



CHAIN TENSIONING

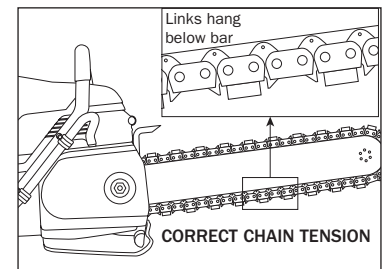
⚠ IMPORTANT ⚠

A properly tensioned chain will optimize cutting performance. The tensioning rule of thumb for a concrete cutting chain saw is that a properly tensioned diamond chain must not be bowstringing tight and can be pulled freely around the guide bar by hand easily without binding.

PROPER CHAIN TENSION

Chain tension is looser than wood chain.

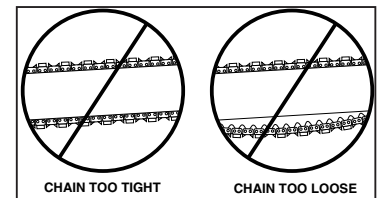
If the chain is too loose, it could come off the bar, or it will allow the drive sprocket to spin without turning the chain, which can chew up the chain drive links. If the chain is too tight, a lot of the saw's power goes into turning the chain rather than into the cut. In extreme over-tightened cases, the saw may not be able to turn the chain at all. In addition, damage can occur to the bar nose and premature stretch may occur.



HOW TO CHECK

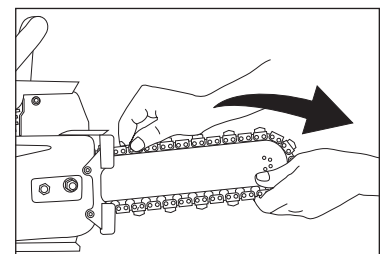
Proper tension should allow drive links to hang below bar.

Before cutting, check for proper tension by pulling the chain around the bar by hand. If you cannot easily pull by hand, the chain is too tight and needs to be loosened.



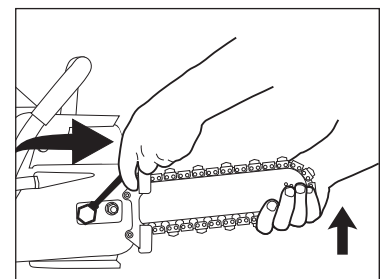
WHEN TO TENSION

All chains have a tendency to stretch when used. Diamond chains stretch more than wood cutting chains because of the abrasive materials they are cutting. When a chain stretches to a point where the drive links are hanging approximately 1/2 in- 3/4 in (12 - 18 mm) below the bar, it's time to tension the chain.



HOW TO TENSION

To tension the chain, first loosen the side cover nuts, then while holding the nose of the bar up, use a screw driver to turn the tensioning screw clockwise until the chain drive links hanging below the bar are just beginning to enter the bar groove. Continue to hold up on the nose of the bar and firmly tighten the side cover nuts, (20 ft-lbs, 27 Nm). And remember, it's the side cover nuts that hold the bar in position.



HOW TO PREVENT CHAIN TENSIONER BREAKAGE

Do not attempt to adjust the tensioner without first loosening the side cover nuts. Do not use the saw without making sure the side cover nuts are tight. If the side cover nuts are not tight, the bar can slip backwards during cutting and break the tensioner pin.



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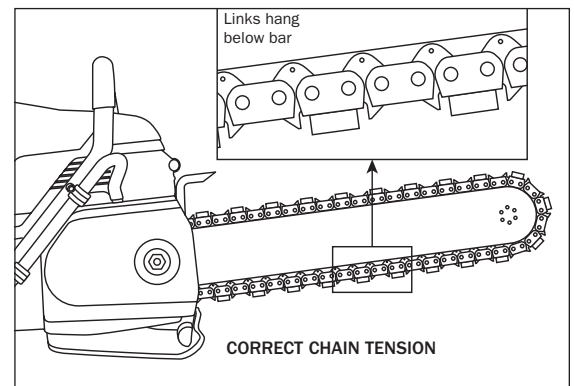
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CHAIN TENSIONING

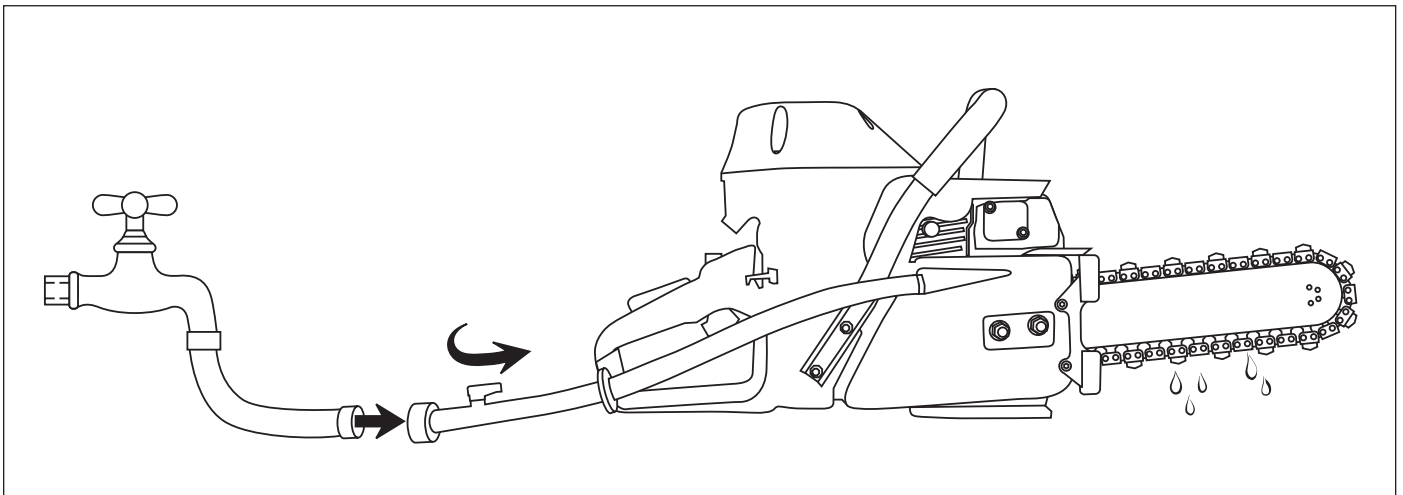
ADDITIONAL INFORMATION

Concrete cutting chainsaws operate with looser chain tension than wood chainsaws. It is common, especially on gas powered, concrete cutting chainsaws to have the drive links hang completely out of the bar. Wood cutting chainsaws use oil to lubricate the chain. The oil makes the chain very slippery and allows the drive links to fully nest between the teeth of the drive sprocket. Concrete cutting chainsaws require water for cooling and flushing the cut. Water is not as good as oil as a lubricant. Also, there are concrete particles mixed in with the water. As a result, sometimes the drive links do not nest properly on the drive sprocket. When this happens, the chain acts like it got tighter. There seems to be tight spots and loose spots as you pull the chain around the bar. If you tension when the chain is in one of the loose spots, it will be too tight at some point in it's rotation around the bar. Rotating the chain completely around the bar by hand will let you know you have the chain properly tensioned.



ADDITIONAL TENSIONING TIPS:

1. To reduce chain stretch and tensioning downtime, use 20 psi (1.5 bar) or greater water pressure.
2. Oil the chain at the end of the day to prevent rust but be careful not to over tension in this condition.
3. When pulling the chain around the bar by hand, be careful not to touch the bar with thumb or forefinger. The bar rails can be very sharp. Grab only the diamond segments to pull the chain.
4. Always pull the chain away from the WallWalker®. The point of the WallWalker® can also be very sharp.
5. Always turn the engine off before tensioning the chain.

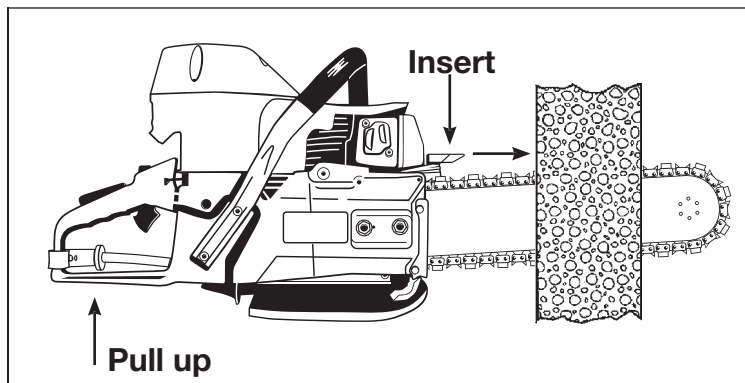




CUTTING TIPS

MAKING YOUR FIRST CUT:

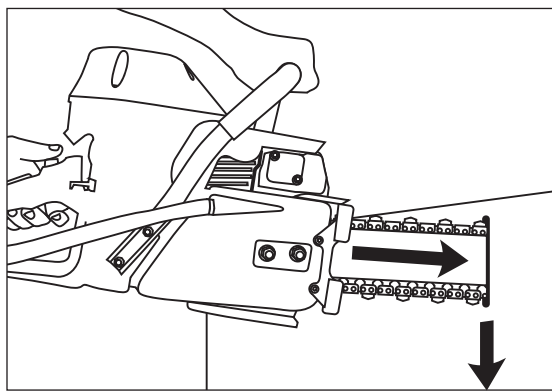
1. **Outline the cut** with a permanent marker.
2. **Start the saw and after a brief warm-up period, rev and hold the trigger on full throttle.** Always use full throttle when cutting. Refer to “Starting the Saw” tip sheet.
3. **Carefully align the nose of the bar with the cut line**, slowly touch the wall with the chain and plunge straight into the wall.
4. **Push hard enough so that the engine RPM drops 20 to 30%.** If the chain is stalling in the cut, you’re pushing too hard. If there is very little difference between free running full RPM and the cutting RPM, you’re not pushing hard enough. Listen for the “sweet spot” and maintain that RPM throughout any cut.
5. **Keep steady, firm pressure on the saw as the chain is cutting.** This will prevent chain bounce and chattering and help extend diamond life. Minimize arm motions.
6. **Use the WallWalker® to make cutting easier.** Insert the point of the WallWalker® into the cut and pull up on the rear handle. If saw is equipped with rubber pad WallWalker®, use the rubber pad for leverage in the same way.



CUTTING TIPS

ADDITIONAL CUTTING TIPS:

- a. **For the straightest cuts use the Step Cut method.** After outlining the cut, score the entire cut line approximately a half-inch deep using the nose of the bar. Next deepen cut by about two inches. Then plunge all the way through and complete the cut using the WallWalker® as a lever.
- b. **Plunge cut instead of starting on top of a wall.** Plunge cutting generally results in a straighter start. If the cut doesn't start straight, it will not finish straight. Also, plunging is the fastest and easiest mode of cutting.



- c. **When cutting heavy rebar.** Slowly rock the saw over the rebar, maintaining gray slurry water, so that you're always cutting concrete as well as steel. This will help keep the diamonds exposed. Also, expect less chain life when cutting heavy rebar.
- d. **Maintain proper chain tension.** The tensioning rule of thumb for a chain-based cut-off saw is that the chain should be tight but must be able to be pulled around the bar by hand. See "Chain Tensioning" tip sheet.
- e. **If the saw begins to cut consistently crooked.** Turn the guide bar over and use the other side. If problem persists, dress the worn rails with belt grinder. Note: The normal life of a guide bar is 2 to 3 chains. Heavy rebar can shorten bar life.
- f. **When using a new chain, it may be necessary to open up the diamonds.** To do this, make a few cuts into an abrasive material like a cinder block. Opening the diamonds will increase the cutting speed.





DAILY MAINTENANCE GAS CONCRETE CHAIN SAWS

**FOLLOW THESE SIMPLE MAINTENANCE GUIDELINES AND YOUR GAS
CONCRETE CHAIN SAW WILL KEEP RUNNING AT ITS VERY BEST**

AFTER EACH USE









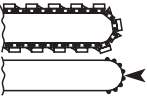
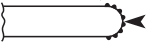

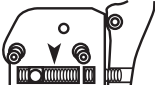
1. Rinse the saw, bar, and chain with water.
2. Follow instructions on the Daily Maintenance Label, located on the air filter cover.
3. Inspect and tighten all fasteners as necessary.
4. Inspect drive sprocket for tooth wear. Replace if tooth tips are pointed.
5. Inspect the starter cord. Replace if frayed.
6. Clean and inspect air filter. Replace as necessary.
7. Spray saw, bar, and chain with lightweight oil.
8. Grease the chain tensioner.

AFTER 10 HOURS OF USE

1. Remove the starter cover and lubricate the starter recoil spring. Clean the flywheel fins and the starter pawls with a wire brush, then grease the starter pawls.
2. Remove the spark plug and clean with a wire brush. Check the electrode gap. The correct gap is 0.02 inches (0.5 mm).

AFTER 40 HOURS OF USE

1. Change the spark plug. Adjust the electrode to 0.02 inches (0.5 mm).
2. Check the fuel filter located inside the fuel tank. Clean or replace if clogged.

 DAILY MAINTENANCE 	
INSPECT 	<ul style="list-style-type: none"> • All fasteners  • Sprocket wear  • Starter rope wear  • Air filter 
OIL 	<ul style="list-style-type: none"> • Guide bar & diamond chain  • Bar nose sprocket 
GREASE 	<ul style="list-style-type: none"> • Chain tensioner 



FIELD TROUBLESHOOTING GAS CONCRETE CHAIN SAWS

5 PROBABLE CAUSES IF SAW IS REPORTED “NOT ABLE TO START” or “WON’T RUN WELL”

Diagnose in the order below:

1. AIR FILTER

IDENTIFICATION	A gradual decrease in power or loss of full throttle RPM.
CAUSE	The air filter is dirty and/or clogged.
FIX	Remove and clean/replace air filter.
NOTES	1. Refer to Operator’s Manual for cleaning procedures. 2. A dirty air filter will contribute significantly to engine flooding, spark plug build-up and/or low compression failures.

2. STARTER

IDENTIFICATION	The starter rope pulls freely without noticeable resistance.
CAUSE	Concrete slurry will get inside the starter housing assembly during cutting, causing the starter pawls to stick and not engage when the rope is pulled.
FIX	Remove starter assembly and clean or replace starter and lube with lightweight penetrating oil (WD40/TriFlow). For starter assembly repair or installation, refer to Operator’s Manual.
NOTES	1. Cutting with saw in horizontal position with flywheel down accelerates slurry collection. Immediately wash starter assembly after use in this mode. 2. Clean or replace the appropriate starter cover assembly components when you encounter a starter with a frayed starter cord, broken rewind spring, or other mechanical damage.

3. FLOODED ENGINE

IDENTIFICATION	Smell of fuel and/or a wet, fuel soaked spark plug after removal.
CAUSE	Commonly caused by leaving choke on after first ignition spark. May also be caused by excess rope pulls.
FIX	Remove spark plug and pull rope to discharge excess fuel from cylinder. Air dry spark plug or replace with correct spark plug.

4. IGNITION

IDENTIFICATION	No obvious fuel issues and a spark plug not showing visible spark after removal and test per method in Note 1 below.
CAUSE	The spark plug is most likely dirty or contaminated. A secondary cause is an improper spark plug gap.
FIX	Remove spark plug and clean or replace. Re-gap spark plug to .020 in (0.05 mm). Refer to Operator’s Manual for more details. If no spark is visible or if the spark is weak (yellow in color), replace ignition system coil.
NOTES	1. Test method: Always ensure ignition switch is ON. Remove plug and connect the plug lead to a new spark plug. Place plug on top of cylinder to ground and crank the engine several times by pulling the recoil starter. A healthy ignition should produce a strong blue spark.

5. LOW COMPRESSION

IDENTIFICATION	The starter rope pulls upwards with very little resisting force from piston. If possible, this should be verified with a compression gauge or by an ICS Servicing Dealer (see Note 1).
CAUSE	Piston scoring/wear or stuck piston rings.
FIX	Contact ICS Servicing Dealer or Factory Service Center for evaluation.
NOTES	1. If compression is checked with a compression gauge, a reading below 125 psi indicates piston damage. New saw compression is 130 to 160 psi.



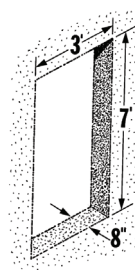
ESTIMATED CHAIN LIFE

Chain life is sometimes measured in inch-feet and can vary widely depending on the type of chain employed and the many variables related to the job. Depending on the type you select, the right ICS® diamond chain used under optimum conditions by a trained operator should deliver the performance shown in the charts below.

For comparison purposes only. Do not use to bid jobs.

INCH-FOOT DEFINITION

- An in-ft is defined as DEPTH of cut in inches multiplied by LENGTH of cut in feet.



$$3 + 7 + 3 + 7 = 20 \text{ feet}$$

$$8 \text{ in} \times 20 \text{ ft} = 160 \text{ in-ft}$$

Outside of the U.S., square meters is used instead of in-feet.

$$0.91 \text{ m} + 2.13 \text{ m} + 0.91 \text{ m} + 2.13 \text{ m} = 5.8 \text{ m}$$

$$20 \text{ cm} \times 6.08 \text{ m} = 1.22 \text{ m}^2$$

Gas PowerCutters

Chain Type	0 in-ft (0 m ²)	200 in-ft (1.55 m ²)	400 in-ft (3.10 m ²)	600 in-ft (4.65 m ²)	800 in-ft (6.19 m ²)	1000 in-ft (7.74 m ²)
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FORCE3® SERIES

Hydraulic Power Cutters

Chain Type	0 in-ft (0 m ²)	200 in-ft (1.55 m ²)	400 in-ft (3.10 m ²)	600 in-ft (4.65 m ²)	800 in-ft (6.19 m ²)	1000 in-ft (7.74 m ²)
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FORCE4®

Chain wear is normal, but excessive wear can result from factors that usually can be corrected. Examining the chain can help pinpoint the source of trouble.



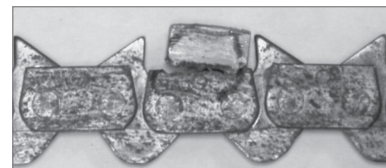
NORMAL WEAR

Example of a worn out chain under normal usage. No damage to the chassis, drive links or segments. Segments have been worn down to the weld pad.



NO WATER

Heat generated by running a chain "dry" can disintegrate o-rings and degrade the diamonds. Drive links are dark blue and connecting links have burred edge on the bottom.



IMPACT DAMAGE

Broken segment caused by attempting to insert the chain into a slot narrower than the diamond segments.



WORN SPROCKET / IMPROPER TENSION

Chain has been run with improper tension (too loose) or drive sprocket is worn out. Sprocket was turning when the chain was stationary, causing damage to the drive links.



WORN BAR

Chain has been run on a bar that has excessive rail wear causing the drive links to be worn flat.



Diamond Tools and Equipment

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