Toronto Industries

CANADIAN STRONG

OPERATING INSTRUCTIONS
-CHAINSAW CSPX280-

CONTENTS

SAFETY FIRST

Instructions contained in warnings within this manual marked with a symbol concern critical points which must be taken into consideration to prevent possible serious bodily injury, and for this reason you are requested to read all such instructions carefully and follow them without fail.

■ **WARNINGS IN THE MANUAL**

⚠WARNING

This mark indicates instructions which must be followed in order to prevent accidents which could lead to serious bodily injury or death.

IMPORTANT This mark indicates instructions which must be followed, or it leads to mechanical failure, breakdown, or damage.

NOTE

This mark indicates hints or directions useful in the use of the product.

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Attention ! Read these notes before you start working with the saw and keep them.

Read the instructions carefully. Familiarise with the control elements so that you are able to safely operate the device. Always keep these Operating Instructions together with the chain saw.

Attention! Risk of hearing defects.

Under normal operating conditions, this device can expose the operator to a noise level of 80 dB(A) or more.

Attention: Noise protection ! Please observe the local regulations when operating your device.

Intended / not intended use:

The chain saw serves trunks, square timbers and for cutting branches, according to the available cutting length. Only materials from wood may be worked on.
Sufficient personal protection equipment (PPE) is required according to the operating instructions during the use. This product is designed for use by a trained operator for pruning and dismantling standing tree crowns. For damage or injuries which resulting from misapplication are responsible by the user/operator and not the manufacturer. Suitable sawing chains, guide bars combinations may be used as mentioned in the operating instructions only for the machine. A component of the intended use is also the attention of the safety references, as well as the operating instructions in the operating instructions. Persons, who serve the machine, must make themselves trained and familiar with this product and think over all the possible dangers. Beyond that the valid rules for the prevention of accidents are to be kept in every detail. Other general rules within ranges according to industrial medicine and in terms of safety are to be considered. Changes in the machine completely exclude an support of the manufacturer and from it developing damage and lead to expiring the warranty. This equipment is designed for use in home garden.

Remainder driven

Also when appropriate using the tool always remains a certain residual risk, which cannot be excluded. From the kind and construction of the tool the following potential

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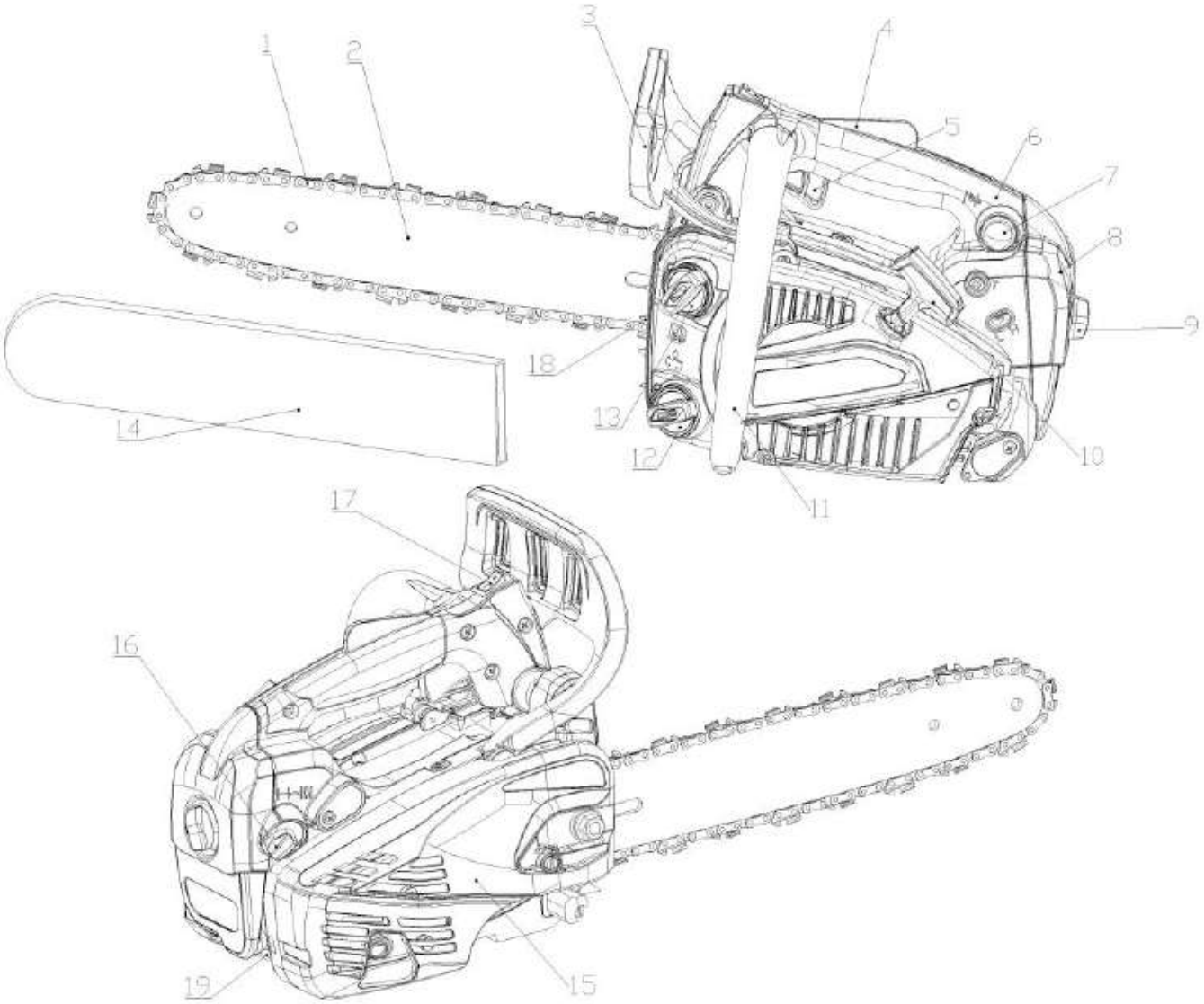
endangerments can be derived:

- Contact with the unprotected sawing chain (cuts)
- Unexpected, sudden movement of the sawing sword (cuts)
- Damage of the ears, if no prescribed protection of the ears is carried
- Inhale from poisonous particle, exhaust gases of the combustion engine
- Contact of gasoline on the skin
- Noise. A degree of noise from the machine is not avoidable. Route noisy work is to be licensed and limits for certain periods. Keep rest periods and they may need to restrict the working hours to a minimum. For their personal protection and protection of people working nearby, an appropriate hearing protection shall be worn;
- Vibration. Warning: The actual existing vibration emission value during use of the machine can deviate from the manual or the manufacturer specified. This can be caused by the following factors, before or during each of use should be considered:
- If the machine is used correctly
- If the method of cutting the material and how it is processed correctly.
- The use of the machine state is in the regulatory
- Sharpness condition of cutting tool or cutting tool real
- The grab handles are mounted back to optional vibration handles and are they fixed to the machine body.

If you notice an unpleasant sensation or skin discoloration during use of the machine on your hands once you stop working. Place an adequate work breaks. In disregard of adequate work breaks, there may be a hand-arm vibration syndrome.

1. Parts location

1. Saw chain
2. Guide bar
3. Front hand guard
4. Throttle trigger lock lever
5. Throttle trigger
6. Rear handle
7. Primer bulb
8. Air filter cover
9. Lock nut
10. Starter handle
11. Front handle
12. Oil tank
13. Fuel tank
14. Guide bar scabbard
15. Clutch cover
16. Choke knob
17. Engine switch
18. spiked bumper
19. Attachment device



2. Symbols on the machine

(1) Read, understand and follow all warnings.

(2) Warning! Danger of kickback. Beware of chain saw kickback and avoid contact with bar tip.

(3) Do not use chain saw one-handed.

(4) Always use chain saw two-handed.

(5) Appropriate ear, eye, and head protection must be worn

(6) Read operator's instruction book before operating this machine.

(7) Always wear safety and anti-vibration(AV) gloves when operating the device.
Always wear safety and slip-resistant boots when operating the device.
Always wear protective clothing for legs and fore-arms.

2. Symbols on the machine

For safe operation and maintenance, symbols are carved in relief on the machine. According to these indicati ons, please be careful not to make any mistake.

(a). The port to refuel the "MIX GASOLINE"
Position: near the fuel cap

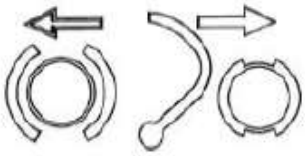
(b). The port to refuel the chain oil
Position: near the oil cap

(c). Operate the engine switch
Flipping the switch to the "O" position, immediately the engine stops.
Position: on the switch

(d). Operate the choke knob
turn the choke knob counter clockwise, close the choke; turn the choke knob clockwise, open the choke.
Position: Near the air filter cover

(f). The screw under the "H" stamp is The High-speed mixture adjustment screw.
The screw under the "L" stamp is The Slow-speed mixture adjustment screw.
The screw up the "T" stamp is the idle speed adjustment screw.
Position: upper-left of the rear handle

2. Symbols on the machine

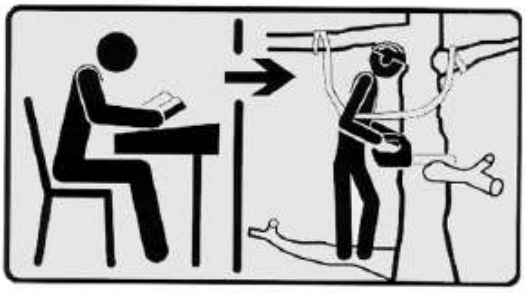


(g). Shows the directions that the chain brake is released (white arrow) and activated (black arrow). Position: Front of the chain cover

(h). Shows the direction of the saw chain installation. Position: Front of the chain cover

(I). Guaranteed sound power level for this equipment

(J). Engine manual start.



(K). This chain-saw is for trained tree service operators only.

3. For safe operation

■Before operate the product

1. Before using our products, please read this manual carefully to understand the proper use of your unit.

2. Never operate a chain saw when you are fatigued, ill, or upset, or under the influence of medication that may make you drowsy, or if you are under the influence of alcohol or drugs.

3. Operate the chain saw only in well ventilated areas. Never start or run the engine inside a closed room or building. Exhaust fumes contain dangerous carbon monoxide.

4. Never cut in high wind, bad weather, when visibility is poor or in very high or low temperatures. Always check the tree for dead branches which could fall during the felling operation.

5. Use safety and slip-resistant footwear, snug fitting clothing and eye, hearing and head protection devices. Use the anti-vibration(AV) glove.
It is believed that a condition called Raynaud's phenomenon, which affects the fingers of certain individuals may be brought about by exposure to vibration and cold. Loss of color and numbness in the fingers. The following precautions are strongly recommended because the minimum exposure which might trigger the ailment is unknown.
Keep your body warm, especially the head, neck, feet, ankles, hands and wrists. Maintain good blood circulation by performing vigorous arm exercises during frequent work breaks and also by not smoking. Keep the saw chain sharp and the saw, including the AV system, well maintained. A dull chain will increase cutting time, and pressing a dull chain through wood will increase the vibrations transmitted to your hands. A saw with loose components or with damaged or worn AV buffers will also tend to have higher vibration levels. Limit the hours of operation.
All the above mentioned precautions do not guarantee that you will not sustain white finger disease or carpal tunnel syndrome. Therefore, continual and regular users should monitor closely the condition of their hands fingers.
If any of the above symptoms appear, seek medical advice immediately.

3. For safe operation

6. Always use caution when handling fuel. Wipe up all spills and then move the chain saw at least ten(10)feet (three(3) m) from the fueling point before starting the engine.

7. Eliminate all sources of sparks or flame (ie. smoking, open flames, or work that can cause sparks) in the areas where fuel is mixed, poured, or stored.
Do not smoke while handling fuel or while operating the chain saw.
8. Do not allow other persons to be near the chain saw when starting the engine or cutting a wood. Keep bystanders and animals out of the work area. Children, pets, and bystanders should be a minimum of 30feet (10m) away when you start or operate the chain saw.

9. Never start cutting until you have a clear work area, secure footing, and planned retreat path from the falling tree.
10. Always hold the chain saw firmly with both hands when the engine is running. Use a firm grip with thumb and fingers encircling the chain saw handles.

11. Keep all parts of your body away from the saw chain when the engine is running. Before you start the engine, make sure the saw chain is not contacting anything.

12. Always carry the chain saw with the engine stopped, the guide bar and saw chain to the rear, and the muffler away from your body.

13. Always inspect the chain saw before each use for worn, loose, or changed parts. Never operate a chain saw that is damaged, improperly adjusted, or is not completely and securely assembled. Be sure that the saw chain stops moving when the throttle control trigger is released.

14. All chain saw service, other than the items listed in the Operator's Manual, should be performed by competent chain saw service personnel. (e.g., if improper tools are used to remove the flywheel, or if an improper tool is used to hold the flywheel in order to remove the clutch, structural damage to the flywheel could occur which could subsequently cause the flywheel to disintegrate).

15. Always shut off the engine before setting it down.
16. Use extreme caution when cutting small size brush and saplings because slender material may catch the saw chain

and be whipped toward you or pull you off balance.

17. When cutting a limb that is under tension, be alert for spring back so that you will not be struck when the tension in the wood fibers is released.

18. Keep the handles dry, clean and free of oil or fuel mixture.

19. Guard against kickback. Kickback is the upward motion of the guide bar which occurs when the saw chain at the nose of the guide bar contacts an object. Kickback can lead to dangerous loss of control of the chain saw.

20. When transporting your chain saw, make sure the appropriate guide bar scabbard is in place.

Securely place the machine and tighten the cap of oil and fuel tank during transport to prevent loss of fuel, damage or injury.

KICKBACK SAFETY PRECAUTIONS FOR CHAIN SAW USERS

⚠WARNING

Kickback may occur when the nose or tip of the guide bar touches an object, or when the wood closes in and pinches the saw chain in the cut. Tip contact in some cases may cause a lightning fast reverse reaction, kicking the guide bar up and back towards the operator. Pinching the saw chain along the top of the guide bar may push the guide bar rapidly back towards the operator. Either of these reactions may cause you to lose control of the saw which could result in serious personal injury.

● Do not rely exclusively on the safety devices built into your saw. As a chain saw user you should take several steps to keep cutting jobs free from accident or injury.

(1) With a basic understanding of kickback you can reduce or eliminate the element of surprise. Sudden surprise contributes to accidents.

3. For safe operation

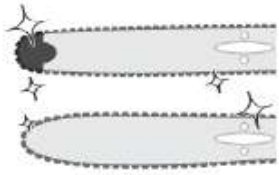
(2) Keep a good grip on the saw with both hands, in the same way as a conventional chain-saw. the right hand on the rear handle, and the left hand on the front handle, when the engine is running. Use a firm grip with thumbs and fingers encircling the chain saw handles. A firm grip will help you reduce kickback and maintain control of the saw. Don't let go.

(3) Make certain that the area in which you're cutting is free from obstructions. Do not let the nose of the guide bar contact a log, branch, or any other obstruction which could be hit while you are operating the saw.

(4) Cut at high engine speeds.

(5) Do not overreach or cut above shoulder height.

(6) Follow manufacturers sharpening and maintenance instructions for saw chain.

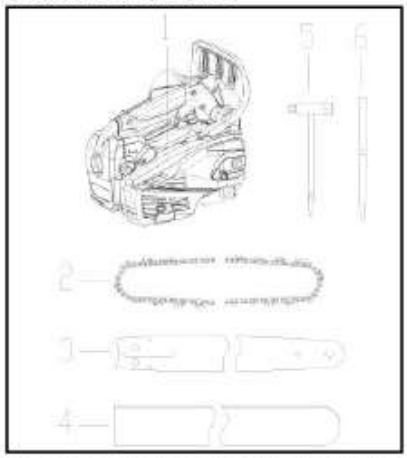


(7) Only use replacement bars and chains specified by the manufacturer or the equivalent.

4. Installing guide bar and saw chain

A standard saw unit package contains the items as shown below.:

(1) Power unit (2) Saw chain
(3) Guide bar (4) Guide bar scabbard
(5) Plug wrench (6) File



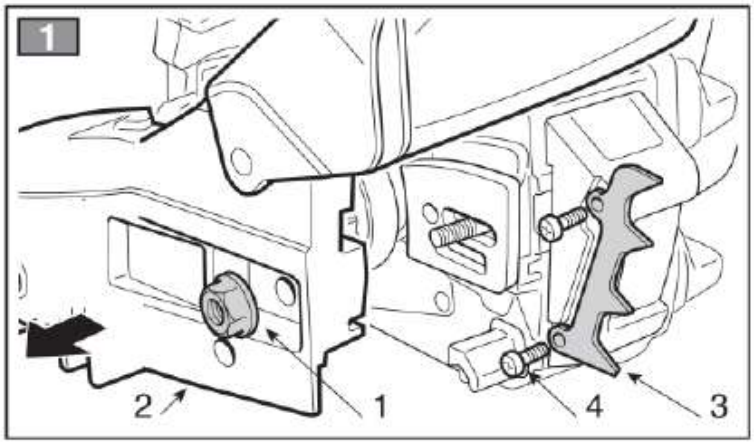
Open the box and install the guide bar and the saw chain on the power unit as follows.

⚠WARNING

The saw chain has very sharp edges. Use protective gloves for safety.

1. Pull the guard towards the front handle to check that the chain brake is not on.

2. Loosen a nut and remove the chain cover. Fix the spiked bumper with two screws on the forefront of the chain saw (Figure 1).

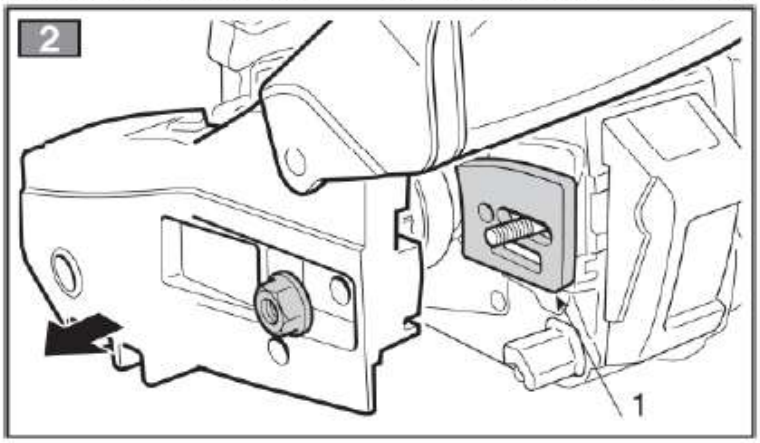


1、 Nut
2、 Clutch cover
3、 Spiked bumper
4、 Tapping screw

❗IMPORTANT The Spiked bumper belongs to the chain saw. It must be screwed up on chain saw before the initial use

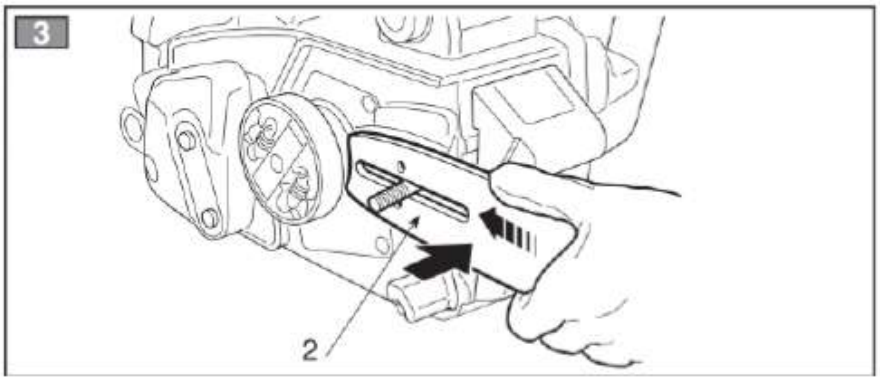
4. Installing guide bar and saw chain

3. Remove the spacer from chain saw (Figure 2).



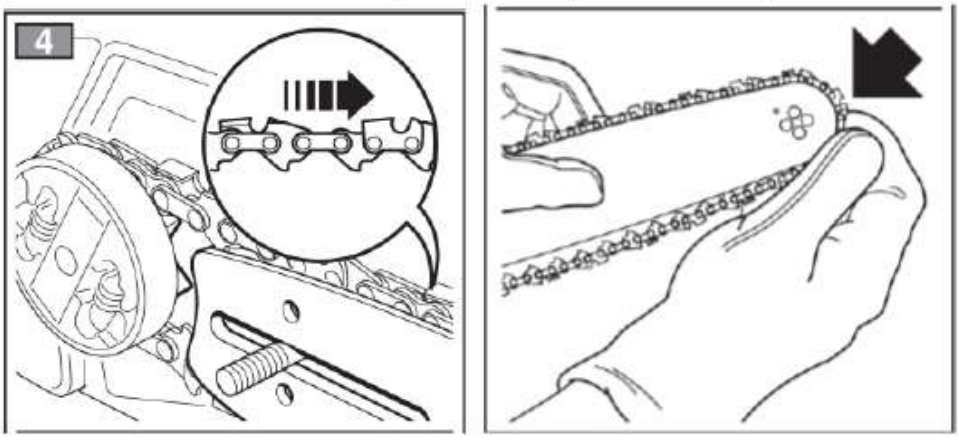
1、Spacer

3. Fit the guide bar to the power unit, and then push the guide bar toward the clutch (Figure 3).



2、Guide bar

4. Gear the chain to the sprocket and, while fitting the saw chain around the guide bar.

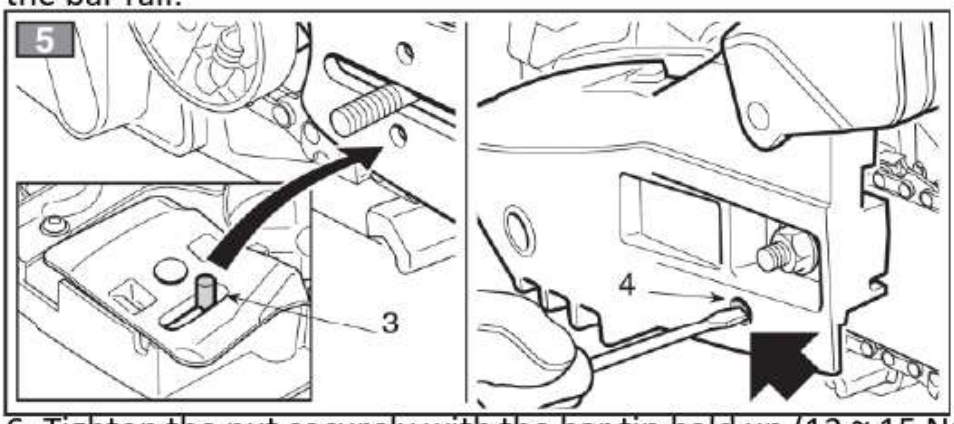


NOTE

Pay attention to the correct direction of the saw chain.

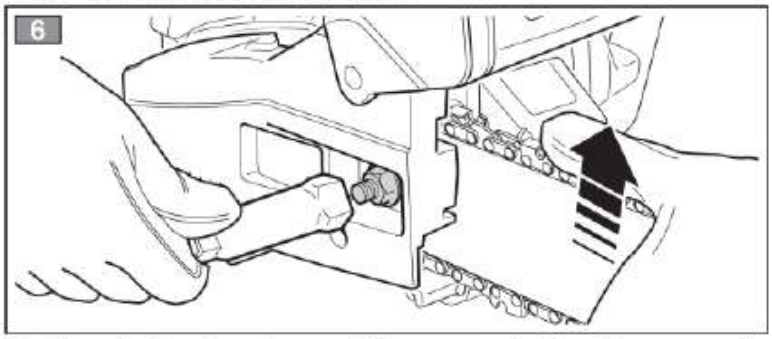
4. Installing guide bar and saw chain

5. Adjust the position of chain tensioner nail, and then insert the tensioner nail in the lower hole of the guide bar. Mount the clutch cover to the power unit and fasten the mounting nut to finger tightness. While holding up the tip of the bar, adjust the chain tension by turning the tensioner screw until the tie straps just touch the bottom side of the bar rail.



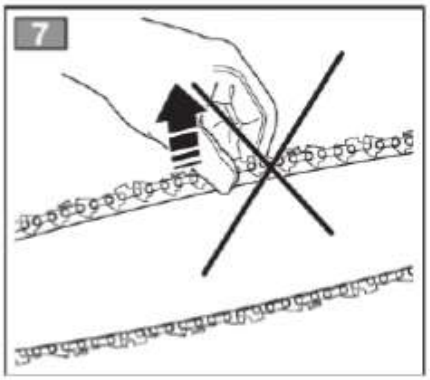
3. Tensioner nail
4. Tensioner screw

6. Tighten the nut securely with the bar tip held up (12 ~ 15 Nm). Then check the chain for smooth rotation and proper tension while moving it by hand. If necessary, readjust with the chain cover loose.



Turn the tensioner screw clockwise to tighten the chain, turn the tensioner screw counter-clockwise to loosen the chain.

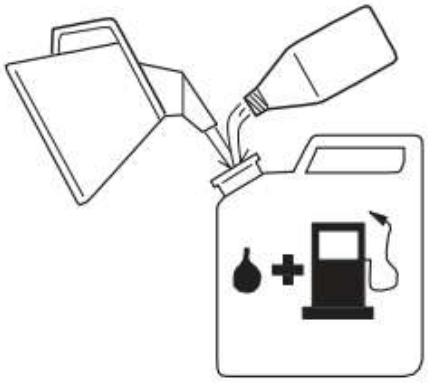
7. Check the tension of the saw chain. Use your hand to lift the chain link which positions on the middle of cutting length up with approximate 10N force. If the chain link goes out of the rail of guide bar entire, you need to retighten the chain



IMPORTANT

It is very important to maintain the proper chain tension. Rapid wear of the guide bar or the chain coming off easily can be caused by improper tension. Especially when using a new chain, take good care of it since it should expand when first used.

5. Fuel and chain oil



■Fuel

The engines are lubricated by oil specially formulated for air-cooled 2-cycle gasoline engine use. If oil is not available, use an antioxidant added quality oil expressly labeled for air-cooled 2-cycle engine use.

RECOMMENDED MIXING RATIO

GASOLINE 50 : OIL 1 (JASO FC or ISO EGC grade ormulated for air-cooled, two-stroke engines**)**

Petrol, litre	**Two-stroke oil, millilitre**
	2% (1:50)
1	20
5	100
10	200
20	400

⚠WARNING

The fuel is highly flammable. Do not smoke or bring any flame or sparks near fuel.

IMPORTANT

1. FUEL WITH NO OIL(RAW GASOLINE) – It will cause severe damage to the engine inner parts very quickly.

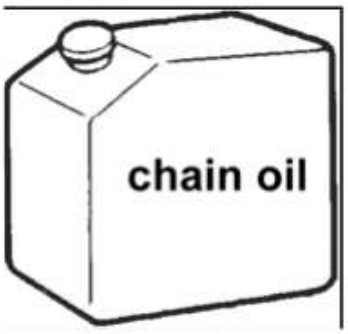
2. OIL FOR 4-CYCLE ENGINE USE or WATER COOLED 2-CYCLE ENGINE USE – It can cause spark plug fouling, exhaust port blocking, or piston ring sticking.

5. Fuel and chain oil

■HOW TO MIX FUEL

1. Measure out the quantities of gasoline and oil to be mixed.
2. Put some of the gasoline into a clean, approved fuel container.
3. Pour in all of the oil and agitate well.

4. Pour in the rest of gasoline and agitate again for at least one minute.
5. Put a clear indication on the outside of the container to avoid mixing up with gasoline or other containers.



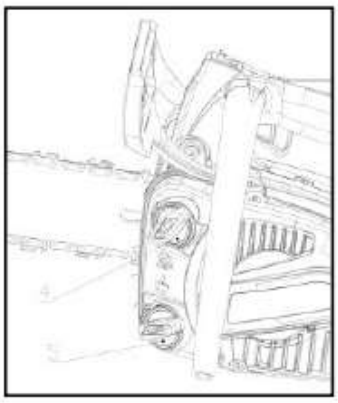
■ CHAIN OIL

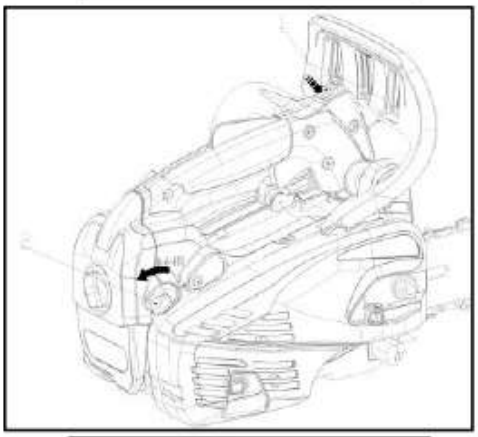
Use special chain saw oil all year round.

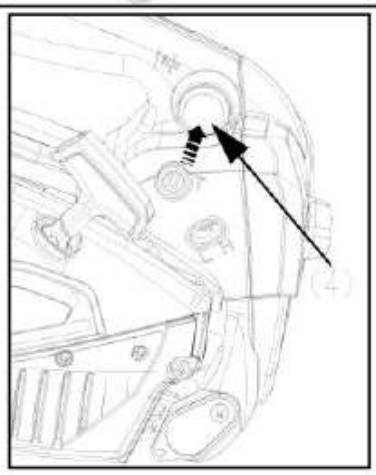
NOTE

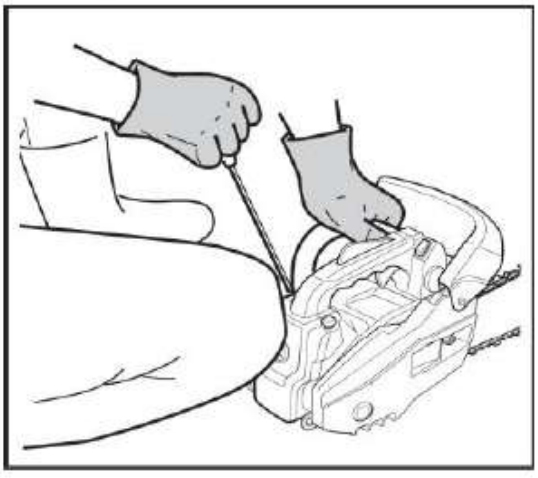
Do not use waste or regenerated oil that can cause damage to the oil pump.

6. Operation









■ STARTING ENGINE

1. Untwist and remove the fuel cap and oil cap.
2. Fill the fuel tank and oil tank to 80% of the full capacity.
3. Fasten the fuel cap and oil tank securely and wipe up any fuel spillage around the unit.
4. Put the switch to the "I" position.
5. Pull out the choke knob. The choke will close and the throttle lever will then be set in the starting position.
6. Continuously push the primer bulb until fuel comes in the bulb.

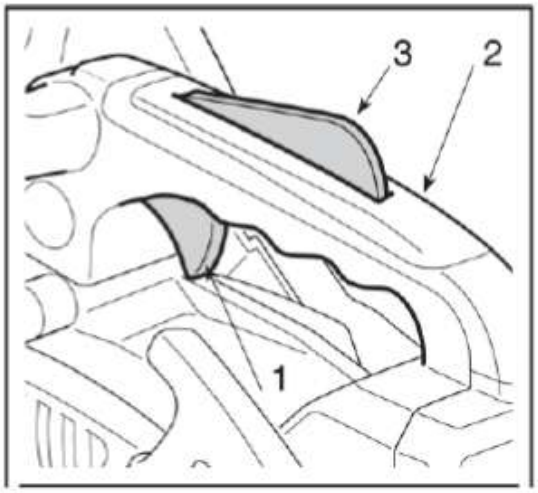
(1) Engine switch (2) Choke knob (3) primer bulb
(4) Fuel tank cap (5) Oil tank cap

NOTE

When restarting immediately after stopping the engine. Set choke in the open position.
Once the choke knob has been turn conuter clockwise, it will not return to the running position even if you press the throttle trigger or press down on knob with your finger. When you wish to return the choke knob to the operating position, press the throttle trigger instead.

7. Push the front handle guard down toward the front to activate the chain brake.
8. While holding the saw unit securely on the ground, pull the starter rope vigorously.
9. When firing occur, push in the throttle trigger to allow the choke return to the running position and pull the starter handle again to start the engine.

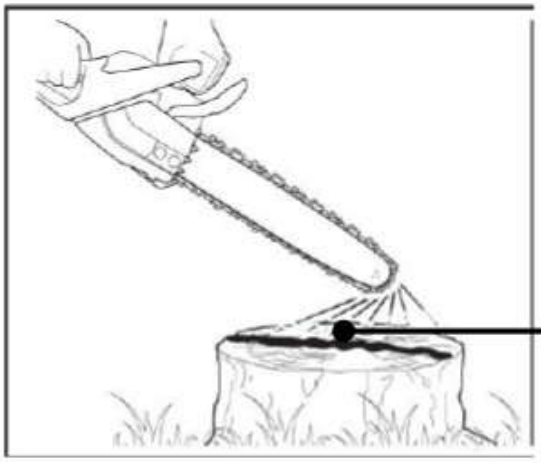
6. Operation



10. Pull up the front handle guard toward the front handle to release brake. Then, allow the engine to warm up with the trigger pulled slightly.
(1) Throttle trigger (2) Rear handle
(3) Throttle trigger lock lever

⚠WARNING

Before you start the engine, make sure the saw chain is not contacting anything. Make sure the chain brake always is activated before each starting.



■CHECKING OIL SUPPLY

After starting the engine, run the chain at medium speed and see if chain oil is scattered off as shown in the figure.
Chain oil

❗ IMPORTANT

The oil tank should become nearly empty by the time fuel is used up. Be sure to refill the oil tank every time when refueling the saw.

■CHECKING FUNCTIONAL OF THE CLUTCH

Before each use, you shall confirm that there is no chain movement when the chain saw running at idling speed.

6. Operation

⚠WARNING

When running, the machine must always be firmly held in both hands, with the left hand on the front hand-grip and the right hand on the rear hand grip, even if the operator is left-handed.

■ ADJUSTING CARBURETOR

The carburetor on your unit has been factory adjusted, but may require fine tuning due to change in operating conditions.

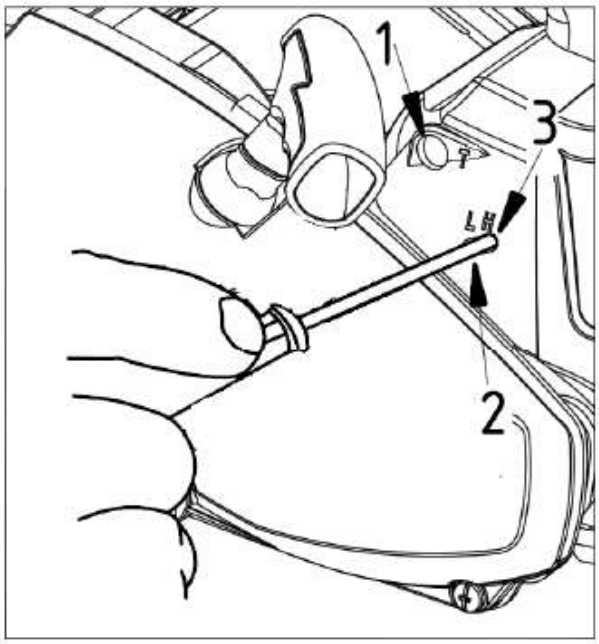
Before adjusting the carburetor, make sure that provided are clean air/fuel filters and fresh, properly mixed fuel.

When adjusting, take the following steps:

❗ IMPORTANT

Be sure to adjust the carburetor with the bar chain attached.

1. H and L needles are restricted within the number of turn as shown below.



H needle –1/4

L needle –1/4

2. Start engine and allow it to warm up in low speed for a few minutes.

3. Turn idle adjusting screw (T) counter-clockwise so that saw chain does not turn. If idling speed is too slow, turn the screw clockwise.

4. Make a test cut adjust the H needle for best cutting power, not for maximum speed.

(1) Idle adjusting screw`.

(2) L needle

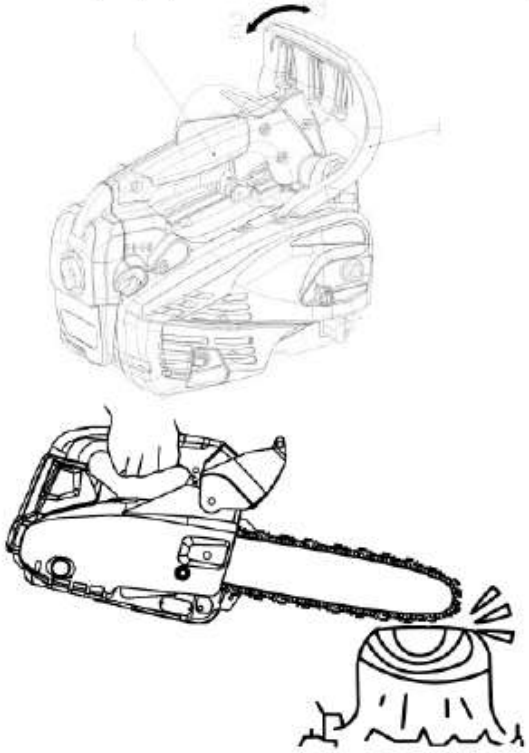
(3) H needle

■CHAIN BRAKE

The chain brake is a device which stops the chain instantaneously if the chain saw recoils due to kickback.

6. Operation

Normally, the brake is activated automatically by inertial force. It can also be activated manually by pushing the brake lever (Front handle guard) down toward the front.



When the brake operates, a white cone pops up from the base of the brake lever.

(1) Rear handle (2) Release (3) Brake

(4) Front handle guard

To release brake, pull up the front handle guard toward the rear handle till “click” sound is heard.

⚠WARNING

When the brake operates, release the throttle lever to slow down the engine speed. Continuous operation with the brake engaged will generate heat from the clutch and may cause trouble.

Be sure to confirm brake operation on the daily inspection.

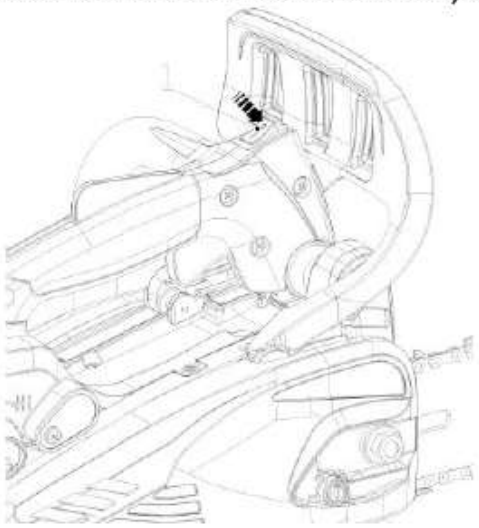
How to confirm:

1) Turn off the engine.

2) Holding the chain saw horizontally, release your hand from the front handle, hit the tip of the guide bar to a stump or a piece of wood, and confirm brake operation.

Operating level varies by bar size.

In case the brake is not effective, ask our dealer inspection and repairing.



■ Stopping engine

1. Release the throttle trigger to allow the engine idling for a few minutes.

2. Set the switch to the “O” (STOP) position.

(1) Engine switch

7. Sawing

⚠WARNING

Before proceeding to your job, read "For Safe Operation" section it is recommended to first practice sawing easy logs. This also helps you get accustomed to your unit.

Always follow all the safety regulations which can restrict the use of the machine.

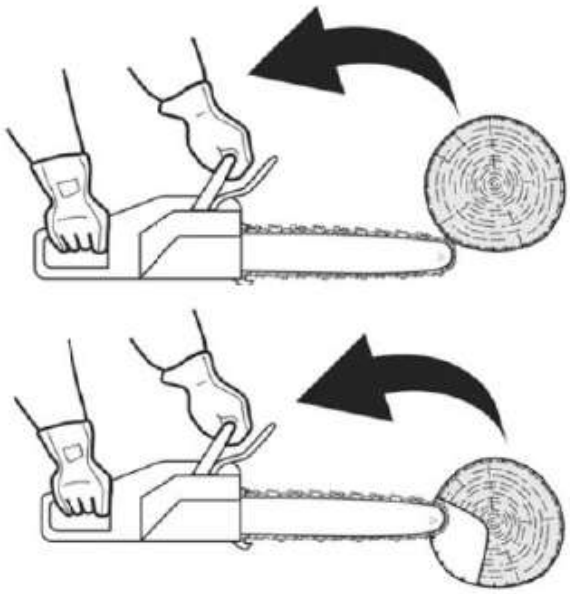
Always follow the safety regulations. The chain saw must only be used for cutting wood. It is forbidden to cut other types of material. Vibrations and kickback vary with different materials and the requirements of the safety regulations would not be respected. Do not use the chain saw as a lever for lifting, moving or splitting objects. Do not lock it over fixed stands. It is forbidden to hitch tools or applications to the P.T.O. that are not specified by the manufacturer.

It is not necessary to force the saw into the cut. Apply only light pressure while running the engine at full throttle.

It is recommended that daily inspection before use and after dropping or other impacts to identify significant damage or defects.

Racing the engine with the chain seized in a cutaway can damage the clutch system.

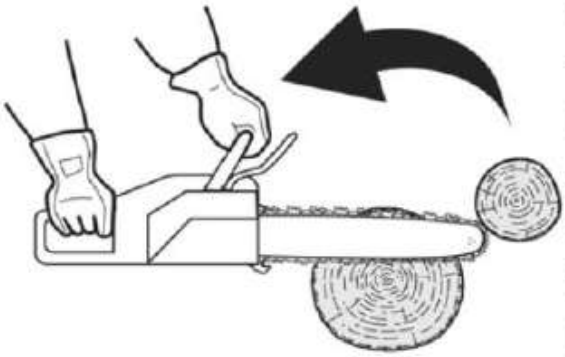
When the saw chain is caught in the cut, do not attempt to pull it out by force, but use a wedge or a lever to open the cut.

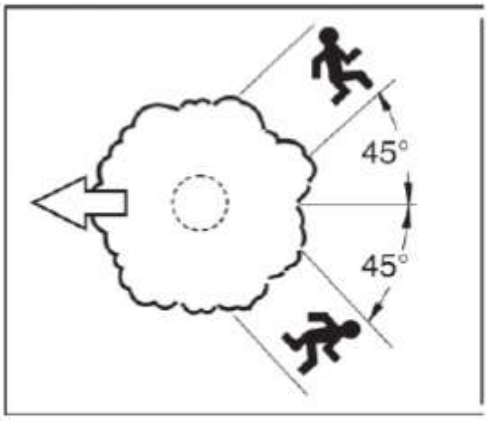


■ **Guard against kickback**

This saw is also equipped with a chain brake that will stop the chain in the event of kickback if operating properly. You must check the chain brake operation before each usage by running the saw at full throttle for 1 or 2 seconds and pushing the front hand guard forward. The chain should stop immediately with the engine at full speed. If the chain is slow to stop or does no stop then replace the brake band and clutch drum before use.

7. Sawing



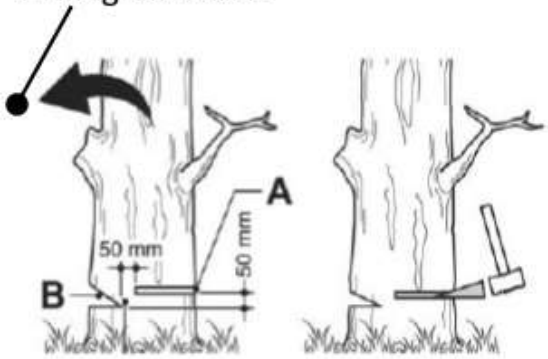


It is extremely important that the chain brake be checked for proper operation before each use and that the chain be sharp in order to maintain the kickback safety level of this saw. Removal of the safety devices, inadequate maintenance, or incorrect replacement of the bar or chain may increase the risk of serious personal injury due to kickback.

■ Felling a tree

1. Decide the felling direction considering the wind, lean of the tree, location of heavy branches, ease of job after felling, and other factors.
2. While clearing the area around the tree, arrange a good foothold and retreat path.
3. Make a notch cut one-third of the way into the tree on the felling side.
4. Make a felling cut from the opposite side of the notch and at a level slightly higher than the bottom of the notch.

Felling direction



⚠WARNING

When you fell a tree, be sure to warn your neighboring workers of the danger.

(A) Felling cut

(B) Notch cut

■LOGGING AND LIMBING

⚠WARNING

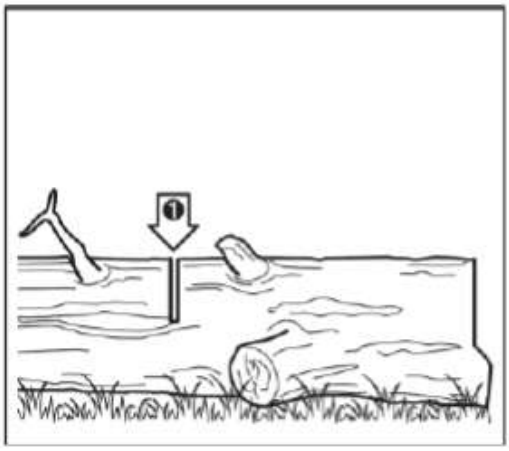
1. Always ensure your foothold as well as stability of the tree.

7. Sawing

2. Be alert to the rolling over of a cut log.

3. Read the instructions in “For Safe Operation” to avoid kickback of the saw.

Before starting work, check the direction of bending force inside the log to be cut. Always finish cutting from the opposite side of bending direction to prevent the guide bar from being caught in the cutaway.



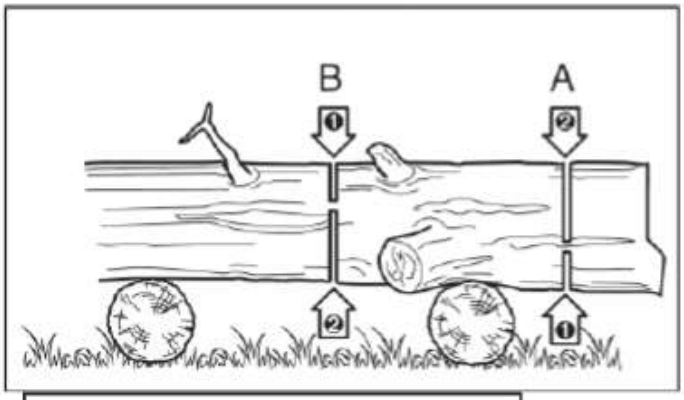
Cutting an unpillowed log

Saw down halfway, then roll the log over and cut from the opposite side.

Cutting a pillowed log

In the area A in the picture right above, saw up from the bottom one-third and finish by sawing down from the top. In the area B, saw down from the top one-third and finish by sawing up from the bottom.

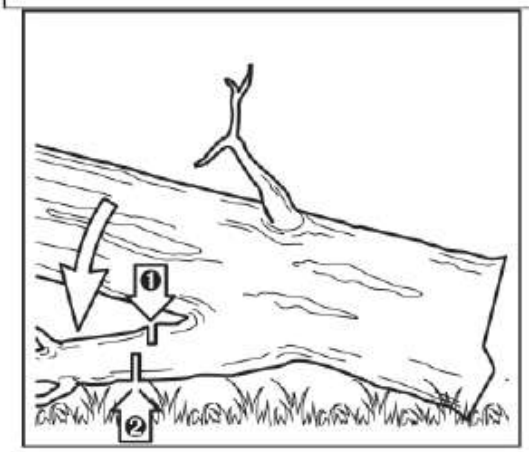
Limbing a felled tree



First check which way the limb is bent. Then make a shallow cut into the compressed side to prevent the limb from being torn. Cut through from the tensed side.

⚠WARNING

Be alert to the spring back of a cut limb.



Pruning

Cut up from the bottom, finish down from the top.

⚠WARNING

1. Do not use an unstable foothold or a stepladder.
2. Do not overreach.
3. Do not cut above shoulder height.
4. Always use both hands to grip the saw.

7. Sawing

⚠WARNING

The Spiked bumper must always be put on while using the chain saw on tree trunk. Push the spiked bumper into the tree trunk by using the rear handle. Push the front handle in the direction of cutting line. The spiked bumper must be remaining set for further saw guiding if necessary. Use a spiked bumper when cutting trees and thick branches can ensure your safety and decrease the working strength and vibration level.

If there's barrier between the cutting material and chainsaw, turn off the machine. Wait until it stops completely. Wear the safety glove and remove the barrier. If the chain must be removed, please follow the instruction of relevant part like installation in manual. A trial run must be conducted after the cleaning and newly installation. If vibration or mechanical noise is discovered, please stop the use and contact your dealer.

8. Working with tree service chain-saws from rope and harness

1、 Overview

This chapter sets out working practices aimed at reducing the risk of injury from tree service chain-saws when working at height from a rope and harness. While it may form the basis of guidance and training literature, it should not be regarded as a substitute for formal training. The guidance given in this annex is only an example of best working practice. National laws and regulations should always be followed.

It presents

- General requirements that should be met before using a tree service chain-saw for work at height from a rope and harness,
- Preparations for using a tree service chain-saw from a rope and harness, and
- Use of a tree service chain-saw for pruning and dismantling, including secure work positioning for two-handed use, starting the chain-saw, cutting with the chain-saw, restrictions on one-handed use and freeing a trapped saw.

8. Working with tree service chain-saws from rope and harness

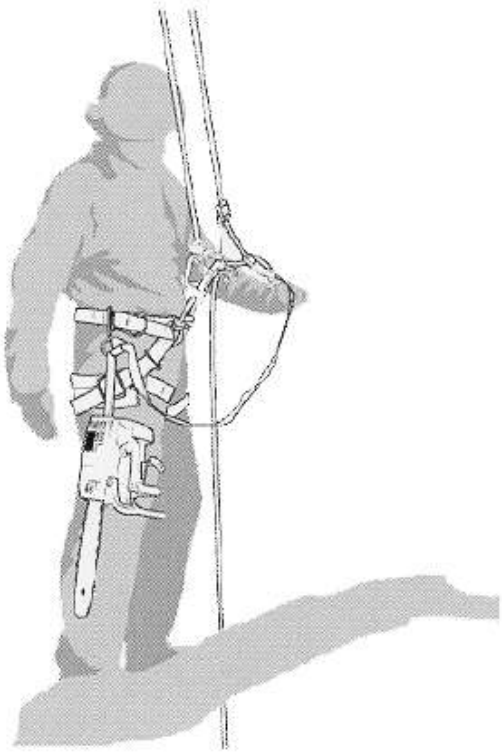
2、 General requirements

Operators of tree service chain-saws working at height from a rope and harness should never work alone. A ground worker trained in appropriate emergency procedures should assist them.

Operators of tree service chain-saws for this work should be trained in general safe climbing and work positioning techniques and be properly equipped with harnesses, ropes, strops, carabiners and other equipment for maintaining secure and safe working positions for both themselves and the saw.

3、 Preparing to use the saw in the tree

The chain-saw should be checked, fuelled, started and warmed up by the ground worker and then switched off before it is sent up to the operator in the tree.



The chain-saw should be fitted with a suitable strop for attachment to the operator's harness (see Figure B.1):

a) Secure the strop around the attachment point on the rear of the saw;

b) Provide suitable carabiners to allow indirect (i.e. via the strop) and direct attachment (i.e. at the attachment point on the saw) of the saw to the operator's harness;

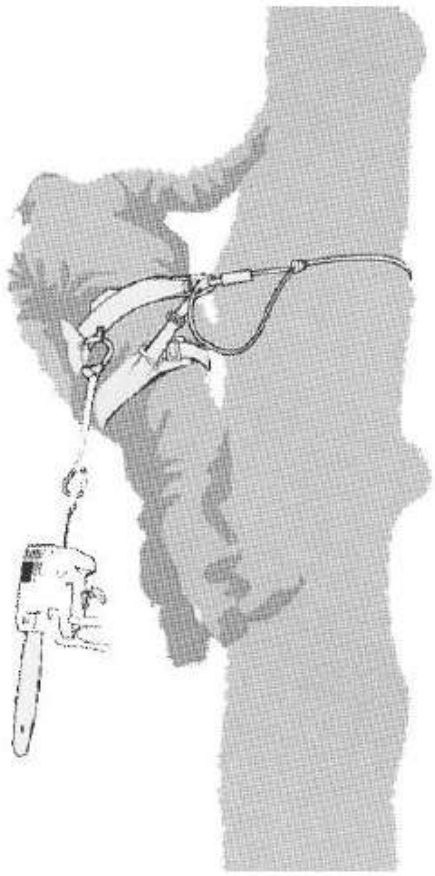
c) Ensure the saw is securely attached when it is being sent up to the operator;

d) Ensure the saw is secured to the harness before it is disconnected from the means of ascent.

Figure B.1 — Example of attachment of tree service chain-saw to operator's harness

The ability to directly attach the saw to the harness reduces the risk of damage to equipment when moving around the tree. Always switch the saw off when it is directly attached to the harness.

8. Working with tree service chain-saws from rope and harness



The saw should only be attached to the recommended attachment points on the harness. These may be at mid-point (front or rear) or at the sides. Where possible, attach the saw to the centre rear mid-point to keep it clear of climbing lines and to support its weight centrally down the operator's spine. See Figure B.2.

When moving the saw from any one attachment point to another, operators should ensure it is secured in the new position before releasing it from the previous attachment point.

Figure B.2 — Example of attachment of tree service chain-saw to centre rear mid-point on harness

4、 Using the chain-saw in the tree

An analysis of accidents with these saws during tree service operations shows the primary cause as being inappropriate one-handed use of the saw. In the vast majority of accidents, operators fail to adopt a secure work position that allows them to hold both handles of the saw. This results in an increased risk of injury due to

- Not having a firm grip on the saw if it kicks back,
- A lack of control of the saw, such that it is more likely to come into contact with climbing lines and the operator's body (particularly the left hand and arm), and
- Loss of control owing to an insecure work position and resulting in contact with the saw (unexpected movement during operation of the saw).

8. Working with tree service chain-saws from rope and harness

Securing the work position for two-handed use

In order to allow the saw to be held with both hands, as a general rule operators should aim for a secure work position in which they operate the saw at

- Hip level, when cutting horizontal sections, and
- Solar plexus level, when cutting vertical sections.

Where the operator is working close into vertical stems with low lateral forces on the work position, then a good footing could be all that is needed to maintain a secure work position. However, as operators move away from the stem, they will need to take steps to remove or counteract the increasing lateral forces by, for example, a redirect of the main line via a supplementary anchor point or use of an adjustable strop direct from the harness to a supplementary anchor point (see Figure B.3).

Figure B.3 — Example of redirection of main line via supplementary anchor point

Gaining a good footing at the working position can be assisted by the use of a temporary foot stirrup created from an endless sling (see Figure B.4).

8. Working with tree service chain-saws from rope and harness

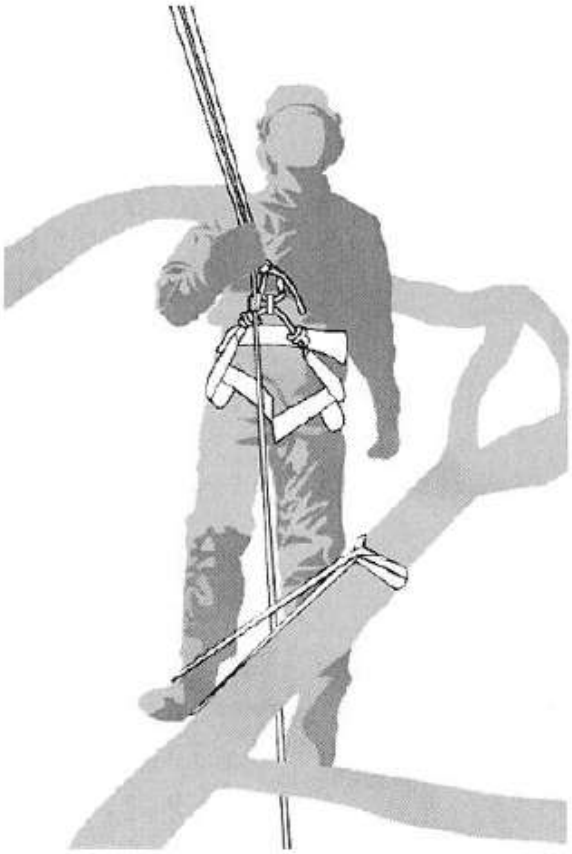


Figure B.4 — Example of temporary foot stirrup created from endless sling

Starting the saw in the tree

When starting the saw in the tree, the operator should

a) apply the chain brake before starting,

b) hold the saw on either the left or right of the body when starting,

   1) on the left side, hold the saw with the left hand on the front handle and thrust the saw away from the body while holding the pull starter cord in the right hand, or

   2) on the right side, hold the saw with the right hand on either handle and thrust the saw away from the body while holding the pull starter cord in the left hand.

The chain brake should always be engaged before lowering a running saw onto its strop. Operators should always check that the saw has sufficient fuel before undertaking critical cuts.

8. Working with tree service chain-saws from rope and harness

One-handed use of the chain-saw

Operators should not use tree service chain-saws one-handed when work position is unstable or in preference to a handsaw when cutting small diameter wood at the branch tips.

Tree service chain-saws should only be used one-handed where

- operators cannot gain a work position enabling two-handed use, and
- they need to support their working position with one hand, and
- the saw is being used at full stretch, at right angles to and out of line with the operator's body (see Figure B.5).

Figure B.5 — Example of one-handed chain-saw use

Operators should never

- cut with the kickback zone at the tip of the chain-saw guide bar,
- "hold and cut" sections, or
- attempt to catch falling sections.

Freeing a trapped saw

It the saw becomes trapped during cutting, operators should

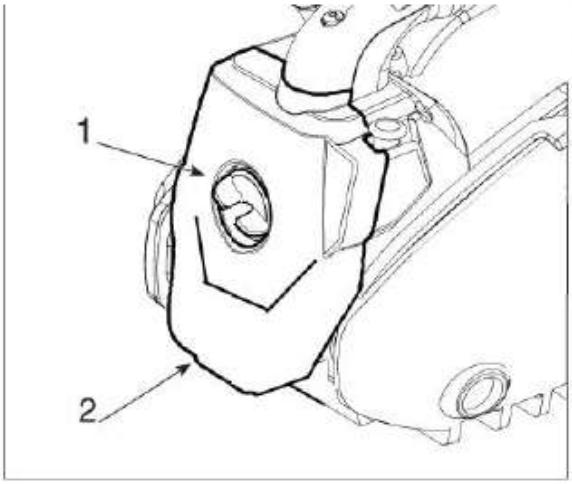
8. Working with tree service chain-saws from rope and harness

- switch off the saw and attach it securely to the tree inboard (i.e. towards the trunk side) of the cut or to a separate tool line,
- pull the saw from the kerf whilst lifting the branch as necessary,
- if necessary, use a handsaw or second chain saw to release the trapped saw by cutting a minimum of 30 cm away from the trapped saw.

Whether a handsaw or a chain-saw is used to free a trapped saw, the release cuts should always be outboard (toward the tips of the branch), in order to prevent the saw being taken with the section and further complicating the situation.

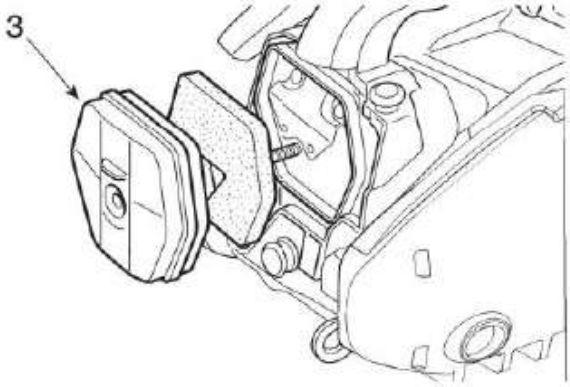
9. Maintenance

⚠WARNING



Before cleaning, inspecting or repairing your unit, make sure that engine has stopped and is cool. Disconnect the spark plug to prevent accidental starting.

Follow the instructions to carry out regular maintenance, pre-operating procedures and daily maintenance routines. Improper maintenance may result in serious damage to the machine.



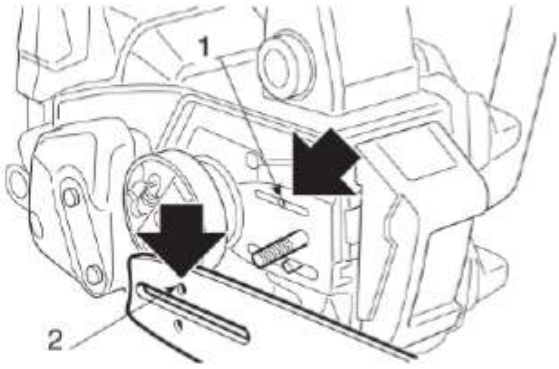
Maintenance after each use

1. Air filter

Dust on the cleaner filter can be removed by washing in a solution of household detergent and warm water. To clean dirt in the meshes, remove the cleaner cover and brush in gasoline. When using compressed air, blow from the inside.

(1) air filter nut (2) air filter cover

(3) cleaner cover

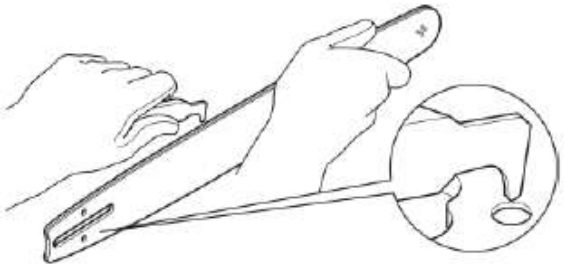


2. Oiling sprayer

Dismount the guide bar and check the oiling outlet for clogging.

(1) Oiling outlet

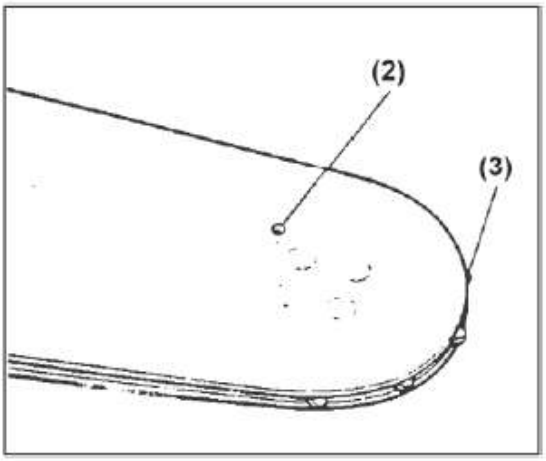
(2) Oiling inlet



3. Guide bar

When the guide bar is dismounted, remove sawdust in the bar groove and the oiling inlet.

Grease the nose sprocket from the feeding port on the tip of the bar.

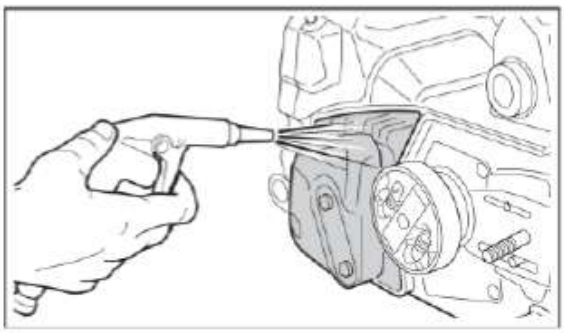


(2) Grease port
(3) Sprocket

4. Others

Check for fuel leakage and loose fastenings and damage to major parts, especially handle joints and guide bar mounting. If any defects are found, make sure to have them repaired before operating again.

■Periodical service points



1. Cylinder fins

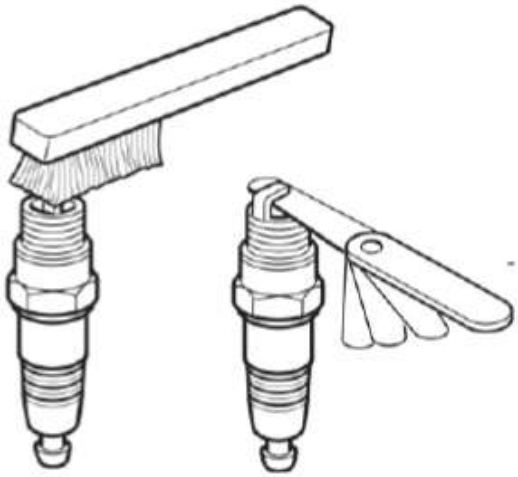
Dust clogging between the cylinder fins will cause overheating of the engine. Periodically check the fins after removing the clutch cover, and then use pressure air to clean the cylinder fins.

2. Fuel filter

(a) Using a wire hook, take out the filter from the filler port.
(b) Disassemble the filter and wash with gasoline, or replace with a new one if needed.

IMPORTANT

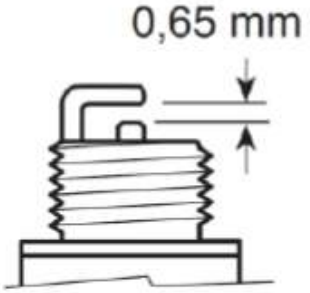
• After removing the filter, use a pinch to hold the end of the suction pipe.
• When assembling the filter, take care not to allow filter fibers or dust inside the suction pipe.



3. Spark plug

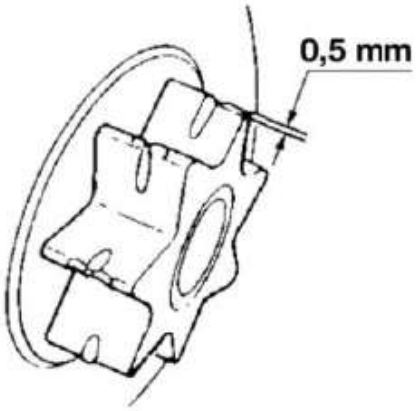
Clean the electrodes with a wire brush and reset the gap to 0.65mm as necessary.

Spark plug type： CHAMPION RY4C /
TORCH CMR6A



4. Sprocket

Check for cracks and for excessive wear interfering with the chain drive. If the wear is considerable, replace it with new one. Never fit a new chain on a worn sprocket, or a worn chain on a new sprocket.



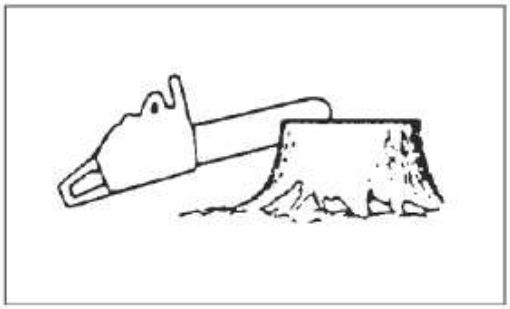
5. Front and Rear dampers

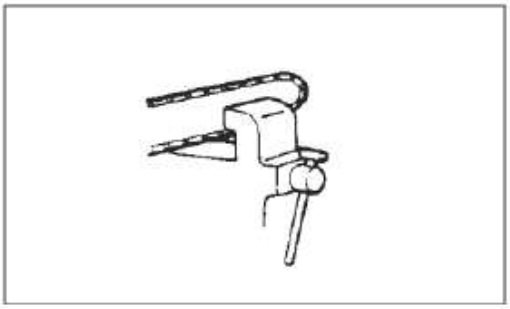
Replace if adhered part is peeled or crack is observed on the rubber part. Replace if the inside of the rear damper metal has been beaten by the stopper bolt and the clearance of the metal increased.

⚠WARNING

Use only the spare parts which named in this manual. Use the other spare part can cause serious injury.

10. Maintenance of Saw Chain and Guide Bar





■ Saw chain

⚠WARNING

It is very important for smooth and safe operation to keep the cutters always sharp.

Your cutters need to be sharpened when:

- Sawdust becomes powder-like.
- You need extra force to saw in.
- The cut way does not go straight.
- Vibration increases.
- Fuel consumption increases.

Cutter setting standards:

⚠WARNING

Be sure to wear safety gloves.

Before filing:

- Make sure the saw chain is held securely.
- Make sure the engine is stopped.
- Use a round file of proper size for your chain.

Chain type: HCS128T: Oregon 91P

HCS128TC: Longer E1

File size: 5/32”(4.0mm) for all models.

Place your file on the cutter and push straight forward.

Keep the file position as illustrated.

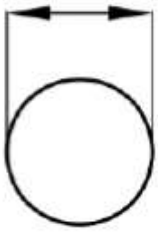
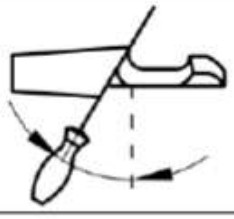
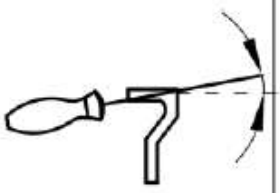
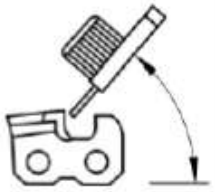
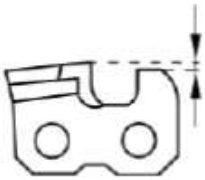
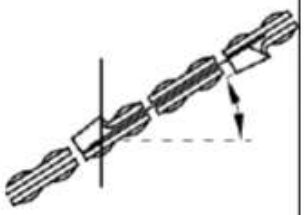
After every cutter has been set, check the depth gauge and file it to the proper level as illustrated.

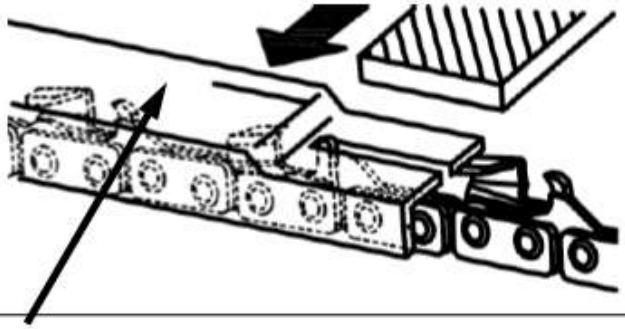
⚠WARNING

Be sure to round off the front edge to reduce the chance of kickback or tie-strap breakage.

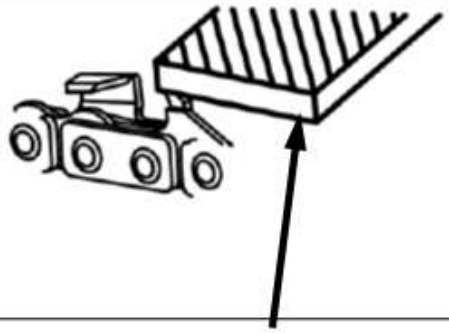
10. Maintenance of Saw Chain and Guide Bar

Make sure every cutter has the same length and edge angles as illustrated.

Type of chain	File diameter	Top plate angle	Down angle	Head tilt angle (55°)	Depth gauge standard
					
		Vise rotate angle	Vise tilt angle	Side angle	
					
91P	5/32"	30°	0°	80°	0.025"
E1	5/32"	30°	10°	85°	0.025"

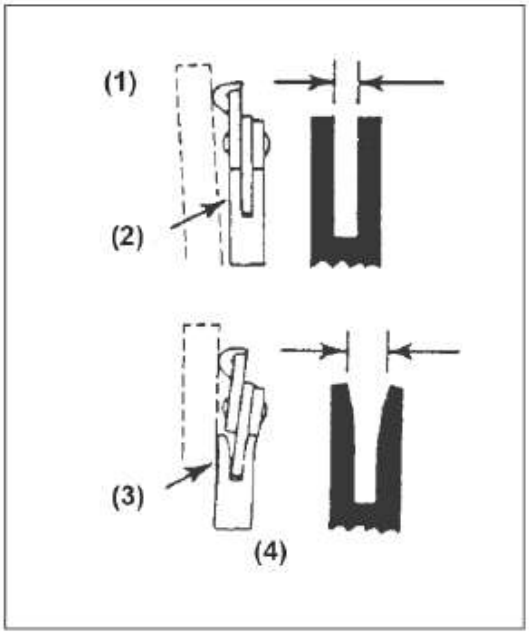


Depth gauge



File

10. Maintenance of Saw Chain and Guide Bar



Guide bar

• Reverse the bar occasionally to prevent partial wear.

• The bar rail should always be a square. Check for wear of the bar rail. Apply a ruler to the bar and the outside of a cutter. If a gap is observed between them, the rail is normal. Otherwise, the bar rail is worn. Such a bar needs to be corrected or replaced.

(1) Ruler (2) Gap (3) No gap (4) Chain tilts

The table contains a list of all possible combinations between bar and chain, indicating those which may be used on each machine, marked with the symbol "*".

Pitch	Guide bar			Chain	Chain saw model	
Zoll	Length Inches/cm	Groove width Inches/mm	Code	Code	CSP280T	CSP280TC
3/8"	10"	0.050"/1.3mm	Oregon 100SDEA041	Oregon 91P040X	*	
3/8"	12"	0.050"/1.3mm	Oregon 120SDEA041	Oregon 91P045X	*	
1/4"	10"	0.050"/1.3mm	Qirui AT10-50	Longer E1-25AP064T		*

For replacement use only above bars and chains. If you use non-approved combinations it may cause serious personal injury and damage to the machine.

11. Storage

1. Empty the fuel tank and run the engine out of fuel.
2. Empty the oil tank.
3. Clean the entire unit.
4. Store the unit in a dry place out of the reach of children.

12. Waste disposal and environmental protection

Never pour remainders of chain lubricant or 2-stroke fuel mixture in the drain or sewerage system or soil, but dispose of it in a proper, environmentally friendly way, e.g., at a special collecting point or dump.

If your device should become useless somewhere in the future or you do not need it any longer, do not dispose of the device together with your domestic refuse, but dispose of it in an environmentally friendly manner. Thoroughly empty the oil/lubricant and fuel tanks and dispose of the remainders at a special collecting point or dump. Please also dispose of the device itself at an according collecting/recycling point. By doing so, plastic and metal parts can be separated and recycled. Information concerning the disposal of materials and devices are available from your local administration.

13. Warranty

For this petrol tool, the company provides the end user - independently from the retailer‘s obligations resulting from the purchasing contract - with the following warranties:

The warranty period is 24 months beginning from the hand-over of the device which has to be proved by the original purchasing document. For commercial use and use for rent, the warranty period is reduced to 12 months. Wearing parts and defects caused by the use of not fitting accessories, repair with parts that are no original parts of the manufacturer, use of force, strokes and breaking as well as mischievous overloading of the motor are excluded from this warranty. Warranty replacement does only include defective parts, not complete devices. Warranty repair shall exclusively be carried out by authorized service partners or by the company‘s customer service. In the case of any intervention of not authorized personnel, the warranty will be held void.

All postage or delivery costs as well as any other subsequent expenses will be borne by the customer.

14. Troubleshooting guide

PROBLEM	CAUSE	REMEDY
1) Starting failure	– Check fuel for water or substandard mixture.	– Replace with proper fuel.
	– Check for engine flooding.	– Remove and dry the spark plug. – Then pull the starter again with no choke.
	– Check spark ignition.	– Replace with a new plug.
2) Lack of power/Poor acceleration/ Rough idling	– Check fuel for water or substandard mixture.	– Replace with proper fuel.
	– Check air filter and fuel filter for clogging.	– Clean.
	– Check carburetor for inadequate adjustment.	– Readjust speed needles.
3) Oil does not come out	– Check oil for substandard quality.	– Replace.
	– Check oil passage and ports for clogging.	– Clean.

If the unit seems to need further service, please consult with an authorized service shop in your area.

14. Specifications

Power unit:	CSP280T	CSP280TC
Displacement:	28.5 cm^3	
Maximum engine power:	1.0 kW	
Fuel:	Mixture (Unleaded Gasoline 50: two-cycle oil 1)	
Fuel tank capacity:	210 cm^3	
Chain oil:	Engine oil SAE#10W-30	
Oil tank capacity:	200 cm^3	
Carburettor:	Diaphragm type	
Fuel consumption at maximum engine power:	460 g/kw·h	
Idling speed range:	3000±400 r/min	
Maximum speed with cutting attachment:	12000 r/min	
Maximum Chain speed:	22.86 m/s	20.32 m/s
Ignition system:	C.D.I. with timing advance function	
Spark plug:	CHAMPION RY4C/ TORCH CMR6A	
Oil feeding system:	Mechanical plunger pump with adjuster	
Sprocket Teeth x Pitch:	6T×0.375in	8T×0.25in
Dimensions (L x W x H):	275×245×225 (mm)	
Dry weight (without guide bar and chain, empty tanks):	3.26 kg	
Sound pressure level at operation position (EN ISO 22868) L_{pA}:	97.2 dB(A)	
Uncertainty of stated value (2006/42EC) K_{pA}:	3.0 dB(A)	
Sound power level (EN ISO 22868) L_{WA}:	109.3 dB(A)	
Uncertainty of stated value (2006/42EC) K_{WA}:	3.0 dB(A)	
Declared sound power level L_{WAd}	112 dB(A)	

14. Specifications

	CSP280T	CSP280TC
Vibration Value (EN ISO 22867):		
Front handle:	6.78 m/s^2	
Rear handle:	7.2 m/s^2	
Uncertainty of stated value (2006/42EC):	1.5 m/s^2	
Cutting head:		
Guide bar		
Type:	Sprocket nose	
Size:	10in/ 12in	10in
Cutting length:	24.5 cm/ 29 cm	26.5 cm
Saw chain		
Type:	Oregon 91P	Longer E1
Pitch:	0.375in	0.25 in
Gauge:	0.050in	

Combinations of guide bar/ saw chain

For HCS128T:

Oregon 100SDEA041/ Oregon 91P040X

Oregon 120SDEA041/ Oregon 91P045X

For HCS128TC:

Qirui AT10-50 / Longer E1-25AP060T

Specifications are subject to change without notice.