cut (with 30 in. bar)	30 in.	(762 mm)
Chain		
Segments (for 10 in. bar)	50	
Segments (for 15 in. bar)	57	
Segments (for 20 in. bar)	67	
Segments (for 25 in. bar)	79	
Segments (for 30 in. bar)	90	
Segment Dimensions	0.472 x 0.228 x 0.275 in.	(12 x 5.8 x 7 mm)
Bar		
Nose Sprocket	12 tooth	
Hydraulic Requirements		
Type of System	Open-Center	
Flow Rate	12 gpm	(45 lpm)
Max Pressure Range	2500 psi	(172 bar)
Back Pressure (Max)	250 psi	(17 bar)
Hose Length (Max)	100 ft.	(30 m)
Couplings	1/2" HTMA flush face	
Water Requirements		
Flow Rate	2.5 gpm	(9.5 lpm)
Pressure (Min)	50 psi	(3 bar)
Operation		
Power @2500 psi	17.5 Hp	(13 kw)
Torgue @2500 psi	170 in.-lbs.	(19.2 Nm)

Speed (Max)	6500 rpm
Vibration and Sound	
Vibration level	a= 5.65 M/S ²
Sound pressure @ 1Meter	88 dba

2.3 RECOMMENDED HYDRAULIC OIL

Viscosity	140-225 SUS @ 100°F	(28-45 cSt @ 38°C)
	40 min. SUS @ 210°F	(8 min. cSt @ 99°C)
Flash Point	340°F min.	(170°C min.)
Pour Point	-30°F min.	(-34°C min.)

Many types of compatible hydraulic oil are available through your local dealer/distributor. As an original equipment manufacturer, RGC uses a Grade ISO VG 32 hydraulic turbine oil.

Hydraulic oil types are too numerous to list in this manual. If you have any question concerning the type of oil suitable for C120 operation, please consult your local supplier or Reimann & Georger Corporation 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 2-1. Record the model and serial numbers for future reference.



Figure 2-1.
Typical C120 HydraCutter Product Nameplate

MODEL _____

SERIAL NUMBER _____

3 OPERATION

3.1 CHAIN SELECTION

Correct chain type selection is critical in maximizing chain life and cutting performance. Refer to the table below as a guide in the chain selection. However, no direct rule determines which chain type is optimum because many material factors also influence selection. Refer to Chapter 6 for more information on factors affecting chain life.

Model	Description
<p>MX-3 S (H) 49 Segments</p> <p>(Faster Cutting Speed)</p>	<p>For cutting very hard aggregate concrete (flint, chert, granite, etc.) with heavy steel reinforcing, medium/hard aggregate concrete (granite, quartz, river rock, etc.) with light steel reinforcing, or natural stone (e.g. granite).</p> <p>Heavy steel reinforcing is defined as (5/8" [16 mm] diameter & larger) rebar— closer than 4" o.c. ("on center").</p> <p>Light steel reinforcing is defined as (1/2" [13 mm] diameter & smaller) rebar— farther than 4" o.c.</p> <p>It is not advisable to use this chain on soft aggregate concrete, masonry brick, concrete block, or under highly abrasive conditions.</p>
<p>MX-3 L (H)</p> <p>(Longer Cutting Life)</p>	<p>For cutting soft to medium aggregate such as abrasive and "green" concrete with light steel reinforcing, concrete block, masonry brick, soft stone (limestone, sandstone, marble, etc.) or under highly abrasive conditions.</p> <p>Light steel reinforcing is defined as (1/2" [13 mm] diameter & smaller) rebar—1/2 farther than 4" o.c.</p> <p>It is not advisable to use this chain on heavy steel reinforcing (5/8" [16 mm] diameter & larger), hard natural stone (flint, chert, granite etc.) or very hard aggregate concrete.</p>

3.2 BEFORE OPERATING THE SAW

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.

1. Hydraulic system
2. Water supply and distribution
3. Chain and bar

3.2.1 Checking the System Hydraulics

1. Read and fully understand the operating manual for the hydraulic power source being used.
2. Always check the hydraulic power supply flow and pressure output. Never exceed the maximum hydraulic flow rate of 12 gpm (45 lpm) and maximum pressure of 2500 psi (172 bar). Overspeeding the chain causes increased chain wear, leading to loss of strength and possible chain breakage.
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.
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.
5. The hydraulic power source must be fitted with a 10-25 micron oil filter.

6. Before making any hydraulic connections, inspect all hoses for leaks and risks of rupture as follows:
 - a. 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.
 - b. 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.

7. 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.

3.2.2 Checking Water Supply

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 three water ports each on the top and bottom of the bar and around the nose sprocket. If not, use a #10 wire to clean the water ports, keeping in mind that the water ports are tilted forward at 30 degrees.
2. The water pressure at the saw must be between 50–160 psi (3–9.6 bar) with a flow rate of 2.5 gpm (9 lpm). For best performance, use an RGC 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.** The recommended water pressure for most applications is between 80–100 psi.

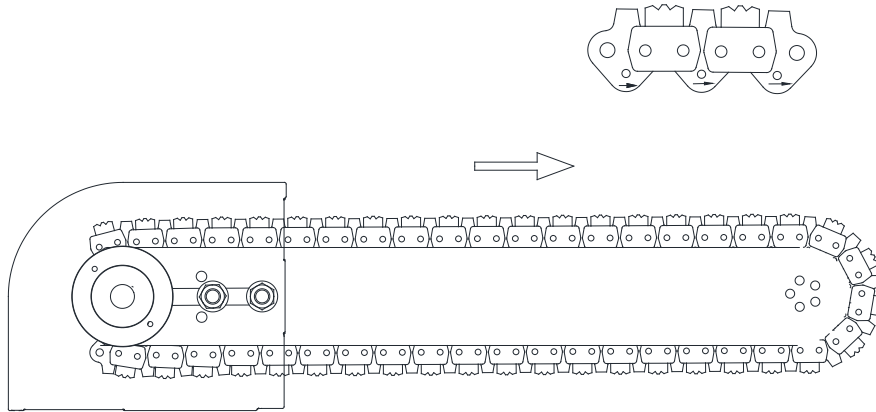


CAUTION:

PERMANENT CHAIN, BAR, DRIVE SPROCKET, AND NOSE SPROCKET DAMAGE WILL OCCUR IF 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.

3.2.3 Checking Chain and Bar

1. 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.
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. 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 tangs from coming completely out of the groove, the chain chassis is considered to be excessively stretched. Discard the chain.
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.



**Figure 3-1.
Proper Chain Mounting**

5. The chain **MUST** be installed with the bumper/drive link tang arrow pointing towards bar nose on top side of bar. See Figure 3-1. **Backward (reverse) chain installation can cause excessive vibration, rough cutting, reduced chain life, and chain breakage**
6. Check for proper chain tension as described in Chapter 4.
7. Check that the drive sprocket cover mounting screws are tight.



WARNING:

DRIVE SPROCKET COVER PROVIDES PROTECTION AGAINST CONTACT WITH MOVING PARTS, EJECTED DEBRIS, BROKEN CHAIN, THROWN WATER AND CONCRETE SLURRY. NEVER OPERATE SAW WITHOUT COVER SECURELY IN PLACE.

8. Always operate a new chain at the rated rpm for two minutes with proper water supply 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.



CAUTION:

EXCESSIVE CHAIN OPERATING SPEED OR INSUFFICIENT WATER SUPPLY RESULTS IN EXCESSIVE WEAR TO THE CHAIN, WHICH CAN LEAD TO LOSS OF STRENGTH AND CHAIN BREAKAGE. OPERATE CUTTING CHAIN AT CORRECT SPEED WITH ADEQUATE WATER.

3.3 PLANNING THE CUT

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.
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.
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. The material being cut must be rigidly supported to prevent it from falling and causing personnel injury.
5. The planned line of cut can be outlined with a permanent marker for a visual guide.

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.

3.4 BREAKING IN A NEW CHAIN

1. Before using a new chain, the cutting segments must be dressed by cutting in an abrasive material such as cinder blocks or bricks.
2. Looking at the cutting segment closely, you should be able to see the diamond particles exposed, raised slightly higher than the surrounding surface.
3. Check the chain tension frequently during the first thirty minutes of operation of a new chain.

3.5 CUTTING PROCEDURE



WARNING:

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

1. Review all safety procedures in Chapter 1 of this manual and in the manual supplied with your hydraulic power unit.
2. Grasp the auxiliary handle with your left hand. Use the appropriate part of the handle for making the first cut.
3. Grasp the trigger with your right hand.
4. Position the saw in the appropriate place to make the desired cut.
5. Disengage (press & hold) the trigger lockout. Then depress (squeeze) the trigger to start the saw.
6. 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.
7. When starting a cut, do not bang the chain into the cutting medium. Jarring impacts can decrease the life and performance of the chain.
8. 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.
9. Do not apply excessive feed force. A constant chain speed is important for optimum cutting.
10. 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 5.
11. Check chain tension frequently during cutting.

3.6 SHUTTING DOWN AND STORING THE SAW

1. Stop the saw by releasing the trigger lever.
2. Stop the hydraulic power source following the procedure in the respective instruction manual.
3. Clean the slurry off the saw with water before it dries.
4. Shut off water supply.
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.

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.
7. Secure the saw and hydraulic power source to prevent unauthorized use.
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.
9. Do not stack material on top of the saw that may cause the chain or bar to bend or deform.

4 INSPECTION AND MAINTENANCE

4.1 GENERAL MAINTENANCE RULES

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.



CAUTION:

FAILURE TO MAINTAIN CUTTING SYSTEM REGULARLY AND PROPERLY CAN LEAD TO PREMATURE WEAR AND INCREASE PROBABILITY OF CHAIN BREAKAGE.

1. 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.
2. Review and follow all the safety rules given in Chapter 1 before attempting any maintenance.
3. Only authorized personnel should be allowed in the maintenance area. Authorized personnel are the trained people as defined below and their supervision.
4. 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 POWER SOURCE TO PREVENT ACCIDENTAL STARTUP.

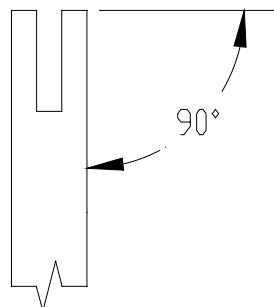


WARNING:

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

4.2 BAR INSPECTION AND MAINTENANCE

1. Before installing the bar, ensure the bar is not bent or twisted.
2. Ensure that the bar rails are dressed squarely as shown in Figure 4-1 with the wire edges removed. 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.



**Figure 4-1
Dressed Bar Rail**

3. Ensure the nose sprocket rotates freely.

4. Check the clearance between the nose of the bar side-plates and the chain chassis; when new, there is 1/32" clearance. The bar must be replaced before the chain chassis begins to ride directly on the nose of the bar side-plates. Refer to Figure 4-2.

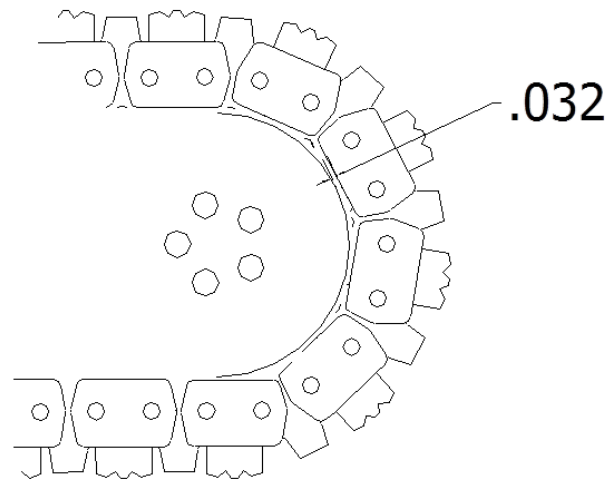


Figure 4-2
Nose Sprocket Clearance

5. 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.
6. Check the bar rail wear. The bar is considered worn-out when any section of the chain groove bottom contacts the chain.
7. Install the bar by aligning the mounting holes on the bar with the bar mount studs (#33) as shown in Figure 7-1. Install chain and replace sprocket cover. Securely attach with two hex nuts (#30).
8. Check the water ports for proper water distribution by triggering the saw with the water connected and hydraulics disconnected. Water should be coming out of the three water ports each on the top and bottom of the bar and around the nose sprocket. If not, use tip cleaner (#60) or #10 wire to clean the water ports. Note that water ports are tilted forward (towards nose) at a 30° angle.
9. After usage be sure to flush all slurry off entire saw while still wet. Dry slurry is very difficult to remove and speeds corrosion of surfaces. Ensure water is completely drained out of the saw. If available, blow the water out with compressed air.



CAUTION:

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

10. Ensure the bar, nose sprocket, and chain all have a light coat of oil to prevent rusting between uses.

4.3 DRIVE SPROCKET INSPECTION AND INSTALLATION

Refer to Figure 4-3. The sprocket assembly consists of external retaining ring (#28) and drive sprocket (#27). Proceed as follows:

1. Check the wear marks on the driving face. Replace the drive sprocket before the wear marks are deeper than 1/32" as shown in Figure 4-4. The outside diameter is also a wearing surface. Do NOT turn around and continue using a worn drive sprocket. A worn drive sprocket will increase wear on the chain chassis.

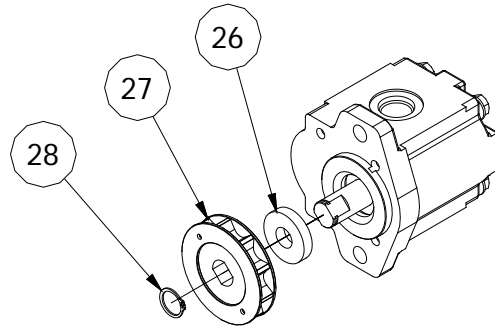


Figure 4-3
Drive Sprocket Assembly

2. Before installing the drive sprocket, carefully inspect the motor shaft for scoring, dried slurry or other debris between the moving parts of the assembly including the felt gasket. Replace gasket if needed.
3. Slide drive sprocket onto shaft so that shaft extends completely through the bore.
4. Install retaining ring using standard snap ring pliers.

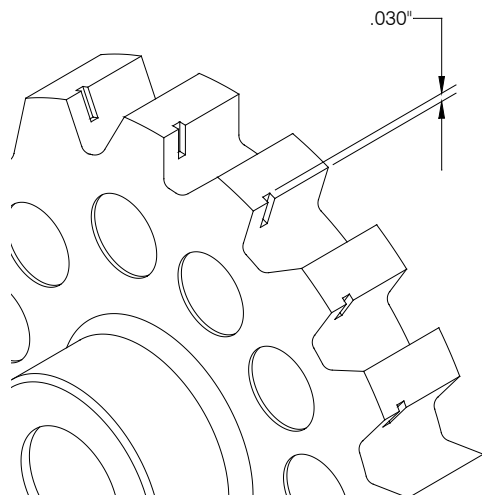


Figure 4-4
Sprocket Wear Measurement

4.4 CHAIN INSPECTION AND MAINTENANCE

Inspect the chain before mounting and before each use.

1. Ensure there are no missing segments or bumpers. There must be 49 segments with a bumper link between each segment.
2. Ensure there are no signs of cracking, overheating, or other damage.
3. Check the wear of the chain chassis, typically referred to as “chain stretch”, by tensioning the chain as described in Section 4.5. The chain chassis is considered worn out or excessively “stretched” if the chain cannot be tensioned sufficiently to prevent the drive tangs from coming completely out of the groove. Discard the chain.
4. 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.

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

4.5 CHAIN INSTALLATION AND TENSIONING

Refer to the Figure 7-1 assembly drawing in Chapter 7 throughout the following procedure.



WARNING:

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

1. Ensure the hydraulic hoses to the saw are disconnected before starting.
2. With the drive sprocket cover removed, back out the bar adjustment screw (#36) all the way by turning it counter-clockwise.
3. Inspect the drive sprocket (#27) and the bar (#34) as described in sections 4.3 and 4.2 respectively.
4. Install the chain by placing it around the drive sprocket making sure the bumpers lead the segments. Then, run the drive tangs into the top groove of the bar (tang arrows pointing towards bar nose) and rotate it around the bar. **Backward (reverse) chain installation can cause excessive vibration, rough cutting, reduced chain life, and chain breakage.** Make sure all drive link tangs are positioned inside the groove of the bar.
5. Tighten the bar adjustment screw (#36) clockwise until chain is snug to the bar but still able to rotate around the bar. Chain tension needs to be readjusted before the drive tangs can come completely out of the groove.



WARNING:

IF THE CHAIN IS TOO LOOSE DURING SAW OPERATION, THERE IS AN INCREASED RISK OF CHAIN THROWING. A CHAIN THROW CAN CAUSE EQUIPMENT DAMAGE AND/OR PERSONAL INJURY.

6. Secure the drive sprocket cover assembly in place by tightening both flange nuts (#30).



WARNING:

NEVER OPERATE THE SAW WITHOUT THE DRIVE SPROCKET COVER INSTALLED. FAILURE TO DO THIS CAN CAUSE SERIOUS PERSONAL INJURY.

5 TROUBLESHOOTING

The following chart is intended to assist with troubleshooting the C120 HydraCutter. 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 this 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 4.2. 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.	Chain is mounted backwards with bumper side of diamond segment not being the side to first contact the cutting groove.	Inspect chain as described in Section 4.4 before re-installing.
	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 water pressure between 50–160 psi (3.5–9.6 bar) with a minimum flow rate of 2.5 gpm (9.5 lpm), use an RGC inline water pump.
	Hydraulic flow is exceeding 12gpm (45lpm).	Adjust power supply or use a flow divider to limit hydraulic flow to 12gpm (45lpm).
	Loose chain tension.	Maintain the chain tension as described in Section 4.5.
	Excessive groove worn in drive sprocket.	Replace drive sprocket.
	Improper operator technique.	Minimize impacting when cutting steel. Minimize rapid chain stops, such as jamming.

<p>Excessive vibration and rough cutting.</p>	<p>Segment(s) broken or missing from chain.</p> <p>Loose chain tension.</p> <p>Loose bar mounting bolts.</p> <p>Chain installed backwards on saw as described under the heading “Chain Inspection”.</p> <p>Worn bar nose sprocket.</p> <p>Worn drive sprocket.</p> <p>Excess feed force when cutting rebar.</p>	<p>Replace chain.</p> <p>Maintain chain tension as described in Section 4.5.</p> <p>Tighten bolts as described in Section 4.5.</p> <p>Inspect chain as described in Section 4.4 and 4.5 before re-installing.</p> <p>Replace bar.</p> <p>Replace drive sprocket.</p> <p>Reduce feed force.</p>
<p>Bar nose sprocket does not turn</p>	<p>Nose bearings worn and are jammed between inner and outer race.</p> <p>Bent or twisted bar.</p>	<p>Replace bar.</p> <p>Replace bar.</p>
<p>Saw cuts slowly</p>	<p>Loss of diamond segment side or top clearance.</p> <p>Chain segment dulled because of continuous use in hard material or steel.</p> <p>Wire edged bar rails.</p> <p>Hydraulic flow is below 12 gpm.</p> <p>Hydraulic pressure relief is set below 2500 psi.</p> <p>Chain tension too tight or too loose.</p> <p>Chain slipping through worn teeth on drive sprocket.</p> <p>Hydraulic hoses too long or too small in diameter.</p> <p>Hydraulic oil leaking on chain.</p>	<p>Replace chain.</p> <p>Redress segment by cutting in abrasive material such as concrete building block or brick.</p> <p>Choose the right chain for the cutting condition. Select either S, or L as described in Section 3.1 & Sec. 6.</p> <p>Dress the top and sides of the bar rails squarely with a grinder or belt sander. See Section 4.2.</p> <p>Adjust hydraulic power source.</p> <p>Adjust hydraulic power source.</p> <p>Readjust chain tension as described in Section 4.5.</p> <p>Install new drive sprocket. See Section 4.3.</p> <p>Select the shortest hose that is feasible. The maximum hose length for 1/2” hose is 100 feet.</p> <p>Check the following locations for leaks:</p> <ul style="list-style-type: none"> (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. <p>Adjust or replace appropriate part.</p>

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.	<p>Bar is bent or twisted.</p> <p>Frame is bent.</p> <p>Saw not cutting a straight line.</p> <p>Side clearance of chain worn.</p> <p>Wire edged bar rails.</p>	<p>Replace bar.</p> <p>Repair or replace frame.</p> <p>Refer to “Saw Will Not Cut Straight” part of troubleshooting chapter.</p> <p>Replace chain.</p> <p>Dress top and sides of the bar rails squarely with a grinder or belt sander. See Section 4.2.</p>

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.

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:

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

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".
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
- Wire mesh

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.

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.

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. 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:

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 pressure between 50-160 psi. The recommended pressure for most applications is between 80-100 psi. Higher water pressures are desired for abrasive conditions.

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

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

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.

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.
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.
5. Rotational Speed—Optimum cutting performance is achieved when operating with a hydraulic input of 12 GPM (6500 RPM max). Operating with a hydraulic input of less than 12GPM will give less than optimum performance, whereas a hydraulic input in excess of 12GPM will decrease the life of both the segment and chain as well as cause equipment damage.
6. Excessive Feed Force—Excessive feed force dulls the diamond segments, decreasing the segment life and performance.
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.
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:

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.
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).
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 tangs can come completely out of the groove after tensioning the chain mounted on the bar.

7 PARTS LIST

The following parts list applies to the 12 gpm C120 HydraCutter only. The parts list for the hydraulic power source is in the separate manual supplied for that item. Each item number on the following parts list can be matched with the item number shown on the following assembly drawings.

Item Number	Part Number	Quantity	Description
---	5050418	1	HANDLE & VALVE ASSY complete (includes item #'s 1 – 21 below)
1	5029162	1	TRIGGER LOCK
2	5819950	1	TRIGGER LOCK SPRING
3	5029161	1	TRIGGER
4	6050901	1	SPOOL
5	5839951	2	TRIGGER & LOCK SCREW SET (2pc)
6	5604685	2	ADAPTER 45D 3/4"
7	6004627	1	SPOOL RETAINER
8	6011943	1	SPOOL COVER
9	5811928	4	SCREW FH 8-32 X 1/2 PHIL
10	5850902	1	OUTER SPOOL SPRING
11	5804654	1	INNER SPOOL SPRING
12	5804653	1	SCREW SHCS 8-32 X 1/2
13	7404608	2	OUTER QUAD RING
14	7404628	2	INNER QUAD RING
15	5804651	2	ROLL PIN 5/32 X 5/8
16	6014935	1	TRIGGER / SPOOL LINK
17	7419525	1	VALVE SEAL KIT (includes item #'s 10 – 16 above)
18	6001886	1	COUPLING FEMALE
19	6001885	1	COUPLING MALE
20	1697502	2	HYDR HOSE WHIP 12"
21	5650912	1	WATER HOSE ADAPTER 45D
22	5806140	1	WATER HOSE CLAMP
23	5619947	1	ADAPTER 1/8NPTM X 1/4BARB
24	7407160	1	WATER HOSE WASHER W/ FILTER
25	1919406	1	MAIN FRAME
26	7404780	1	MOTOR SHAFT GASKET 1-1/4"
27	6750907	1	DRIVE SPROCKET
28	5839945	1	DRIVE SPROCKET RETAINING RING
29	5804659	1	MOTOR MOUNT HARDWARE SET
30	5894901	2	NUT FLANGED 3/8-16
31	1950407	1	DRIVE SPROCKET COVER ASSY (includes seal & decal)
32	6250914	1	SPROCKET COVER DECAL
33	1950903	2	SPROCKET COVER & BAR MOUNTING STUD
34	1959151	1	BAR 15" .456 PITCH

34	1945710	1	BAR 10" .456 PITCH
	1945715	1	BAR 15" .456 PITCH
	1945720	1	BAR 20" .456 PITCH
	1945725	1	BAR 25" .456 PITCH
	1945730	1	BAR 30" .456 PITCH
35	5245701	1	CHAIN 50SEG .456 PITCH MC3/MX3-L
	5245703	1	CHAIN 50SEG .456 PITCH MC3/MX3-S
	5245711	1	CHAIN 57SEG .456 PITCH MC3/MX3-L
	5245713	1	CHAIN 57SEG .456 PITCH MC3/MX3-S
	5245721	1	CHAIN 67SEG .456 PITCH MC3/MX3-L
	5245723	1	CHAIN 67SEG .456 PITCH MC3/MX3-S
	5245731	1	CHAIN 79SEG .456 PITCH MC3/MX3-L
	5245733	1	CHAIN 79SEG .456 PITCH MC3/MX3-S
	5245623	1	CHAIN 90SEG .456 PITCH MC3/MX3-L
5245621	1	CHAIN 90SEG .456 PITCH MC3/MX3-S	
36	5819985	1	BAR ADJUSTMENT SCREW
37	1919901	1	BAR ADJUSTMENT PIN
38	5806141	1	BAR ADJUSTMENT NUT
39	1950401	1	AUX. HANDLE MOUNTING BAR
40	5806206	1	HHCS 1/4-20 X 3/4
41	5806394	3	WASHER FLAT EXT TOOTH 1/4"
42	1911928	1	HAND GUARD
43	6205646	1	HAND GUARD DECAL
44	1911210	1	AUX. HANDLE w/ GRIP ASSY
45	6539981	1	MOTOR 12GPM
46	1939519	1	MOTOR SEAL KIT
47	1919916	2	C120 HYDRACUTTER HAND GUARD STIFFENER
48	5806317	5	SHCS 1/4-20 X 3/4
49	5650911	1	WATER HOSE ADAPTER (HANDLE)
50	5804684	4	ADAPTER 90D 3/4
51	6050905	2	HYDR TUBE PRESSURE & RETURN
52	5806241	2	SCREW PH MS 1/4-20X1/2 PHIL SS
53	1950909	1	SPLASH GUARD MTG BRACKET
54	6411952	1	SPLASH GUARD 3/16 X 8 X 8
55	5819930	2	SCREW FLAT HD 8-32 X 3/4 PH CZP
56	1911309	1	SPLASH GUARD MTG CLAMP
57	5894103	2	NUT HEX NYLOCK 8-32 SS
58	5620869	1	WATER HOSE ADAPTER 90D (BAR)
59	5920843	.67 FT	WATER HOSE HANDLE TO BAR

60	1906150	2	TIP CLEANER WYPO #7 .018-.019
61	5119938	1	BEARING SLEEVE
62	5841075	2	RIVET
63	1919910	1	C120 HYDRACUTTER BAR CLAMP
64	5896955	3	WASHER FLAT SAE 1/4" SS
65	5901820	1	HOSE 1/4" PUSHLOK "BLACK"
66	7419101	1.92 FT	GASKET 3/16 X-PROFILE BUNA-N BLACK

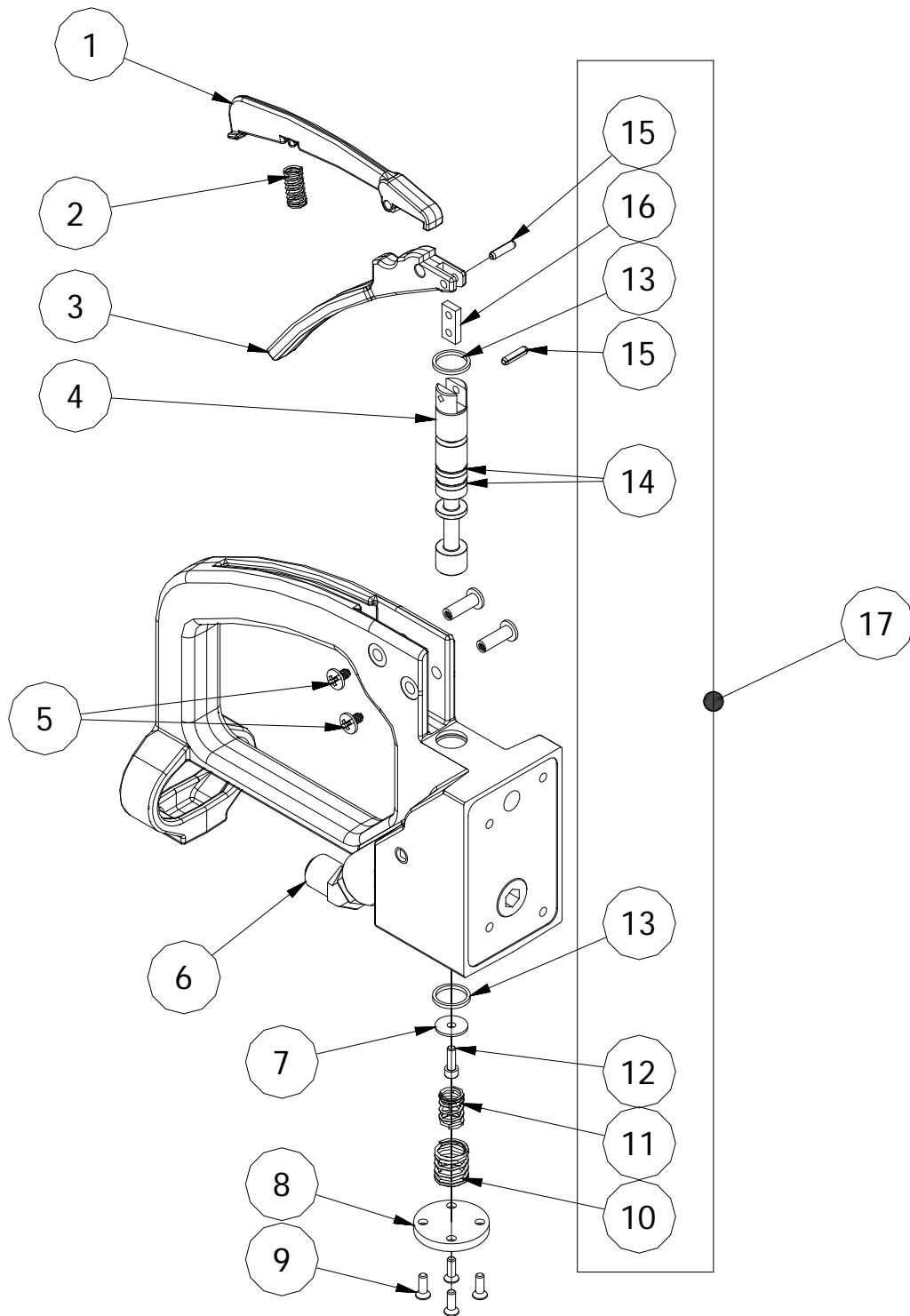


Figure 7-1.
C120 HydraCutter Handle & Valve Assembly

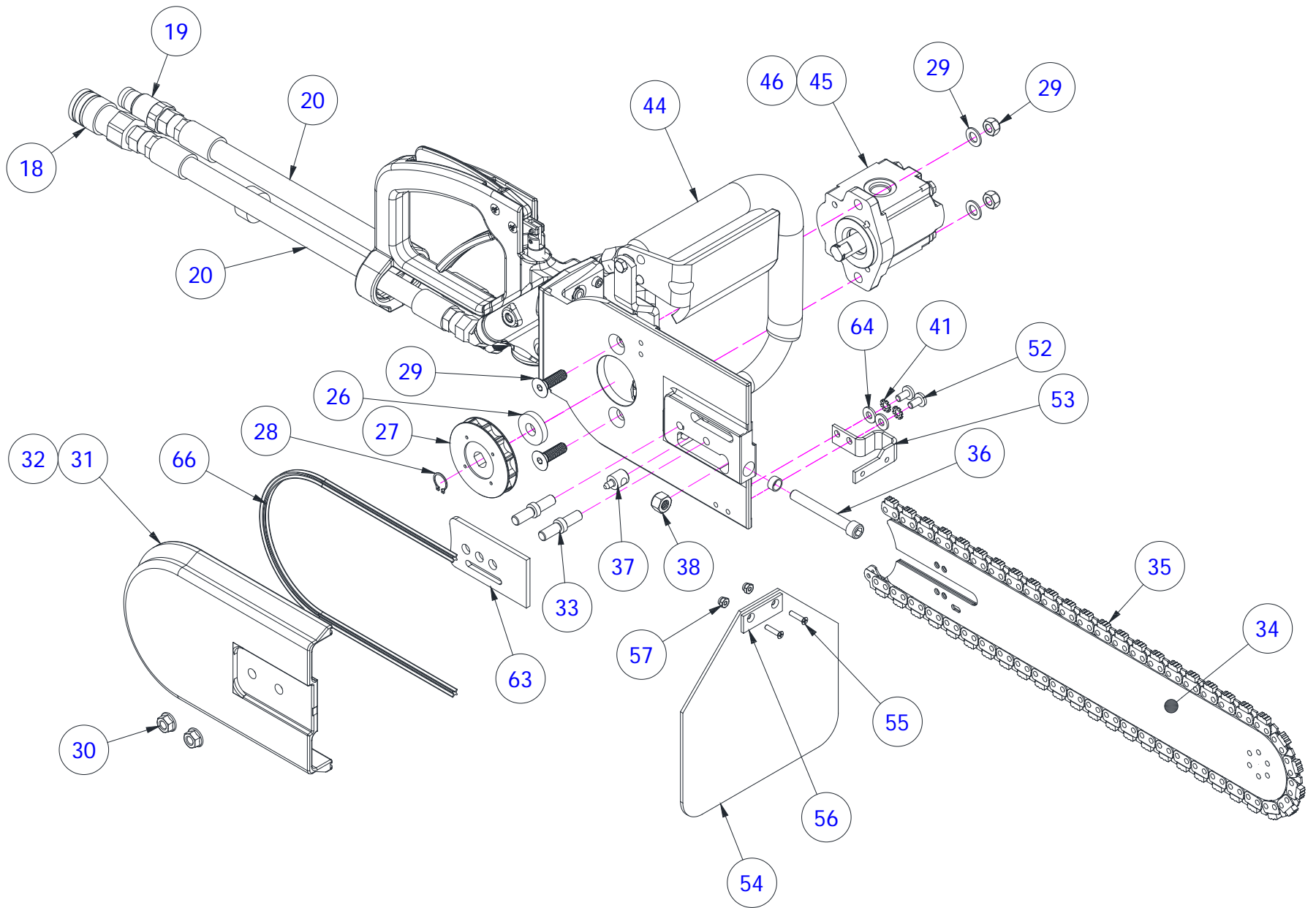


Figure 7-2.
C120 HydraCutter Assembly – Right Side View (Bar Side)

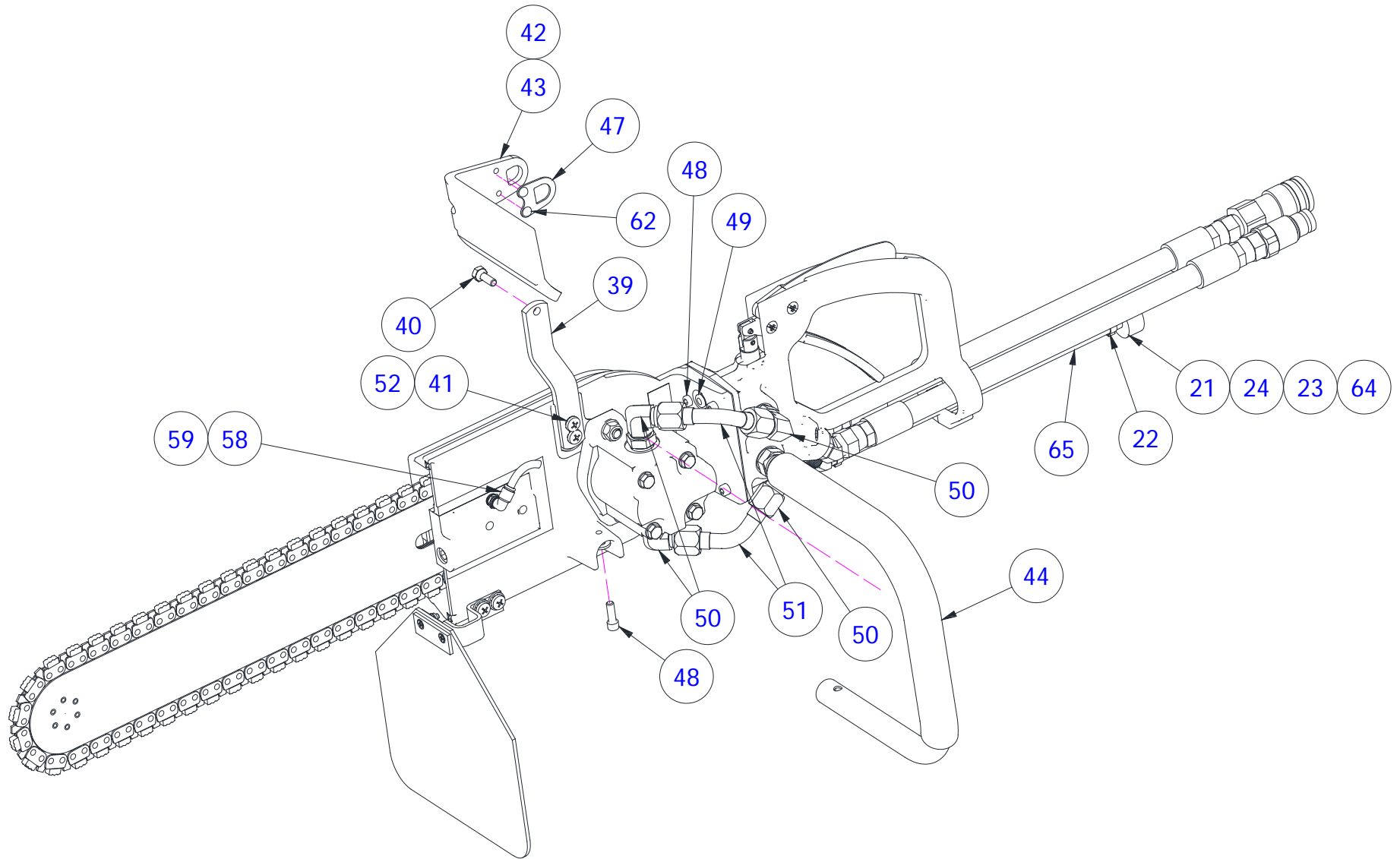


Figure 7-3.
C120 HydrCutter Assembly – Left Side View (Motor Side)

LIMITED PRODUCT WARRANTY

**Reimann & Georger Corporation
Hoisting and Construction Products**

A. LIMITED WARRANTY

Reimann & Georger Corporation (the "Manufacturer") warrants to the original purchaser (the "Buyer") that all Reimann & Georger Hoisting and Construction 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.