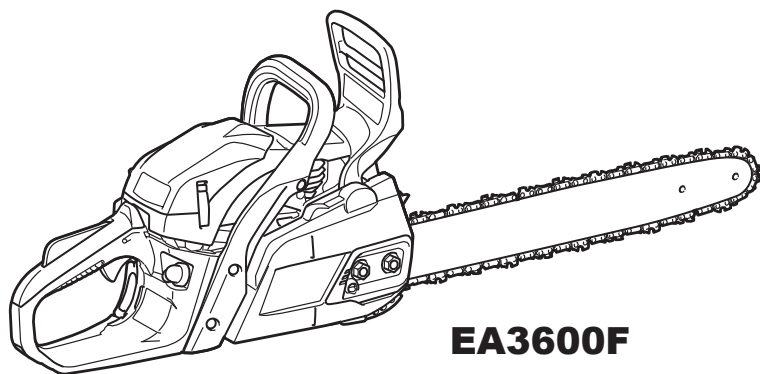


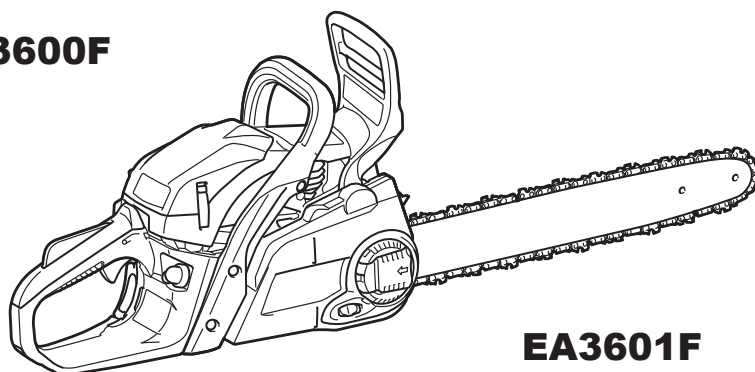


Petrol Chain Saw ORIGINAL INSTRUCTION MANUAL

EA3600F EA3601F



EA3600F



EA3601F

Important:

Read this instruction manual carefully before putting the chain saw into operation and strictly observe the safety regulations!
Keep this instruction manual!

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SYMBOLS



Read instruction manual and follow the warning- and safety precautions!



Particular care and caution!



Forbidden!



Wear protective helmet, eye and ear protection!



Wear protective gloves!



No smoking!



No open fire!



Stop engine!



Start engine



Combination switch, Choke ON/STOP



Caution, kickback!



Chain brake



Hold the saw with both hands while working!
One-handed use is extremely hazardous!



Fuel and oil mixture



Chain oil fill/oil pump



Saw chain oil adjustment screw



Primer pump



Chain direction



First aid

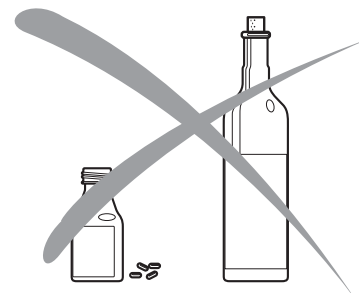
SAFETY PRECAUTIONS

Intended use

This power chain saw is only intended for sawing wood outdoors.

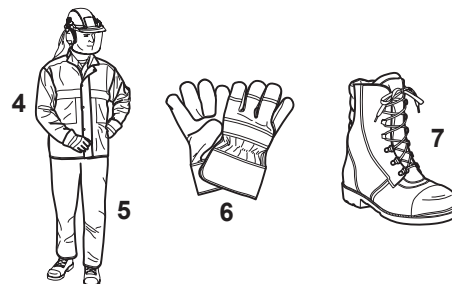
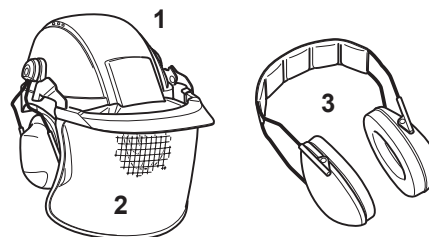
General precautions

- **To ensure correct operation the user has to read this instruction manual** to make himself familiar with the characteristics of the chain saw. Users insufficiently informed will endanger themselves as well as others due to improper handling.
- It is recommended to lend the chain saw only to people who are experienced in working with chain saws. Always hand over the instruction manual.
- First users should ask the dealer for basic instructions to become familiarized with the characteristics of engine powered sawing or even attend a recognized course of instruction.
- Children and young persons aged under 18 years must not be allowed to operate the chain saw. Persons over the age of 16 years may, however, use the chain saw for the purpose of being trained as long as they are under the supervision of a qualified trainer.
- Operate the chain saw only if you are in good physical condition. If you are tired, your attention will be reduced. Be especially careful at the end of a working day. Perform all work calmly and carefully. The user has to accept liability for others.
- Stay alert, watch what you are doing and use common sense when operating a chain saw. A moment of inattention while operating may result in serious personal injury.
- Never use the chain saw after having consumed alcohol, drugs or medication.
- The muffler may contain carcinogenic chemicals inside. Avoid contact with them in case the muffler is damaged.
- Ignition system of the engine emits electromagnetic wave during operation. It may interfere with medical equipments under certain circumstances, and may cause serious injury to persons with pace maker. It is recommended that persons with pace maker shall consult with their physicians and pacemaker manufacturer before using the chain saw.
- Do not use a chain saw which seems to be modified.
- A fire extinguisher and shovel must be available in the immediate vicinity when working in easily inflammable vegetation or when it has not rained for a long time (danger of fire).
- National regulation can restrict the use of the machine. Follow your county's regulations relating to use of chain saw.



Personal protective equipment

- **In order to avoid head, eye, hand or foot injuries as well as to protect your hearing the following protective equipment must be used during operation of the chain saw:**
- The kind of clothing should be appropriate, i. e. it should be tight-fitting but not be a hindrance. Do not wear jewellery or clothing which could become entangled with bushes or shrubs. If you have long hair, always wear a hairnet.
- It is necessary to wear a protective helmet whenever working with the chain saw. The protective helmet (1) is to be checked in regular intervals for damage and is to be replaced after 5 years at the latest. Use only approved protective helmets.
- The face shield (2) of the protective helmet (or the goggles) protects against sawdust and wood chips. During operation of the chain saw always wear a goggle or a face shield to prevent eye injuries.
- Wear adequate noise protection equipment (ear muffs (3), ear plugs, etc.). Long time exposure to noise may cause permanent hearing disorder.
- The safety jacket (4) is provided with special signal-colored shoulder straps and is comfortable and easy to care for.
- The protective brace and bib overall (5) is made of a nylon fabric with 22 layers and protects against cuts. We strongly recommend its use.
- Protective gloves (6) made of thick leather are part of the prescribed equipment and must always be worn during operation of the chain saw.
- During operation of the chain saw safety shoes or safety boots (7) fitted with anti skid sole, steel toe caps and protection for the leg must always to be worn. Safety shoes equipped with a protective layer provide protection against cuts and ensure a secure footing.
- Wear protective mask when necessary. Long time exposure to exhaust fumes, chain oil mist, and saw dust can damage your health.



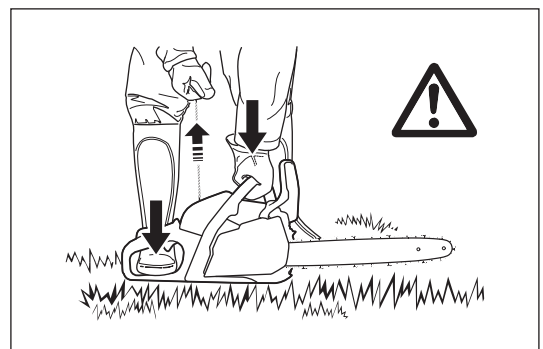
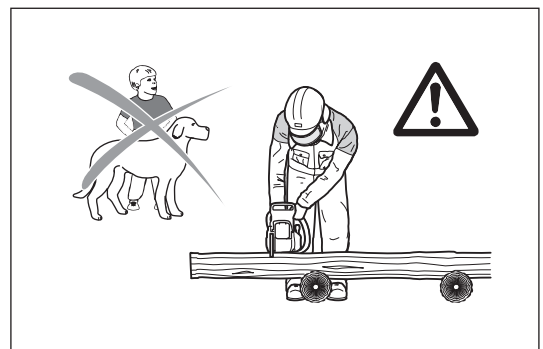
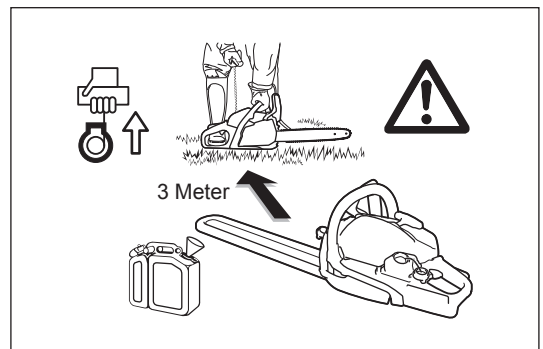
Fuels/Refuelling

- Stop the engine before refuelling the chain saw.
- Do not smoke or work near open fires.
- Let the engine cool down before refuelling.
- Fuels can contain substances similar to solvents. Eyes and skin should not come in contact with mineral oil products. Always wear protective gloves when refuelling. Frequently clean and change protective clothes. Do not breathe in fuel vapors. Inhalation of fuel vapors can be hazardous to your health.
- Do not spill fuel or chain oil. When you have spilt fuel or oil immediately clean the chain saw. Fuel should not come in contact with clothes. If your clothes have come in contact with fuel, change them at once.
- Ensure that no fuel or chain oil oozes into the soil (environmental protection). Use an appropriate base.
- Refuelling is not allowed in closed rooms. Fuel vapors will accumulate near the floor (explosion hazard).
- Ensure to firmly tighten the screw plugs of the fuel and oil tanks.
- Change the place before starting the engine (at least 3 m from the place of refuelling).
- Fuel cannot be stored for an unlimited period of time. Buy only as much as will be consumed in the near future.
- Use only approved and marked containers for the transport and storage of fuel and chain oil. Ensure children have no access to fuel or chain oil.



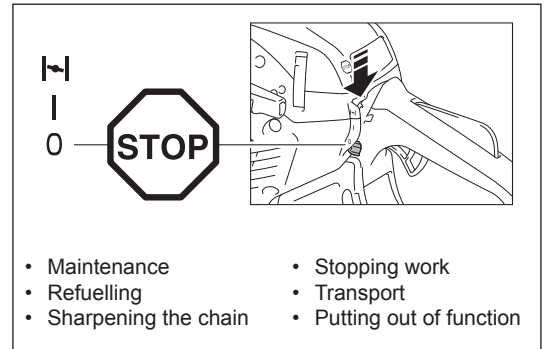
Putting into operation

- **Do not work on your own. Another person must be nearby in case of emergencies** (within shouting distance).
- Ensure that there are no children or other people within the working area. Pay attention to any animals in the working area, as well.
- **Before starting work the chain saw must be checked for perfect function and operating safety according to the prescriptions. Never use a chain saw with defects.** Check especially the function of the chain brake, the correct mounting of the guide bar, the correct sharpening and tightening of the chain, the firm mounting of the chain cover, the easy motion of the throttle trigger and the function of the throttle trigger lock-out, the cleanliness and dryness of the handles, and the function of the combination switch.
- When you drop the chain saw or it gets other impacts, stop using the tool immediately and perform inspection for identify significant damage or defects.
- Put the chain saw only into operation if it is completely assembled. Never use the chain saw when it is not completely assembled.
- Check your personal protective equipment.
- Put the chain saw into operation only as described in this instruction manual. Other starting methods are not allowed.
- Before starting the chain saw ensure that you have a safe footing.
- When starting the chain saw it must be well supported and securely held. The guide bar and chain must not be in contact with any object.
- Check chain oil reaches sufficiently to the chain.



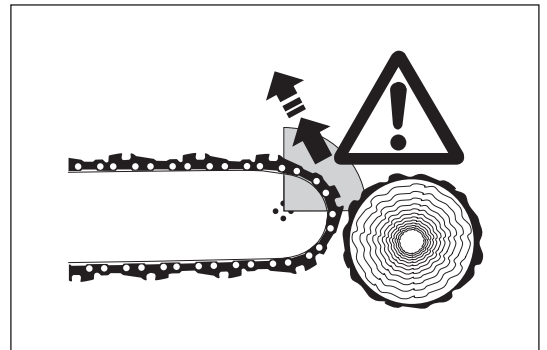
Operation

- **When working with the chain saw always hold it with both hands.** Take the rear handle with the right hand and the front handle with the left hand. Hold the handles tightly with your thumbs facing your fingers.
- **⚠ CAUTION: When releasing the throttle trigger the chain will keep on running for a short period of time (free-wheeling).**
- Continuously ensure that you have a safe footing.
- Hold the chain saw such that you will not breathe in the exhaust gas. Do not work in closed rooms (danger of poisoning).
- **Switch off the chain saw immediately if you observe any changes in its operating behavior.**
- **The engine must be switched off before checking the chain tension, tightening the chain, replacing it or clearing malfunctions.**
- When the sawing device is hit by stones, nails or other hard objects, switch off the engine immediately and check the sawing device.
- When stopping work or leaving the working place, switch off the chain saw and put it down such that nobody is endangered.
- **⚠ CAUTION: Do not put the overheated power chain saw in dry grass or on any inflammable objects. The muffler is very hot (danger of fire).**
- **CAUTION:** Oil dropping from the chain or guide bar after having stopped the saw chain will pollute the soil. Always use an appropriate base.



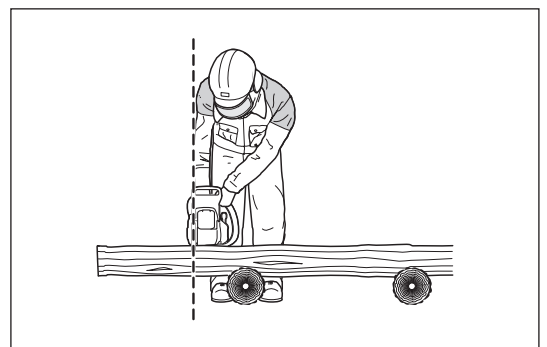
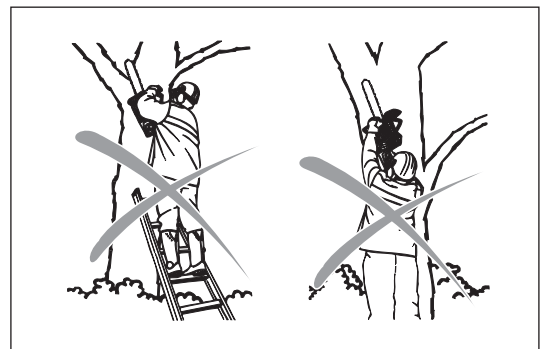
Kickback

- When working with the chain saw dangerous kickbacks may occur.
- Kickback occurs when the upper part of the end of the guide bar inadvertently touches wood or other hard objects.
- This causes the saw to be thrown back toward the user with great force and out of control. **Risk of injury!**
- **In order to prevent kickback, follow these rules:**
 - Only specially-trained persons should perform plunge cuts, i.e., piercing timber or wood with the tip of the saw!
 - Never apply the end of the bar when starting to make a cut.
 - Always observe the end of the guide bar. Be careful when continuing an already started cut.
 - When starting to cut the chain must be running.
 - Ensure that the chain is always sharpened correctly. Pay special attention to the height of the depth limiter.
 - Never cut several branches at the same time. When cutting a branch ensure that no other branch is touched.
 - When crosscutting a trunk be aware of the trunks next to it.



Working behavior/Method of working

- Only use the chain saw during good light and visibility periods. Be aware of slippery or wet areas, and of ice and snow (risk of slipping). The risk of slipping is extremely high when working on recently peeled wood (bark).
- Never work on unstable surfaces. Make sure that there are no obstacles in the working area, risk of stumbling. Always ensure that you have a safe footing.
- Never saw above your shoulder height.
- Never saw while standing on a ladder.
- Never climb up into trees to perform sawing with the chain saw.
- Do not work leaning too far over.
- Guide the chain saw in such a way that no part of your body is within the elongated swivelling range of the saw.
- Use the chain saw for sawing wood only.
- Avoid touching the ground with the chain saw while it is still running.
- Never use the chain saw for lifting up or removing pieces of wood or other objects.
- Remove foreign objects such as sand, stones and nails found within the working area. Foreign objects may damage the sawing device and can cause dangerous kickback.
- When sawing pre-cut timber use a safe support (sawing jack). Do not steady the workpiece with your foot, and do not allow anyone else to hold or steady it.
- Secure round pieces against rotation.

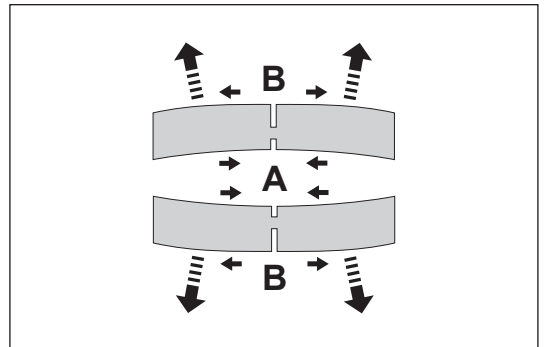
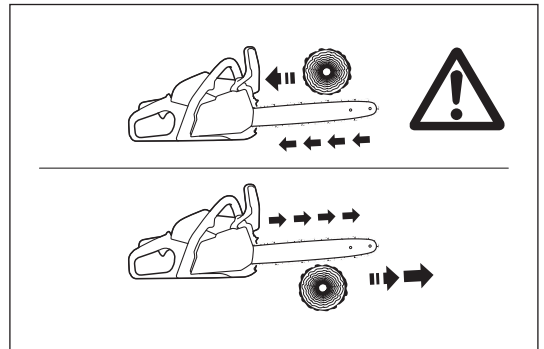
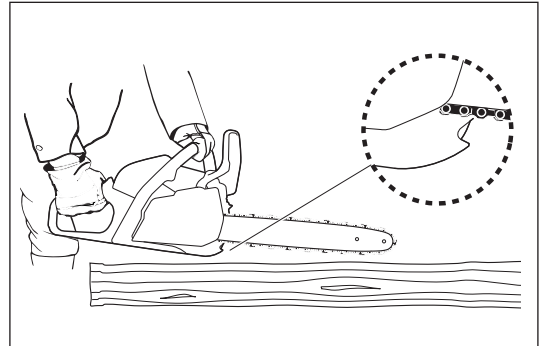
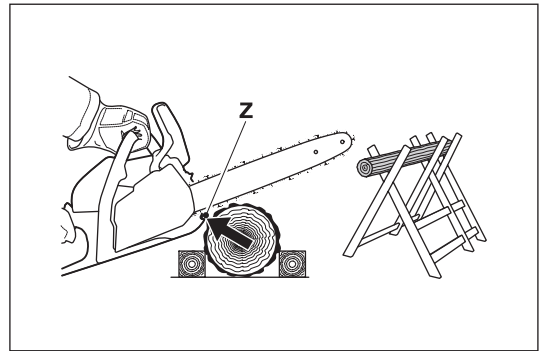


- For cutting down trees or performing crosscuts the spike bumper (Z) must be applied to the wood to be cut.
- Before performing a **crosscut** firmly apply the spike bumper to the timber, only then can the timber be cut with the chain running. For this the chain saw is lifted at the rear handle and guided with the front handle. The spike bumper serves as a centre of rotation. Continue by slightly pressing down the front handle and simultaneously pulling back the chain saw. Apply the spike bumper a little bit deeper and once again lift the rear handle.
- **When the timber must be pierced for cutting or longitudinal cuts are to be performed it is urgently recommended to have this carried out by specially trained persons only** (high risk of kickback).
- Do **longitudinal - lengthwise - cuts** at the lowest possible angle. Be very careful when doing this type of cut, as the spike bumper cannot grip.
- The saw must be running whenever you remove the chain saw from the wood.
- When performing several cuts the throttle trigger must be released in between.
- Be careful when cutting splintery wood. Cut pieces of wood may be pulled along (risk of injuries).
- When cutting with the upper edge of the guide bar, the chain saw may be pushed in the direction of the user if the chain gets clamped. For this reason use the lower edge of the bar whenever possible. The chain saw will then be pushed away from you.
- If the timber is under tension, first cut the pressure side (A). Then the crosscut can be performed on the tension side (B). Thus clamping of the guide bar can be avoided.

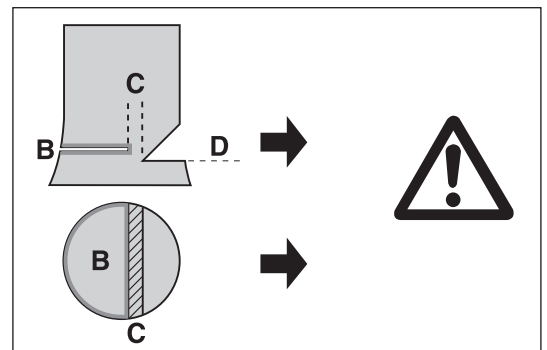
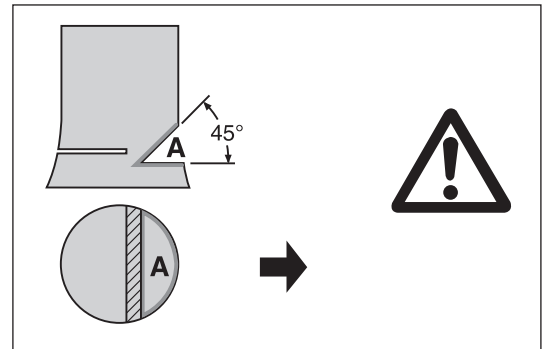
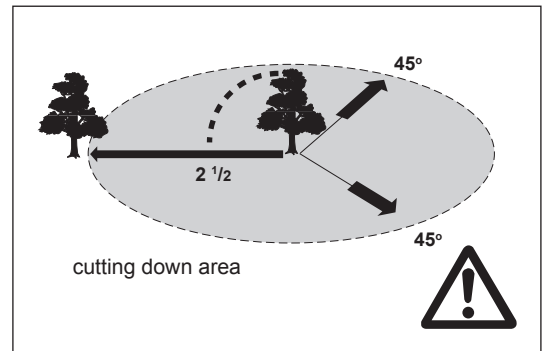
⚠ CAUTION:

People felling trees or cutting of branches must be specially trained. High risk of injuries!

- When cutting of branches, the chain saw should be supported on the trunk. Do not use the end of the bar for cutting (risk of kickback).
- Be aware of branches under tension. Do not cut free branches from below.
- Never perform detensioning cuts while standing on the trunk.

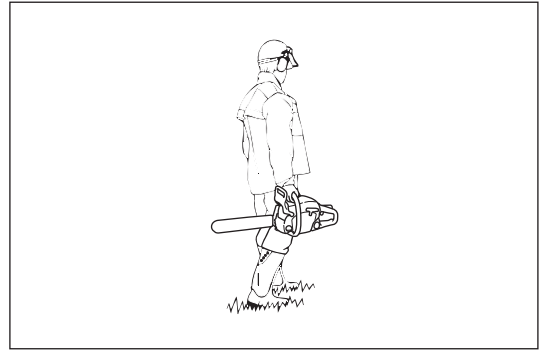


- **Before cutting down a tree ensure that**
 - a) only those people are within the working area which are actually involved in cutting down the tree.
 - b) every worker involved can withdraw without stumbling (the people should withdraw backwards in a diagonal line, i. e. at a degree of 45°).
 - c) the bottom part of the trunk is free from foreign objects, underbrush and branches. Make sure to have a safe footing (risk of stumbling).
 - d) the next working place is at least 2 1/2 tree lengths away. Before cutting down the tree check the direction of fall and make sure that there are neither people nor objects within a distance of 2 1/2 tree lengths.
- **Judging the tree:** Direction of hanging - loose or dry branches - height of the tree - natural overhang - is the tree rotten?
- Take into account the direction and speed of the wind. If strong gusts are occurring, do not do any felling.
- **Cutting the roots:** Start with the strongest root. First do the vertical and then the horizontal cut.
- **Notching the trunk:** The notch (A) determines the direction of fall and guides the tree. The trunk is notched perpendicular to the direction of fall and penetrates 1/3 - 1/5 of the trunk diameter. Perform the cut near the ground.
- When correcting the cut, always do so over the whole width of the notch.
- **Cut down** the tree above the bottom edge of the notch (D). The cut must be exactly horizontal (B). The distance between both cuts (C) must be approx. 1/10 of the trunk diameter.
- The **material between both cuts** serves as a hinge. Never cut it through, otherwise the tree will fall without any control. Insert felling wedges in time.
- Secure the cut only with wedges made of plastic or aluminium. Do not use iron wedges. If the saw hits an iron wedge the chain can be seriously damaged or torn.
- When cutting down a tree always stay sideways of the falling tree.
- When withdrawing after having performed the cut, be alert for falling branches.
- When working on sloping ground the user of the chain saw must stay above or sideways of the trunk to be cut or the tree already cut down.
- Be alert for trunks which may roll towards you.



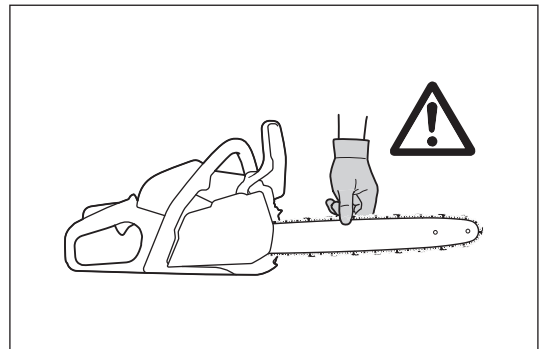
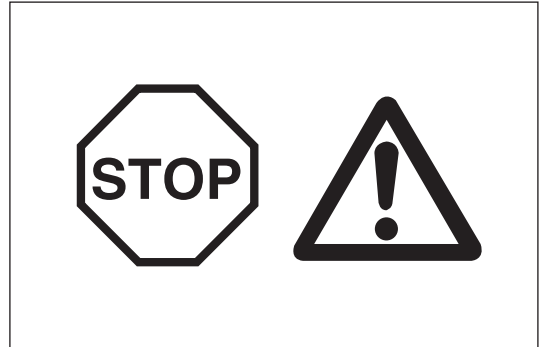
Transport and storage

- **When changing your location during work switch off the chain saw and actuate the chain brake in order to prevent an inadvertent start of the chain.**
- **Never carry or transport the chain saw with the chain running. When the saw is hot, do not cover it (with a tarp, blanket, newspaper or the like). Let the saw cool down before putting it in a storage case or vehicle. Saws with catalytic converter take longer to cool down!**
- Use the chain protection cover during transport and storage.
- Carry the chain saw with the front handle. The guide bar points backwards. Avoid coming in contact with the muffler (danger of burns).
- Ensure safe positioning of the chain saw during car transportation to avoid fuel leakage, damage or injury.
- Store the chain saw safely in a dry place. It must not be stored outdoors. Keep the chain saw away from children.
- Before storing the chain saw over a long period of time or shipping it, the fuel and oil tanks must be completely emptied.
- Perform cleaning and maintenance before storage.



Maintenance

- **Before performing maintenance work switch off the chain saw and pull out the plug cap.**
- Before starting work always check the operating safety of the chain saw, in particular the function of the chain brake. Make sure that the chain is always sharpened and tightened correctly.
- Operate the chain saw only at a low noise and emission level. For this ensure the carburetor is adjusted correctly.
- Regularly clean the chain saw.
- Regularly check the tank cap for tightness.
- **Observe the accident prevention instructions issued by trade associations and insurance companies.**
- **Do not perform any modifications on the chain saw. You will put your safety at risk.**
- Perform only the maintenance and repair works described in the instruction manual. All other work must be carried out by Makita Service.
- Use only original Makita spare parts and accessories.
- Using spare parts other than original Makita parts or accessories and guide bar/chain combinations or lengths which are not approved bring a high risk of accidents. We cannot accept any responsibility for accidents and damage resulting from using sawing devices or accessories which have not been approved.



Vibration

Individuals with poor circulation who are exposed to excessive vibration may experience injury to blood vessels or the nervous system.

Vibration may cause the following symptoms to occur in the fingers, hands or wrists: "Falling asleep" (numbness), tingling, pain, stabbing sensation, alteration of skin color or of the skin.

If any of these symptoms occur, see a physician! To reduce the risk of vibration white finger, keep your hands warm, wear gloves, and make sure the saw chain is sharp.

First Aid

In case of accident make sure that a first-aid box is available in the vicinity of the cutting operations. Immediately replace any item taken from the first aid box.

When asking for help, please give the following information:

- Place of accident
- What happened
- Number of injured persons
- Kind of injuries
- Your name



For European countries only

EC Declaration of Conformity

The EC declaration of conformity is included as Annex A to this instruction manual.

TECHNICAL DATA

Model		EA3600F	EA3601F
Overall length (without guide bar)	mm	388	
Net weight	kg	4.2	
Stroke volume	cm ³	35.2	
Bore	mm	38	
Stroke	mm	31	
Max. power at speed	kW/min ⁻¹	1.7/9,500	
Max. torque at speed	Nm/min ⁻¹	1.9/6,600	
Idling speed/max. engine speed with bar and chain	min ⁻¹	2,900/13,500	
Clutch engagement speed	min ⁻¹	4,100	
Carburetor	Type	Diaphragm	
Spark plug	Type	NGK BPMR 8Y	
Electrode gap	mm	0.7	
Fuel tank capacity	cm ³	310	
Chain oil tank capacity	cm ³	260	
Mixture ratio (fuel/two stroke oil) Makita genuine oil or quality grade JASO FC (ISO EGC) or upper		50:1	
Chain brake		Engages manually or in case of kickback.	
Chain speed	m/s	24.1	
Sprocket pitch	mm (inch)	0.95 (3/8)	
Number of teeth	Z	6	
Sound pressure level at the workplace L _{PA, eq} per ISO 22868 ¹⁾	dB (A)	97.1	
	K _{PA}	2.5	
Sound power level L _{WA, FI + Ra} per ISO 22868 ²⁾	dB (A)	109.6	
	K _{WA}	2.5	
Vibration acceleration a _{hV, eq} per ISO 22867 ¹⁾	front handle	m/s ²	2.7
		K	2.0
	rear handle	m/s ²	2.8
		K	2.0

1) Figures derived in equal part from idling, full-load and racing speed.

2) Figures derived in equal part from full-load and racing speed.

- Due to our continuing program of research and development, the specifications herein are subject to change without notice.
- Specifications may differ from country to country.

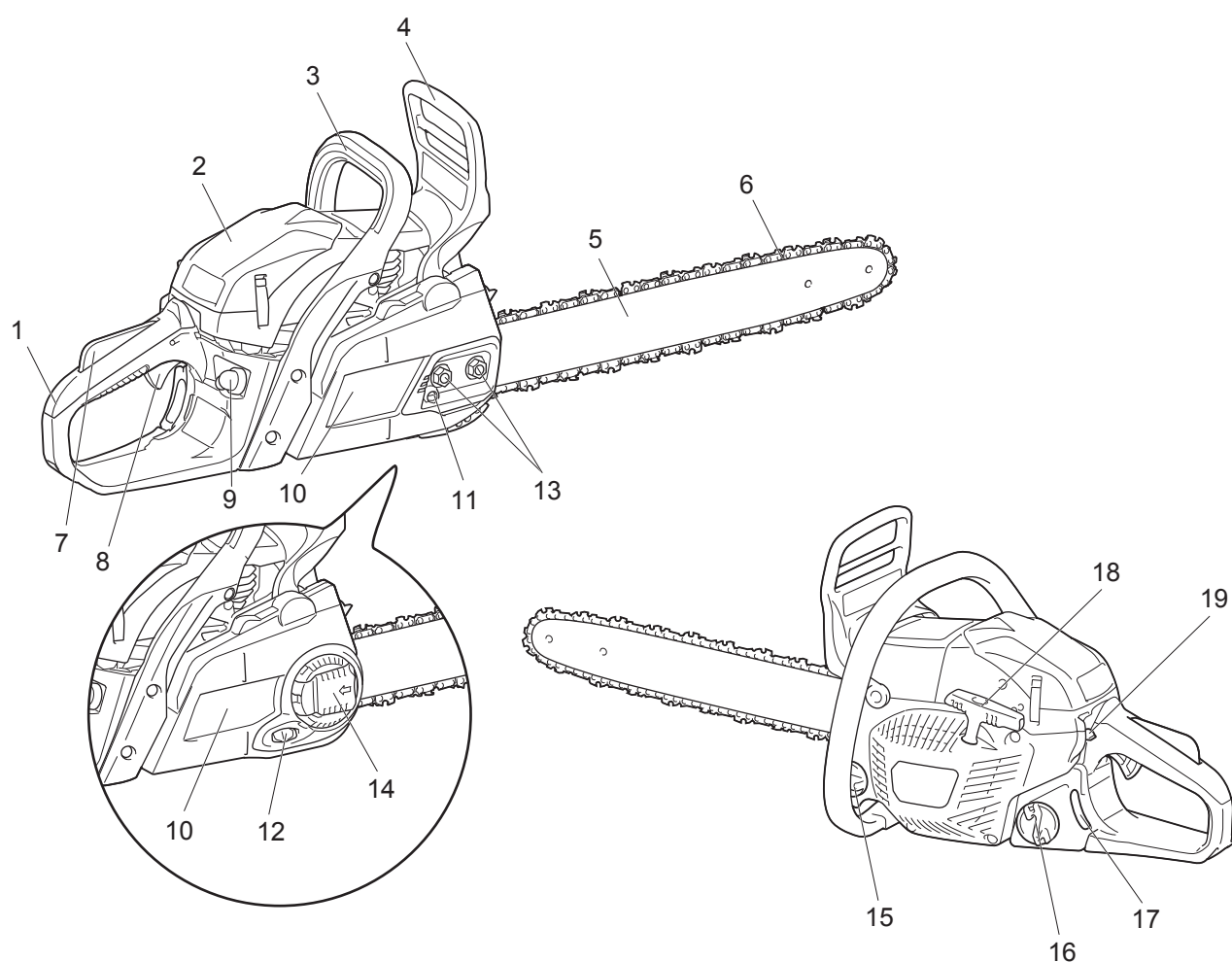
Guide bar and saw chain

Guide bar type		Sprocket nose bar	
Length		350 mm	400 mm
Cutting length		325 mm	360 mm
Saw chain	Type	91PX	
Pitch		3/8"	
Gauge		1.3 mm (0.05")	
No. of drive links		52	56

WARNING:

Use appropriate combination of the guide bar and saw chain. Otherwise personal injury may result.

DESIGNATION OF PARTS



	Designation of parts
1	Rear handle
2	Cleaner cover
3	Front handle
4	Front hand guard
5	Guide bar
6	Saw chain
7	Throttle trigger lock-out
8	Throttle trigger
9	Fuel pump (Primer)
10	Chain cover
11	Chain adjusting screw
12	Chain adjusting dial
13	Retaining nuts
14	Lever
15	Oil tank cap
16	Fuel tank cap
17	Fuel level gauge
18	Starter grip
19	Combination switch

CHAIN SAW'S SAFETY FUNCTION

⚠ WARNING:

- Following safety functions does NOT guarantee all time protection from injury.
Only proper usage and technique can reduce the risk of kickback and other dangerous accidents.
- Always check the safety functions before use.
- If the chain saw fails any of the checking, switch off the engine immediately, and do NOT use the chain saw. Contact Makita authorized service center.

Chain brake

The chain brake is designed to stop the chain to standstill within a fraction of a second. It is activated when the kickback is sufficiently strong.
To engage the chain brake manually, push the front hand guard forward (forwards the tip of the saw) with your left hand.

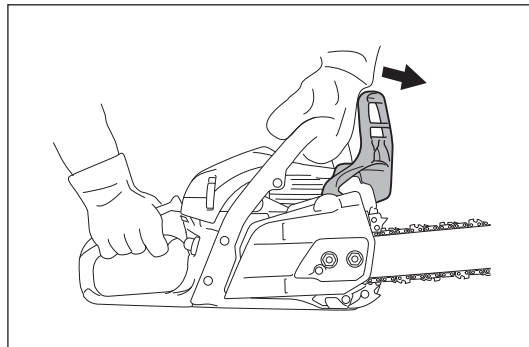
To release the chain brake, pull the front hand guard towards backward (towards you).

NOTICE:

- Do not accelerate the engine with the chain brake actuated (except for testing).
- Always release the chain brake before starting the operation.

Checking the chain brake

1. Run the engine at idle speed.
2. Hold the chain saw with both hands. Hold the rear handle with your right hand, the front handle with your left. Make sure that the guide bar and the chain do not contact with any object.
3. Push the front hand guard using the back of your hand, until the chain brake engages.
4. Accelerate till engine reaches full throttle for less than 3 seconds. Make sure that the saw chain does not move at all.
5. Bring the engine back to idle and release the chain brake.



Checking the brake band

The brake band is at the back of the chain cover. Chain brake wears out in course of time. Have it checked and serviced by Makita authorized service center at least every 3 month.

Throttle trigger lock-out

Throttle trigger lock-out is designed to prevent accidental start. You can pull the throttle trigger only when the throttle trigger lock-out is pressed (i.e. when you grasp the handle).

Checking throttle trigger lock-out

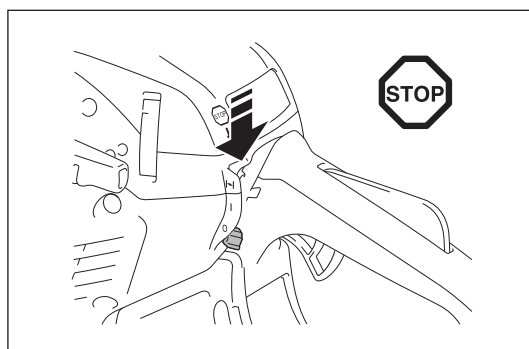
Check the throttle trigger lock-out returns its original position after releasing your hand from the rear handle.

Engine stop

Make sure that the engine stops when you intend to.

Checking the engine stop

Start the engine. Then release the throttle trigger, and press down the combination switch to lower (O) position.

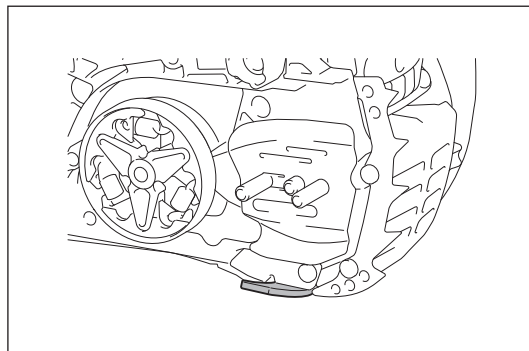


Chain catcher

Chain catcher is designed to catch the chain in case the saw chain jumps from the guide bar. The saw chain should not jump if it is properly tensioned. Always check and adjust the tension of the saw chain in accordance with this instruction manual.

Checking chain catcher

Check the chain catcher is not damaged and securely sits on the housing.



ASSEMBLY

⚠ WARNING:

- Before performing any work on the guide bar or saw chain, always switch off the engine and make sure that the cutting tool is stopped.
- Always wear protective gloves.

⚠ CAUTION:

- Start the chain saw only after having assembled it completely and inspected.

Installing guide bar and saw chain

NOTICE:

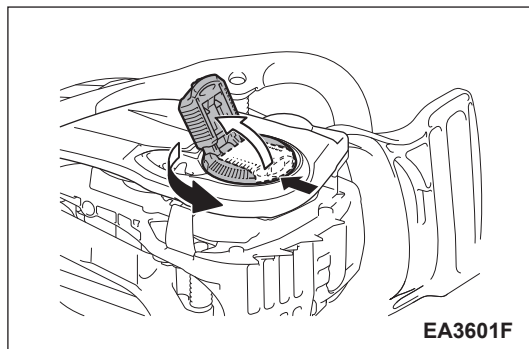
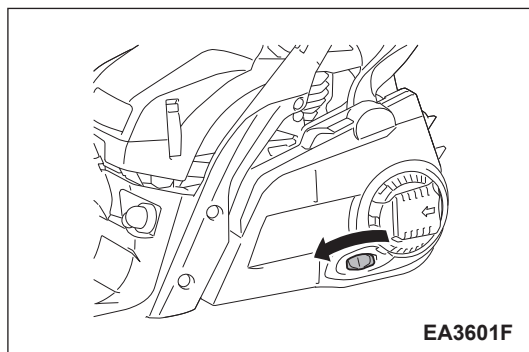
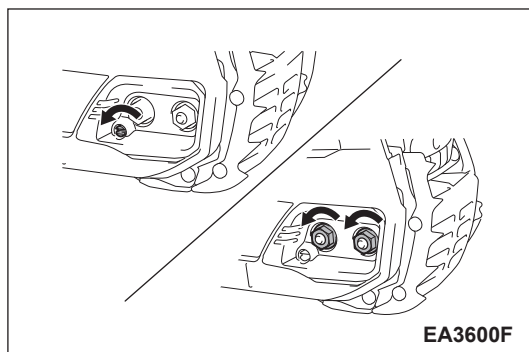
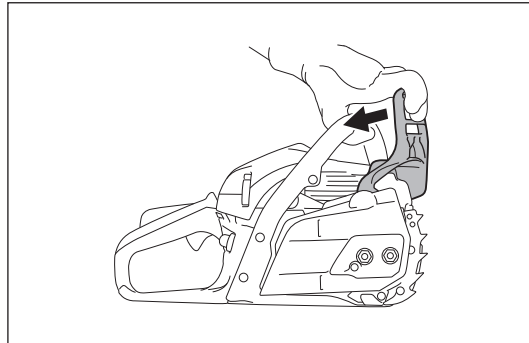
- Installing or removing saw chain should be carried out in a clean place free from sawdust or other foreign material.

Put the chain saw on a stable surface and carry out the following steps:

1. Release the chain brake by pulling the front hand guard.
2. Loosen chain tension fully.
3. (For model EA3600F) Unscrew the retaining nuts.
(For model EA3601F) Press and fully open the lever until it stops. Turn the lever counterclockwise.
4. Remove the chain cover.

NOTICE:

- You can not remove the chain cover without releasing the chain brake.



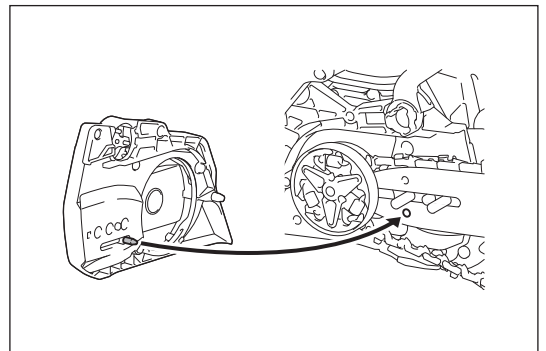
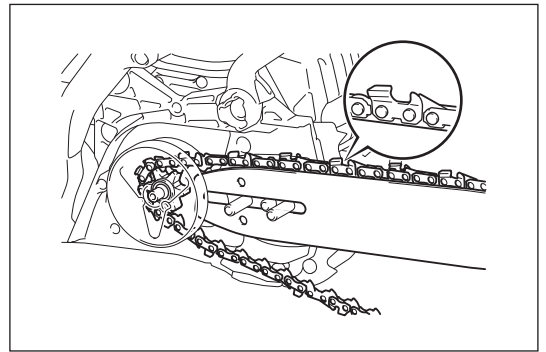
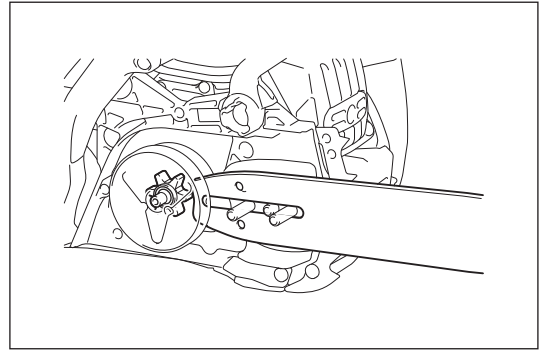
5. Place the guide bar over the bar bolts.
6. Check the direction of the saw chain. The arrows on the saw chain must point the same direction as the arrow on the saw housing.
7. Fit the saw chain at the sprocket first, then fit the saw chain on the guide bar tip.
8. Place the chain cover as the adjusting pin come on the hole on the guide bar.

NOTICE:

- Lift the saw chain over the chain catcher.
9. (For model EA3600F) Tighten the retaining nuts to secure the chain cover, then loosen them a bit for tension adjustment.
(For model EA3601F) Turn the lever clockwise to secure the chain cover, then loosen them a bit for tension adjustment.
 10. Adjust the saw chain tension. (See the section "Adjusting saw chain tension" step 3 and after.)

NOTE:

- In order to gain uniform wear of the guide bar, turned it over when replacing the chain.



Adjusting saw chain tension

⚠ CAUTION:

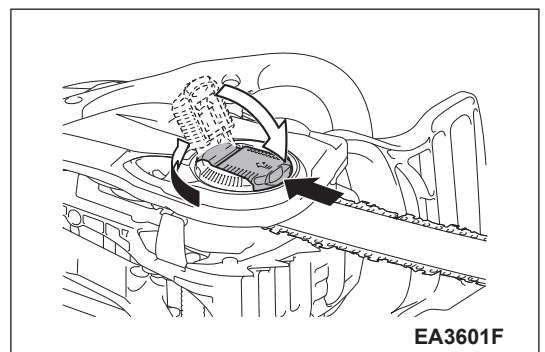
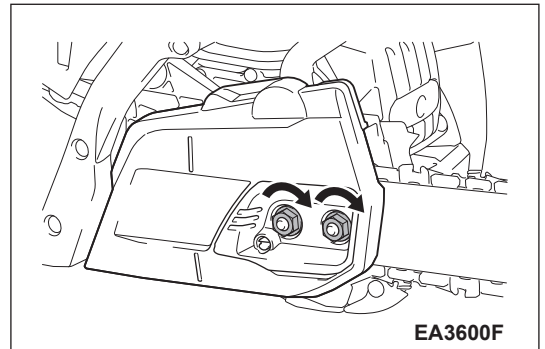
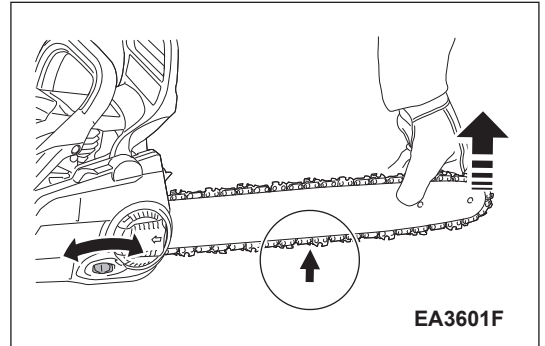
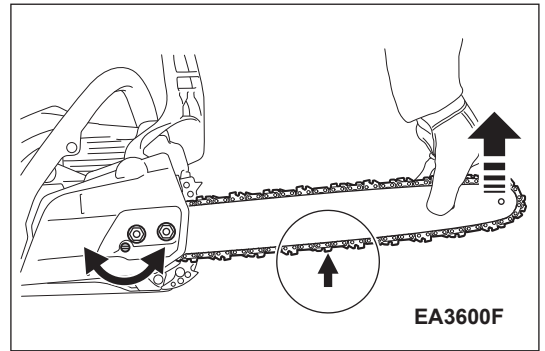
- Excessively loose saw chain may jump off the bar, and therefore presents an accident risk. If the saw chain is too loose, adjust it.
- Excessively high tension of saw chain may cause breakage of saw chain, wear of the guide bar and breakage of the adjusting screw/dial.

The saw chain may become loose after many hours of use. When you change the saw chain or after some hours of operation, check the saw chain tension before use. Properly adjusted saw chain contributes good performance and tool's long life. The tension of the chain is correct if the chain rests against the bottom side of the guide bar and can still be easily turned by hand.

Check the chain tension frequently, new chain tends to become longer during use.

To adjust tension of the saw chain, perform the following procedure:

1. Release the chain brake by pulling the front hand guard.
2. (For model EA3600F) Unscrew the retaining nuts a bit to loosen the chain cover.
(For model EA3601F) Press and fully open the lever until it stops. Turn the lever counterclockwise a bit to loosen the chain cover.
3. Slightly lift and hold the tip of the guide bar.
4. (For model EA3600F) Turn the chain adjusting screw to adjust the saw chain tension.
(For model EA3601F) Turn the chain adjusting dial to adjust the saw chain tension.
5. Adjust the chain tension until the lower side of the saw chain fits in the guide bar rail (see circle in the figure).
During adjusting the chain tension, keep lifting up the tip of the guide bar.
6. Keep holding the guide bar lightly, and tighten the chain cover after adjusting the chain tension.
(For model EA3600F) Tighten the retaining nuts to secure the chain cover.
(For model EA3601F) Turn the lever fully clockwise to secure the chain cover. Then press and close the lever.
7. Make sure that the saw chain does not loose at lower side but it fits snugly against the lower side of the bar.



BEFORE USE

WARNING:

- AVOID SKIN AND EYE CONTACT. Mineral oil products degrease your skin. If your skin comes in contact with these substances repeatedly and for an extended period of time, it may dry your skin. Various skin diseases may result. In addition, allergic reactions are known to occur. Eyes can be irritated by contact with oil. If oil comes into your eyes, immediately wash them with clear water. If your eyes are still irritated, see a doctor immediately.

Fuel

CAUTION:

- Be especially careful when handling gasoline.
- Do not smoke. Keep tool well away from open flames, spark, or fire (explosion hazard).

Fuel mixture

This tool is powered by a high-performance air-cooled two stroke engine. It runs on a mixture of gasoline and two-stroke engine oil.

The engine is designed for unleaded regular gasoline with a min. octane value of 91 RON (89 AKI), and ethanol contained no more than 10%. In case no such fuel is available, you can use fuel with a higher octane value. This will not affect the engine.

In order to obtain an optimum engine output and to protect your health and the environment use unleaded fuel only.

To lubricate the engine, use synthetic oil for two-stroke air-cooled engines (Makita genuine oil or quality grade JASO FC (ISO EGC) or upper). Mix engine oil with fuel.

CAUTION:

- Do not use ready-mixed fuel from petrol stations.

The correct mixture ratio: 50:1 i.e. mix 50 parts gasoline with 1 part oil.

NOTE:

- For preparing the fuel-oil mixture first mix the entire oil quantity with half of the fuel required, then add the remaining fuel. Thoroughly shake the mixture before filling it into the chain saw tank.

Do not add more engine oil than specified. Incorrect mixture ratio of oil results in making more polluting combustion residues. It also causes clog exhaust channel in the cylinder and muffler, and causes poor performance and excessive fuel consumption.

The Storage of Fuel

Fuels have a limited storage life. Fuel mixtures age through evaporation, especially at high temperatures. Aged fuel and fuel mixtures can cause starting problems and damage the engine. Purchase only that amount of fuel, which will be consumed over the next few months. At high temperatures, once fuel has been mixed it should be used up in 6-8 weeks.

Preserve fuel only in proper containers, in dry, cool, secure locations.

Chain oil

Use oil with adhesive additive for lubricating the chain and guide bar. The adhesive additive prevents the oil from being flung off the chain too quickly.

We recommend the use of Makita genuine chain oil or chain oil which is bio-degradable in order to protect the environment. The use of bio-degradable oil may even be required by local regulations.

Bio-degradable oil is stable only for a limited period of time. Use it within 2 years from the date of manufacture (printed on the container).

Important note on bio-degradable chain oils

If you are not planning to use the saw again for an extended period of time, empty the oil tank and put in a small amount of regular engine oil (SAE 30), and then run the saw for a time. This is necessary to flush out all remaining bio-degradable oil from the oil tank, oil-feed system, chain and guide bar, as many such oils tend to leave sticky residues over time, which can cause damage to the oil pump or other parts.

NEVER USE WASTE OIL

Waste oil is very dangerous for the environment.

Waste oil contains high amounts of carcinogenic substances.

Residues in waste oil result in extreme wear and scuff at the oil pump and the sawing device.

In case of damage caused by using waste oil or inappropriate chain oil the product warranty will be void.

Refuelling and refilling chain oil

⚠ WARNING:

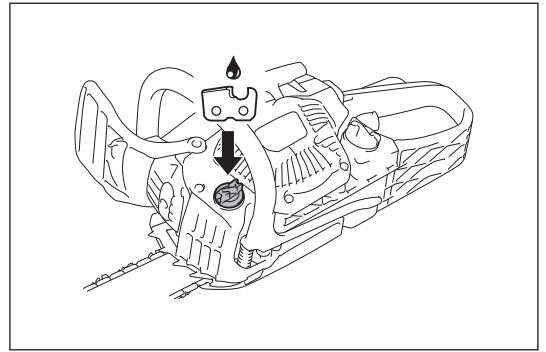
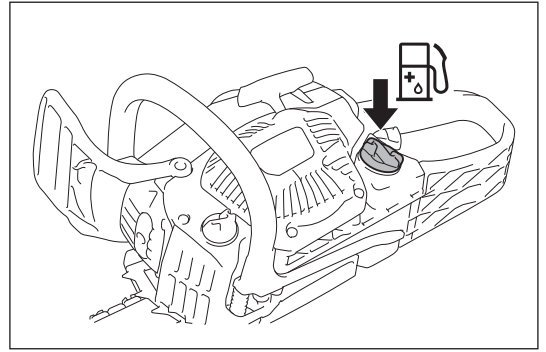
- FOLLOW THE SAFETY PRECAUTIONS. Be careful and cautious when handling fuels.
- Switch off the engine.

⚠ CAUTION:

- Clean the tank cap and the area around the tank after refuelling.

Refuel or refill the chain oil as follows:

1. Thoroughly clean the area around the caps, to prevent dirt from getting into the fuel or oil tank.
2. Unscrew the cap and fill the each tanks with fuel (fuel/oil mixture) and chain oil respectively.
3. Fill up to the bottom edge of the filler neck. Be careful not to spill fuel or chain oil!
4. Tighten the tank caps by hand as far as it goes.



Lubricating the chain

⚠ WARNING:

- Check the chain oil tank only when the engine is switched off.

Make sure there is sufficient chain oil in the chain oil tank to provide good chain lubrication during operation.

At medium oil feed rate, the oil tank capacity is approximately equal to the run time of one tank of fuel.

Before operation or refueling, check the chain oil level and refill if necessary.

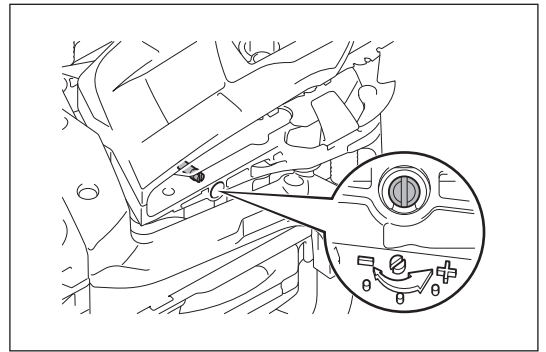
Adjusting the chain lubrication

⚠ WARNING:

- Switch off the engine.

You can adjust the oil pump feed rate with adjusting screw. There are three degrees of the oil pump feed rate, i.e. high, middle or low.

Adjusting screw locates at the bottom of the chain saw. Use a screwdriver and adjust the amount of oil delivery appropriately.



Cleaning the oil guide

To ensure secure operation of the oil pump, clean the oil guide groove at the housing and the oil feed hole in the guide bar regularly.

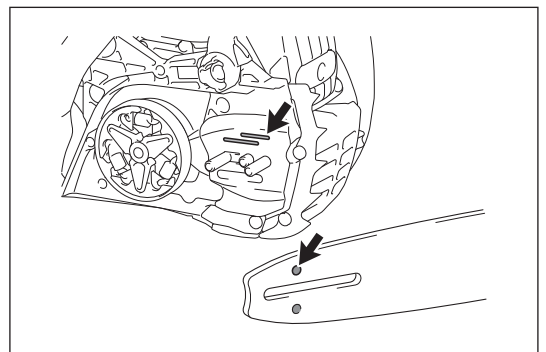
Checking the chain lubrication

⚠ CAUTION:

- Never work with the chain saw without sufficient chain lubrication. Otherwise the service life of the saw chain and guide bar is reduced.
- Before starting work check the oil level in the tank and the oil feed.
- Pay attention to the direction of the wind and avoid unnecessary exposure to the oil spray.

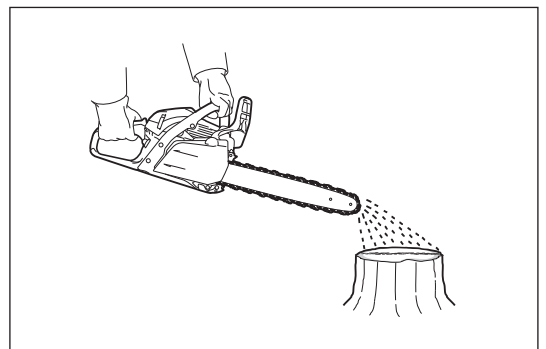
Check the oil feed rate as follows:

1. Start the chain saw.
2. Hold the running chain saw approx. 15 cm (6") above a trunk or the ground (use an appropriate base).
3. If the lubrication is sufficient, you can see light oil trace because oil is scattered off the chain.



NOTE:

- After turning off the chain saw, it is normal that residual chain oil drips from the oil feed system, the guide bar and the chain for a while. This does not mean a defect. Place the saw on a suitable surface.



STARTING AND STOPPING ENGINE

⚠ WARNING:

- Do not start the engine before the chain saw is completely assembled and checked.

⚠ CAUTION:

- Move at least 3 meters (10 ft.) away from the place where the chain saw is fuelled.
- Make sure you have a secure footing, and place the saw on the ground.
- Make sure the guide bar and saw chain does not touch anything.
- Do not forget to activate chain brake before starting the engine.

NOTICE:

- Never pull the rope to the full extension.
- Return the starter grip gently into the housing. Otherwise released starter grip may hit your body or it may not rewind appropriately.
- The engine must be put in idle immediately after starting. If not, the clutch can be damaged, ask authorized service center.

Starting the engine

- Activate the chain brake (lock).
- Hold the front handle firmly with left hand and press the chain saw against the ground.
- Hold down the rear handguard with your right foot.
- Start the engine in accordance with engine circumstances as follows.

Cold start

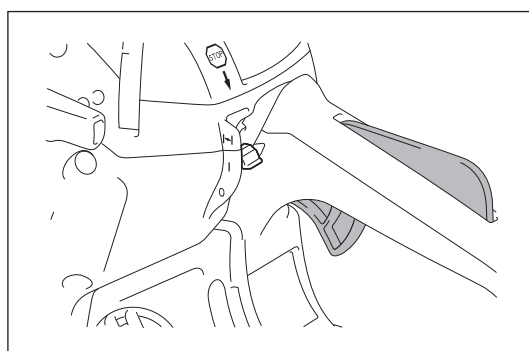
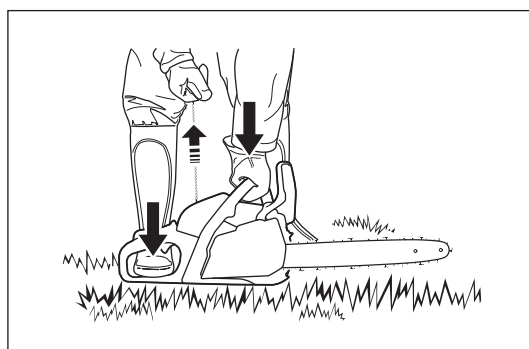
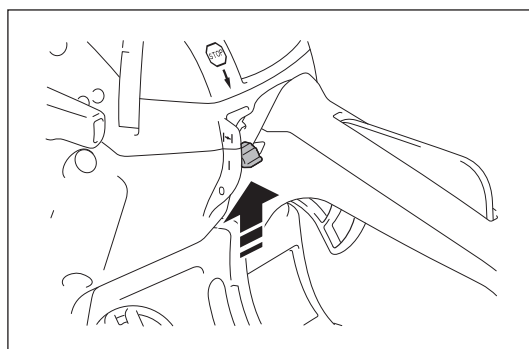
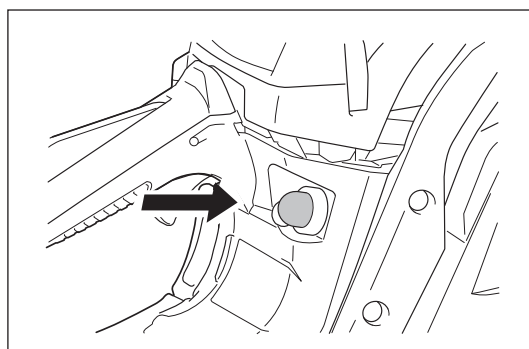
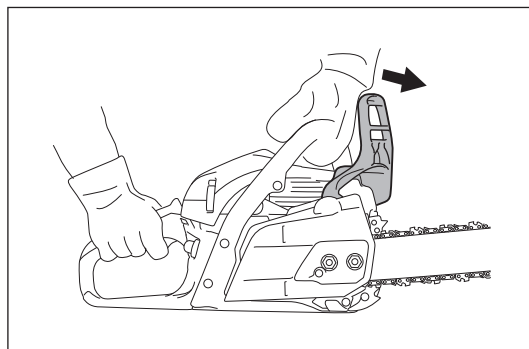
When the engine is not used just before starting, perform the following steps:

- Push the primer pump several times until fuel comes into the primer pump. (In general, 7 to 10 pushes.)
- Move up the combination switch (choke position). This also actuates the half-throttle lock.
- Pull the starter grip slowly until feeling compression. Then pull it strongly. It may take two to four attempts until engine fires.
- As soon as the engine fires, move the combination switch to the middle (I) position. Then pull the starter grip strongly again until the engine starts running.
- Grasp the rear handle (the throttle trigger lock-out is released by the grasp) and pull the throttle trigger for a little, and release it.
- Release the chain brake.

Warm start

When the engine is used just before starting and still warm, perform the following steps:

- Push the primer pump several times until fuel comes into the primer pump. (In general, 7 to 10 pushes.)
- Move up the combination switch (choke position), and then back to the middle (I) position.
- Pull the starter grip slowly until feeling compression. Then pull it strongly. It may take two to four attempts until engine starts. If the engine does not start, perform the steps of cold start (see the section "Cold start").
As soon as the engine starts running, grasp the rear handle (the throttle trigger lock-out is released by the grasp) and pull the throttle trigger for a little then release it.
- Release the chain brake.

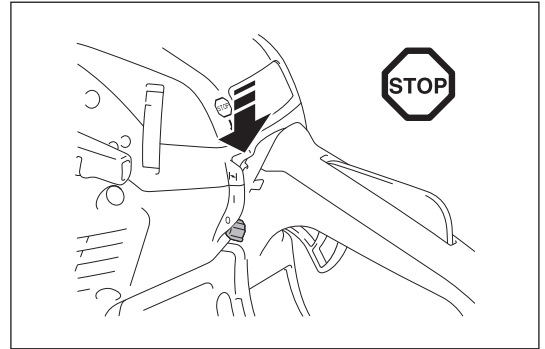


Stopping the engine

Release the throttle trigger, and then press down the combination switch to lower (O) position.

The combination switch reverts to (I) position automatically. The engine stops with this switch off, but is ready to start.

To cut off the ignition current, push the combination switch all the way down past the resistance point to lock it at (O) position.



Adjusting idle speed

⚠ WARNING:

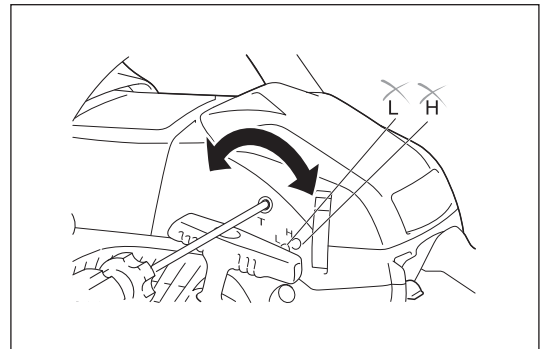
- Do not adjust idle speed before the chain saw is completely assembled and checked.
- If the saw chain still moves at idle speed even after adjustment, stop using the chain saw immediately, and bring it to Makita authorized service center for repair.

⚠ CAUTION:

- Do not adjust the screws (H) and (L) in the illustration.
- If the saw chain moves in idle without pulling throttle trigger, it is necessary to adjust the idle speed.

Adjust the idle speed as follows:

1. Start and warm up the engine for two or three minutes, but do not drive the engine at high speed.
2. To reduce the idle speed, turn the adjusting screw counterclockwise.
3. To increase the idle speed, turn the adjusting screw clockwise.
4. Make sure the saw chain does not move at idle speed.



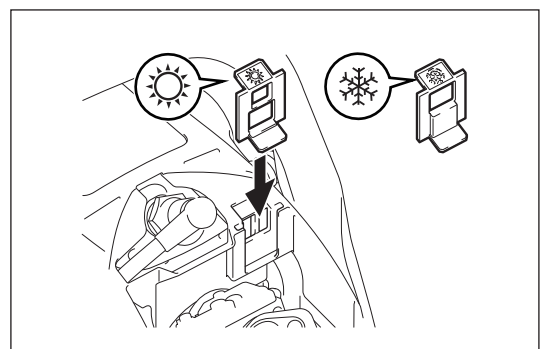
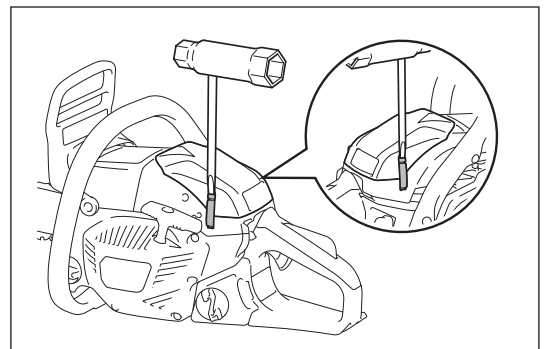
Prevention from carburetor icing

NOTICE:

- When environmental temperature is higher than 5°C, always return the shutter to normal (sun mark) setting. Otherwise the engine may be damaged by overheating.

When the environmental temperature is low (0°C - 5°C) and humidity is high, water vapor may freeze inside the carburetor and the engine drives unsteadily (carburetor icing). Change the setting of the shutter as follows if necessary.

1. Open the cleaner cover.
2. Pull out the shutter.
3. Set the shutter in anti-icing position (snow mark).
4. Return the cleaner cover.



MAINTENANCE

⚠ WARNING:

- Make sure that the chain saw is switched off the engine and pull the plug cap off the spark plug before performing maintenance or inspection.
- Wait until the engine cools down before performing any maintenance work.
- Always wear protective gloves.
- Start the chain saw only after having assembled and inspected it completely.
- Keep away from open flames and do not smoke.

⚠ CAUTION:

- To maintain product SAFETY and RELIABILITY, any repair, maintenance or adjustment work that is not included in this manual should be performed by Makita Authorized Service Centers. Always use Makita replacement parts.

Sharpening the saw chain

The chain needs sharpening when:

- Chips produced by cutting look like sawdust.
- The chain penetrates the wood only under great pressure.
- The cutting edge is visibly damaged.
- The saw is pulled to the left or right when sawing. This is caused by uneven sharpening of the chain.

NOTICE:

- Sharpen frequently, but without removing too much. Generally, two or three strokes of the file are enough.
- Have the chain resharpened at a service centre when you have already sharpened it yourself several times.

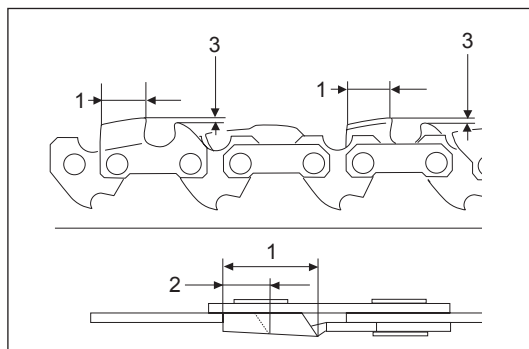
Proper sharpening

⚠ CAUTION:

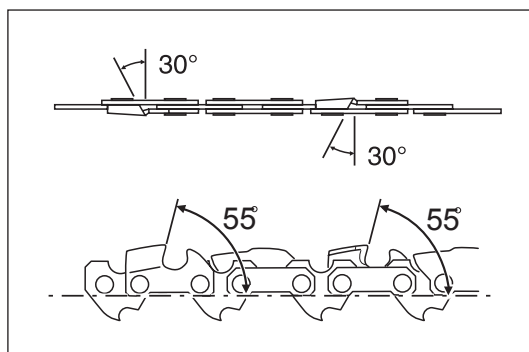
- Use only chains and guide bars designed for this saw.
- Excessive depth (3) increases the risk of kickback.

Sharpening criteria (for saw chain 91PX)

- Maintain all cutter parts (1) on the saw chain the same length. Cutter parts with different lengths result in rough running of the chain and can cause cracks in the chain.
- The minimum cutter length (2): 4 mm. Do not sharpen the chain when the cutter part length becomes less than 4 mm. At this point, replace the saw chain.
- The depth of the cut (3) is determined by the difference in height between the depth gauge (round nose) and the cutting edge.
- The best results are obtained with 0.64 mm (.025") of the depth.

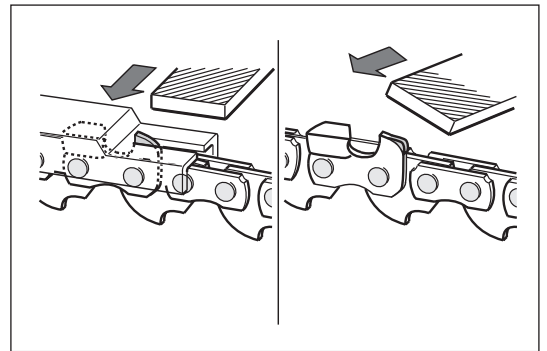
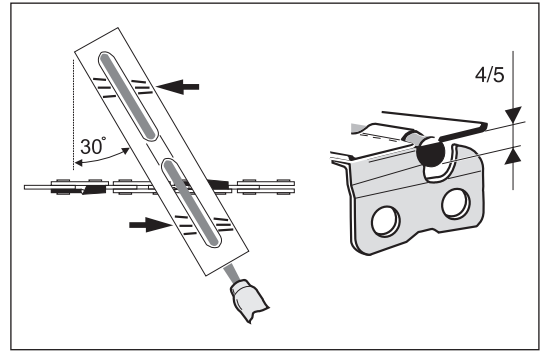
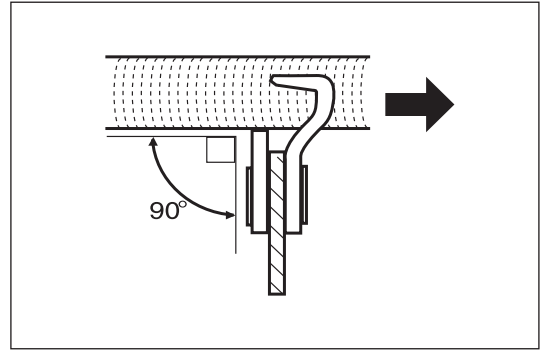


- Maintain the same sharpening angle of 30° for all the cutter parts.
- Use a proper round file so that proper sharpening angle of 55° is kept against the teeth.
- Sharpen the cutters with proper angle, otherwise it may cause rough and irregular chain running, and result in increasing wear and breakage of the saw chain.



Files and file guiding

- Use a special round file (optional accessory) for saw chains sharpening. Normal round files are not suitable.
- Use the round file of diameter 4.0 mm.
- The file should only engage the cutter part on the forward stroke. Lift the file off the cutter part on the return stroke.
- Sharpen the shortest cutter first. Then the length of this shortest cutter becomes the standard for all other cutters on the saw chain.
- Guide the file as shown in the figure.
- A file holder (optional accessory) makes file guidance easier. The file holder has markings for the correct sharpening angle of 30° . When using the file holder, align the markings parallel to the saw chain, and limit the filing depth to $4/5$ of the file diameter.
- After sharpening the chain, check the depth of the cut using the chain gauge tool (optional accessory).
- Remove the small excess with a special flat file (optional accessory).
- Round off the front of the depth gauge.



Cleaning the inside of the chain cover

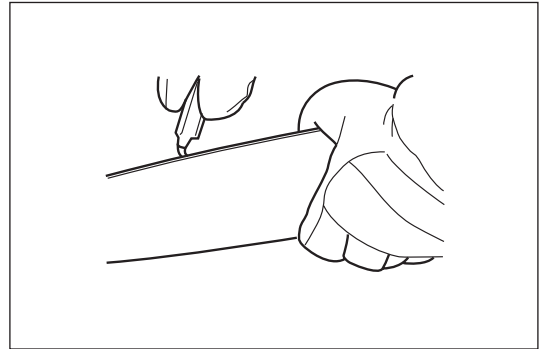
Remove the chain cover, the saw chain and guide bar.
Clean the inside of the chain cover with a brush.

NOTICE:

Make sure there are no residues or foreign matter remaining in the oil guide groove, chain tension pin, and brake band.

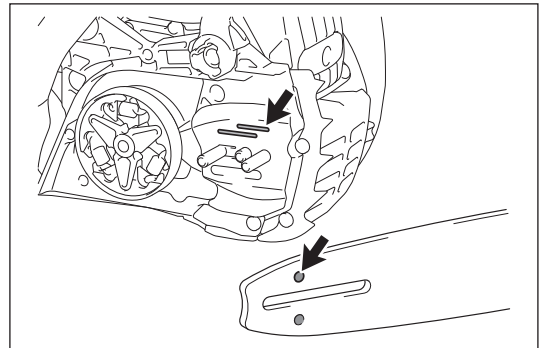
Cleaning the guide bar

Check the running surfaces of the bar regularly for damage. Clean it with using a suitable tool.



Cleaning the oil guide

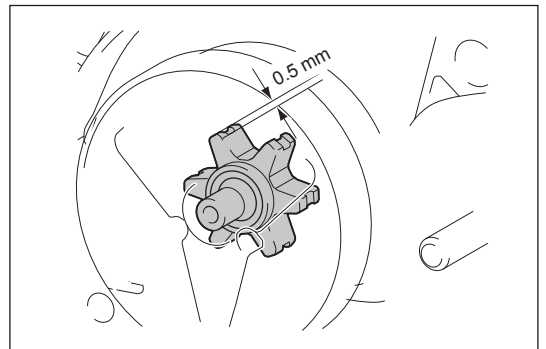
Clean the oil guide groove and oil feed hole in the bar at regular intervals.



Checking the sprocket

⚠ CAUTION:

A worn sprocket may damage a new saw chain. Do not use a new chain on a worn chain sprocket. Check the sprocket before installing a new saw chain. Ask Makita authorized service center for repair if there are any defect or if the sprocket is worn out more than 0.5 mm.



Cleaning the air cleaner

⚠ CAUTION:

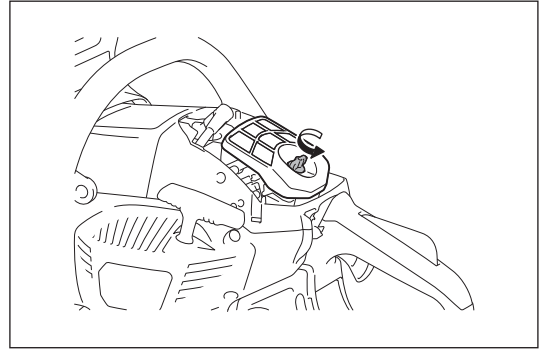
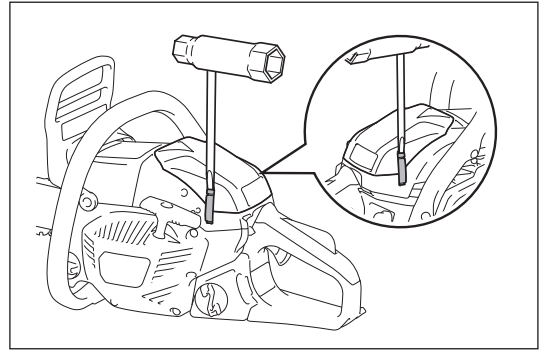
- Always wear eye protection.

To clean the air cleaner, perform following steps:

1. Move up the combination switch (choke position) to prevent dirt or foreign materials from falling into the carburetor.
2. Open two hooks with a flat screwdriver, and remove the cleaner cover.
3. Loosen the nut, and then remove the air cleaner.

NOTE:

- During cleaning, cover the opening with a clean cloth to prevent dirt or foreign materials from falling into the carburetor.
 - Replace the air cleaner immediately if it is damaged.
4. Tap it or clean it with a brush or air compressor to remove the dirt.
 5. If the air cleaner is very dirty, replace it to a new one.
 6. Return the air cleaner and cleaner cover by performing above steps in reverse.



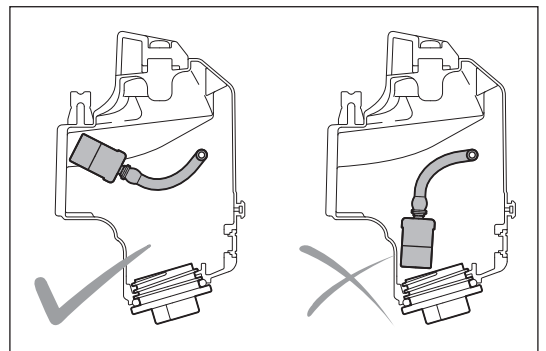
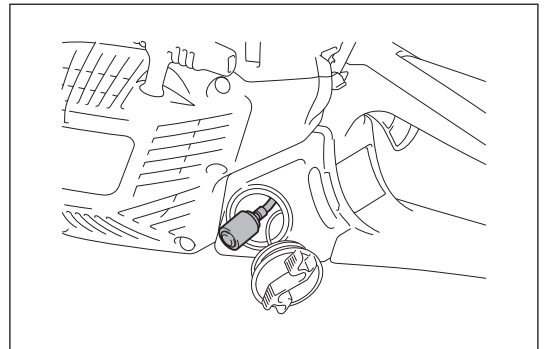
Cleaning the fuel filter

The fuel filter of the suction head is used to filter the fuel required by the carburetor. Perform visual inspection periodically.

1. Open the tank cap, use a wire hook and pull out the suction head through the tank opening.
2. If the filter is hard or clogged up, replace it.
3. After checking, cleaning or replacing, fix the fuel filter onto the fuel pipe with the hose clamp. Push the fuel filter in all the way to the bottom of the fuel tank.

NOTE:

- It is recommended to replace the fuel filter at least once every three months to ensure an enough fuel supply to the carburetor. Otherwise an insufficient fuel supply may cause the engine defects.

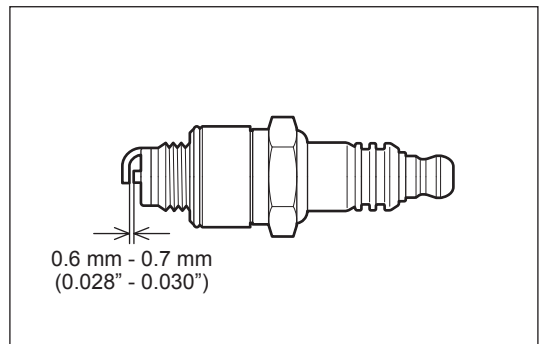


Checking the spark plug

⚠ CAUTION:

- Never touch the spark plug connector while the engine is running (danger of high voltage electric shock).

The gap between the two electrodes of the spark plug should be 0.6 mm - 0.7 mm (0.028" - 0.030"). If the gap is too wide or too narrow, adjust it. If the spark plug is clogged or contaminated, clean it thoroughly or replace it.



Cleaning the cylinder space

⚠ CAUTION:

- Always wear eye protection.

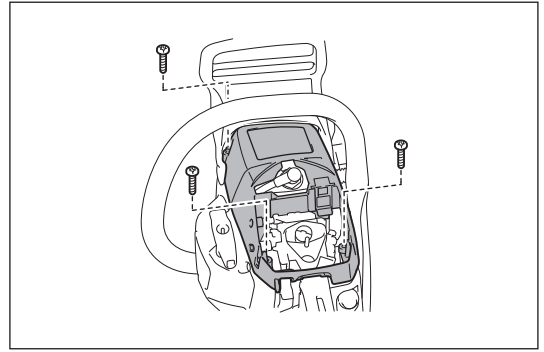
After long period of operation, dust may accumulate in cylinder space. It may cause overheating of the engine. Clean the cylinder space occasionally.

Perform cleaning as follows:

1. Open two hooks, and remove the cleaner cover.
2. Remove the air cleaner.

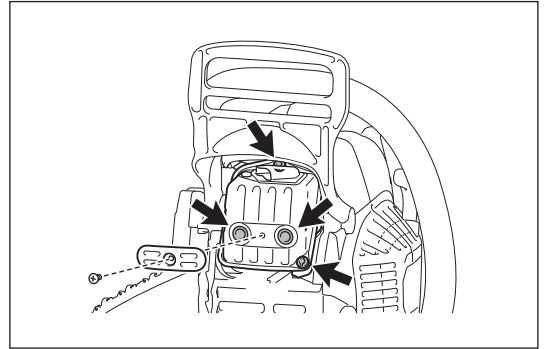
NOTE:

- During cleaning, cover the opening with a clean cloth to prevent dirt or foreign materials from falling into the carburetor.
3. Remove three screws and remove the cylinder cover. It is easier to remove the cylinder cover when the front hand guard is forward position.
 4. Clean the cylinder space and cylinder fins. Use a brush or air compressor if necessary.
 5. Return the cylinder cover, air cleaner, and cleaner cover after cleaning.



Checking the screws on the muffler

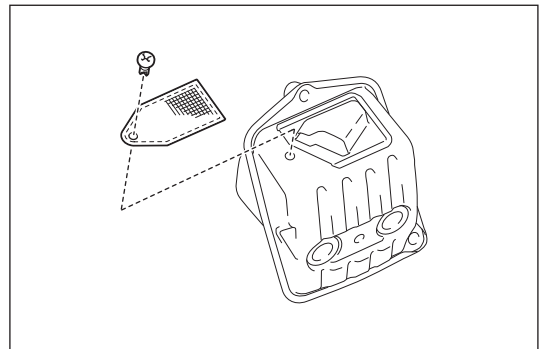
Remove the cylinder cover and dust cover, and check the tightness of four screws on the muffler. Tighten it if it is loose.



Checking the spark arrester

⚠ CAUTION:

- Do not start the engine if the spark arrester is damaged or missing. The spark arrester prevents hot carbon from flying out of exhaust pipe. Check the spark arrester regularly as following steps:
1. Remove the cylinder cover.
 2. Remove the screw which secures the spark arrester. It is easier to remove the screw by pushing the front hand guard forwards. Then slide the spark arrester. Clean the spark arrester if necessary with a wire brush.
- If the spark arrester is damaged, replace it.



Cleaning of parts

Always keep the engine clean by wiping down with a cloth rag.

Inspection of bolts, nuts and screws

- Check bolts, nuts, etc. Tighten them if necessary.
- Check the fuel cap and oil cap for tightness. Check for fuel leakage.
- Replace damaged parts with new ones for safety operation.

Storing tool

⚠ CAUTION:

- The engine is still hot just after stopping engine. When draining the fuel, allow sufficient time for the engine to cool down after stopping it. Otherwise a skin burn and/or fire may result.
- When the machine is kept out of operation for a long time, drain all fuel from the fuel tank and carburetor, and keep it at a dry and clean place.

Biologically degradable saw chain oil can only be kept for a limited period. Beyond two years after manufacture, biological oils begin to acquire an adhesive quality, and cause damage to the oil pump and components in the lubricating system.

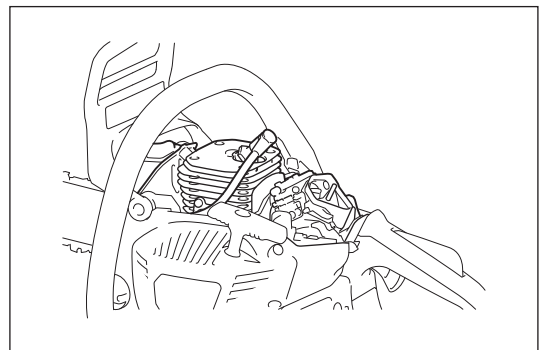
- Before taking the chain saw out of service for a longer period, empty the oil tank and fill it with a small quantity of engine oil (SAE 30).
- Run the chain saw briefly to flush all residue of the biological oil out of the tank, lubricating system and saw mechanism.

Store the chain saw on a suitable surface.

Before returning the chain saw to service, fill up with fresh bio-degradable saw chain oil.

NOTE:

- When the chain saw is taken out of service, small quantities of chain oil leaks from it for some time afterwards. This is normal, and is not a sign of a fault.



MAINTENANCE INTERVAL

For tool's long life, and to ensure the full functioning of the safety features, perform maintenance work regularly.

Operating time Item		Before operation	Everyday	Every week	Every 3 month	Annually	Before storage
Chain saw	Inspection.	○					
	Cleaning.		○				
	Check at authorized service center.					○	
Saw chain	Inspection. / Sharpening if necessary.	○					
Guide bar	Inspection.	○					
Chain brake	Check the function.	○					
	Have it inspected regularly at authorized service center.				○		
Starter rope	Inspection.	○					
Chain lubrication	Check the oil feed rate.	○					
Combination switch	Inspection.	○					
Throttle trigger lock-out	Inspection.	○					
Throttle trigger	Inspection.	○					
Fuel tank cap	Check tightness.	○					
Oil tank cap	Check tightness.	○					
Air cleaner	Cleaning.		○				
Idle speed	The saw chain does not move at idle speed.		○				
Cylinder space	Cleaning.			○			
Spark plug	Inspection. / Cleaning. / Replace if necessary.				○		
Spark arrester	Inspection. / Cleaning. / Replace if necessary.				○		
Muffler	Check tightness of screws.			○			
Chain catcher	Inspection.			○			
Screws and nuts	Inspection.			○			
Fuel filter	Inspection. / Replace if necessary.				○		
Fuel tank	Empty.						○
Carbretor	Run empty.						○

* Before emptying oil, check for a suitable way to dispose of old oil. Do not pour it down into sewage drains, onto garden soil or onto open streams. Your local zoning or environmental regulations will give you more detailed instructions on proper disposal.

TROUBLE SHOOTING

Before making a request for repairs, check for trouble by yourself. For repairs, contact authorized service centers.

Malfunction status	Possible cause	Remedy
Chain does not run.	Chain brake is engaged.	Release chain brake.
Engine does not start.	Spark plug malfunction.	Check the spark plug.
	Fuel tank is empty.	Fill the fuel tank.
	Fuel supply problem.	Check whether the fuel filter is not clogged.
	Tool malfunction.	Ask your local authorized service center for repair.
Insufficient performance.	Air cleaner is dirty.	Clean the air cleaner. Replace it if necessary.
	Cylinder space is dirty.	Clean cylinder space.
	Environment temperature is very low.	Change the shutter setting of the carburetor. See section "Prevention from carburetor icing".
No oil on the saw chain.	Oil tank is empty.	Fill the oil tank.
	Oil guide groove is dirty.	Clean the groove.
	Oil delivery is not adjusted properly.	Adjust amount of oil delivery.
	Oil pump malfunction.	Ask your local authorized service center for repair.
Chain does not stop even the chain brake is activated.	Brake band worn down.	Stop using the tool immediately, and ask your local authorized service center for repair.
The tool vibrates abnormally.	Loose guide bar or saw chain.	Adjust the guide bar and saw chain tension.
	Tool malfunction.	Stop using the tool immediately, and ask your local authorized service center for repair.
Chain does not stop when engine is idle.	Idle speed is too high.	Correct idle speed.
	Clutch defect.	Stop using the tool immediately, and ask your local authorized service center for repair.

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