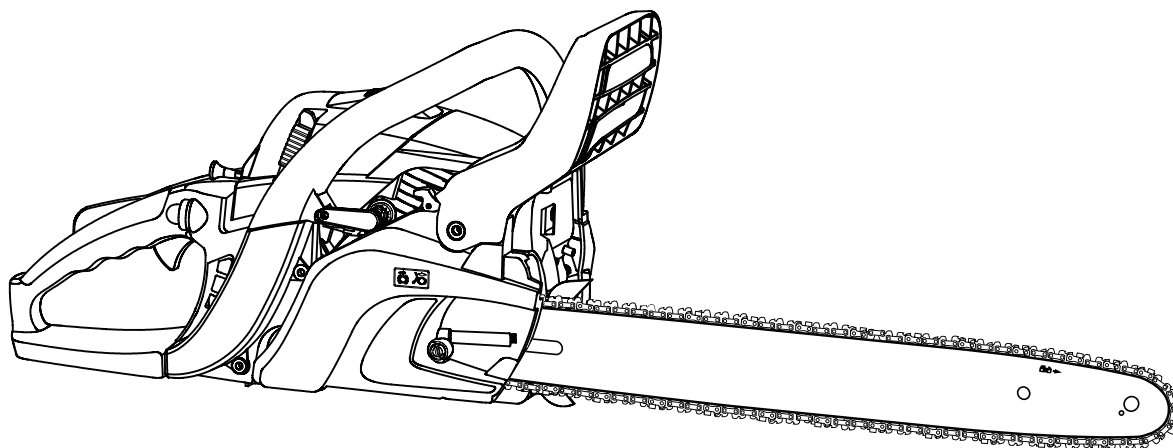


POWER KING®

40cc Powerking Chainsaw
PK4014 - PK4018 - PK401418

Operation Instructions



Danger Warning

Please carefully read the manual and follow the safety operations shown in it; otherwise, physical injury may be caused.



**Professional
gasoline chain saw**

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Introduction

The operation manual mainly introduces the safety operation steps, proper operation, related services and maintenance of SURPASS gasoline chain saw. If the suggestions are adopted, the service life of the saw will be prolonged, and the good operating state will be guaranteed.

Improper operation may cause physical injury.

Correctly understand all the safety precautions before use.

The machine is used for cutting wood and other wooden products, and must not be used to cut metal rods, metal plates, plastic or other non-woody materials.

If you cannot understand any part of the manual, please contact SURPASS product distributor immediately.

Symbol and Sign Illustration



Please carefully read the operation manual.



This symbol indicates warning and danger, and is used to remind the operator to pay attention to operation cases in which injury and even death may be caused.



This symbol with an oblique line in a circle indicates prohibition in any case.



Wear the eye, ear and head protective appliance.



Warning! Bounce occurs easily.



Emergency stop sign



Saw chain brake operation



Fuel mixture of gasoline and oil



Filling saw chain lubricating oil/oil pump



Flow adjustment of saw chain lubricating oil



Carburetor adjustment--low-speed mixing



Carburetor adjustment--high-speed mixing



Carburetor adjustment--idle-speed mixing

Attention

The information includes the contents to which attention should be paid during operation, storage and maintenance of the machine.

Find these marks on the machine and check whether they are clear and comprehensible. Operate the machine according to the instructions.

In case you cannot find some marks in the manual, consult SURPASS dealer for definition and illustration of the marks. Check whether the marks are legible.

Safety Precautions

Overview of Preventive Measures

Operation Manual



Carefully read the operation manual of the saw chain. Be fully familiar with the operating instructions of the saw chain, and properly operate the saw chain. Personal injury may be easily caused if you do not follow the suggestions in the manual. If you have any question, please contact SURPASS product distributor.

Physical conditions

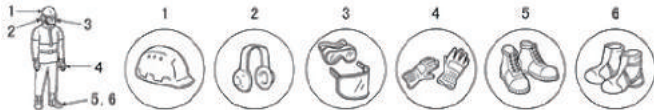


Do not operate the chain saw after drinking or taking narcotic drugs or when you feel tired.

In order to ensure operation safety, be sure that your mind and body are in good condition. Any improper judgment or action will result in serious and even fatal consequences.

If you feel uncomfortable, tense work will further deteriorate your health condition. Therefore, please examine your physical conditions before operating the chain saw. Don't operate the machine if you are sick or tired or you take drugs or other food that will seriously affect the eyesight, action sensitivity and judgment.

Safety protection equipment



Wear appropriate goggles to protect your eyes, as wood chippings, dust, suddenly broken branches or other waste may be thrown to you in the cutting process. Goggles can also be used to protect your eyes to the most extent if the chain saw hits the face in the cutting process. If required, wear the goggles under the ventilating mask.

SURPASS strongly recommends the operator to wear earmuffs during operation of the chain saw; otherwise, your hearing will

be affected. You must wear the “helmet” type protective device or earmuffs approved by the safety organization to protect your hearing. Any person that operates the chain saw frequently must receive hearing examination on a regular basis.

Wear the heat during operation of the chain saw. If you work under a tree or a place where there is a chance that something may hit you, please wear a qualified safety helmet.

You must wear heavy and non-slip labor protection gloves to help hold the chain saw, protect you under cold conditions and reduce vibration.



Wear the complete labor protection shoes or boots with non-slip soles. Do not wear loose clothes, jackets without buttons or clothes with sleeves or legs extended outwards. Do not wear the scarf, lacing, tie, bracelet, necklace and other kinds of jewelry, which may be easily hooked by the chain saw or branches.

Wear fitting clothes made of durable materials to prevent clothes from being hooked or broken. However, the flexible operation must be guaranteed.

Legs must be tie. Preferably, legs should be inserted into the labor protection boots or shortened. It is more effective to wear labor protection clothes, leg protection leather trousers or special trousers for woodcutters.

If possible, the operator should wear the above labor protection articles. The chain saw must be operated by more than one person. At least one person should be appointed to help you when required.

Fuel

Warning Danger

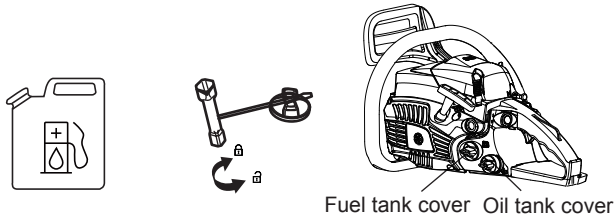
- Gasoline and oil are flammable. If gasoline or oil spills out or if there is a fire source, fire may be easily caused, resulting in serious burns and huge property losses. So please be very careful when adding fuel.
- After refueling, tighten the fuel container cover and check whether fuel leaks. In case of leakage, repair the fuel container before starting the engine, so as to prevent fire.

Use the fuel container approved by safety authorities.

Smoking, open fire and spark are prohibited when refueling.

There may be pressure inside the fuel container. Slowly loosen the fuel cover until the internal pressure becomes equal to the external pressure before removing the fuel cover.

Place the fuel container in an outdoor open area. Ensure the safety while tightening the cover. Wipe the fuel outside the machine. Do not fill fuel indoors.



Do not refuel when the engine is hot or running. Do not store the machine with fuel in the fuel tank into the warehouse. Fire may easily occur in case of fuel leakage.

Carry the fire extinguisher or shovel during operation of the chain saw or cutting in the forest, so as to prevent fire.

Start Engine



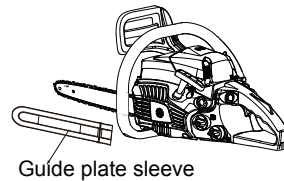
Remove the chain saw to a place at least 3m away from the refueling point before starting the engine.

Others must not get close to the chain saw when the engine is started or the chain saw is used for cutting. Bystanders or other small animals must be kept outside the working area. Wood must not be held by others in the cutting process.

The engine must not be started until the working area is cleaned, a safe standing place is determined, and the safe retreat routine for escape at the time of falling-off of the tree is selected.

Before starting the engine, check whether the chain saw contacts with any object. The handle must be dry, without any gasoline, oil or mixture thereof. Operate the machine in a well-ventilated area, as the exhaust gas, oil mist (produced in lubrication of the chain saw) and sawdust are harmful to your health.

Relocation of the machine



Use the approved guide plate sleeve for handling the chain saw elsewhere. Stop the engine, make the guide plate and chain face backwards and keep the muffler away from the body before moving the chain saw.

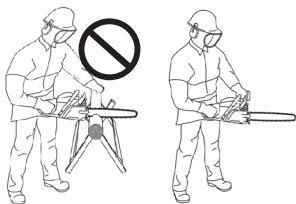
Safety prevention of bounce

Warning Danger

When the top or front end of the guide plate of the chain saw contacts with an object, bounce may easily occur at the time of breaking of trees and in case of extrusion of the chain saw in the cutting process. Preventive measures must be taken in advance.

If the top contacts with other objects, slight and quick return response will occur, and the guide plate will rapidly bounce up and down towards the operator (known as rotating bounce). If the chain is twisted towards the guide plate, the guide plate will suddenly bounce towards the operator (known as linear bounce). Any kind of bounce will result in out-of-control of the chain saw and serious injury caused by collision between the chain moving rapidly and the body. The chain saw operator must take measures to prevent accidents or casualties.

The basic knowledge of bounce can help to reduce or evaluate emergencies which may easily result in accidents. When you understand the causes of bounce, you can take measures to prevent the front part of the guide plate without protection from contacting with other objects or the ground.



Do not operate the chain saw with one hand. Physical injuries of the majority of operators or assistants are caused by operation with one hand. In order to normally control, the chain saw must be operated with both hands, and the throttle

should be controlled with one hand. If the chain saw is out of control and slippage or side slipping is caused, personal injury may cause.

Hold the handles of the chain saw with both hands during operation of the engine, the right hand for holding the rear handle, and the left hand for holding the front handle. The handles of the chain saw must be held with the thumb and other fingers in a loop form. Thus, bounce in operation can be reduced, and the chain saw can be continuously controlled. In any case, the chain saw must be controlled with both hands.



Do not cut branches higher than the chest.

Check whether there is any obstacle in the cutting area. Prevent the front part of the guide plate from contacting with logs, branches or other objects to prevent bounce during operation of the chain saw.

High-speed cutting can help to reduce the possibility of bounce. Low speed or throttle can help to control the chain saw, thus reducing the possibility of bounce. Adopt the chain saw grinding and maintenance methods provided by the manufacturer. For replacement, use the guide plate and chain saw provided by the manufacturer or the approved guide plate and chain saw of equivalent performance.

Other Safety Protections and Precautions

Shock and Cold Protection Measures



According to Raynaud's phenomenon, the functions of fingers will be significantly affected after long-term exposure to cold air or vibration. Therefore, the anti-vibration design of the chain saw can help to reduce the intensity of vibration transmitted from the handle to the body. Long-time exposure to the cold and vibration will result in finger sounding or burning and further paleness and numbness.

It is strongly recommended to take the following preventive measures, as you cannot feel slight cold or vibration.

1. Keep the body warm, especially the head, neck, feet, ankles, hands and wrists.
2. Smoking is prohibited at break during work. Stretching the arms as much as practical to keep good blood circulation of the body.
3. Limit the daily operating time of the chain saw, and minimize the work requiring direct control of power tools by hand.
4. If you feel uncomfortable or the fingers are subject to swelling and further paleness and numbness, you must not work under cold and vibrating conditions and should immediately seek medical help.

Repetitive injury

Excessive operation may result in swelling, numbness and extreme pains of the muscles and tendons of the fingers, hands, arms and shoulders. Repetition of the same actions by hand may easily lead to the above symptoms.

Take the following steps to avoid the above symptoms:

1. Prevent the wrists from bending. Stretch the wrists out and keep the wrists upright as possible as practical. Hold objects with the entire hand, instead of the thumb and forefinger.
2. Rest several times during work to reduce the time of repeated operation to make the arms rest.
3. Reduce the speed and intensity of repeated operation.
4. Exercise more to strengthen the arms and muscles.
5. Seek medical help if your fingers, hands, wrists or arms feel numb or painful or utter sound.

Chain saw conditions

Warning Danger

Do not modify the chain saw.

Use the pass and accessories provided SURPASS, or the parts and accessories which are approved by SURPASS and of the same model as the chain saw. If the parts are suitable for the machines of SURPASS but not approved by SURPASS, physical injury or serious risks may be caused.

Do not use the chain saw which is damaged, poorly adjusted or not installed completely and safely.

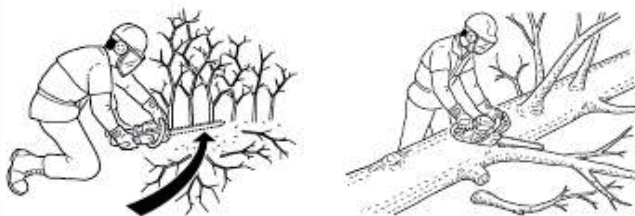
Do not use the chain saw if the muffler is not installed firmly or damaged.

Check whether the chain saw can stop moving after the throttle controller is released.

Cutting

The operator must receive training before cutting trees with the chain saw.

Keep the body away from the chain saw during operation of the engine.



Be careful to cut small shrubs or trees, as the chain may be easily stuck by soft branches or soft branches may whip or the operator may lose the balance.

Be careful to cut large branches under pressure to prevent them from bouncing and hitting the operator and chain saw after release.



It is dangerous to cut on the ladder. The ladder is easy to slip, thus limiting the control of the chain saw. Cutting in high places must be done by professional operators.

Stop the engine before lowering the chain saw.

Maintenance

All the items of maintenance services related to the chain saw are listed in the maintenance instructions in the operation manual. Maintenance must be done by the competent professional service personnel (the flywheel may be damaged and even broken if the flywheel and clutch are removed with inappropriate tools).

Wood cutting operation

To ensure the cutting safety, keep the normal work sequence, judge the sound and adopt different cutting methods in different cutting environments.

Do not lend the chain saw to others, unless the operator have carefully read the operation manual and understood all the suggestions and guides.

The chain saw must not be operated by children.

The chain saw must not be used for cutting metal rods, metal plates, plastic and other materials except wood, and can only be used for cutting trees or wooden products.

Stand on the uphill during cutting of logs and trees without boughs on slopes, so as to prevent injuries caused by sudden rolling of wood. Always keep both feet on the ground in the cutting process.

Chain brake

The chain brake is used to stop chain rotation in case of bounce of the chain saw, and cannot be used to prevent or reduce bounce.

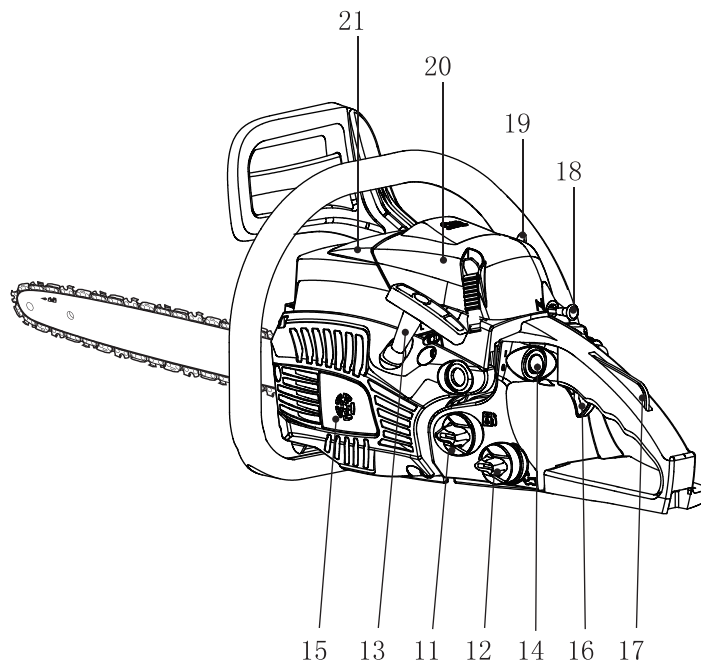
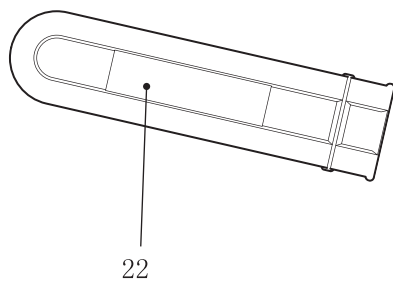
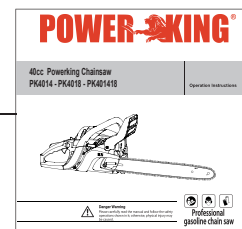
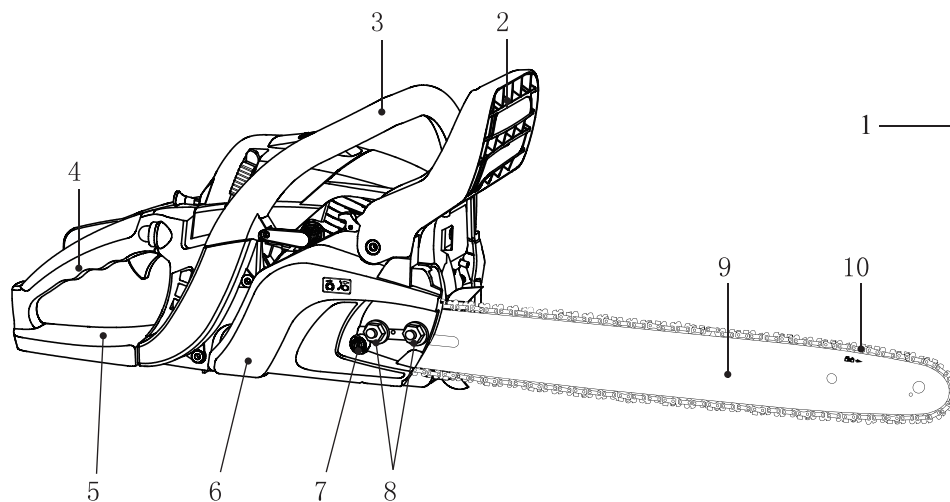
Even if the chain brake is applied, the operator should keep the quick response and adopt the correct cutting method, like in the case with no chain brake.

The response time of the chain brake will gradually increase even if the chain saw is properly operated and maintained.

The following operations may affect the capability of the chain brake to protect the operator.

1. The chain saw is controlled improperly and contacts with the body of the operator. The speed of bounce is too high, and prompt braking cannot be realized even by the well-maintained brake.
2. The hands of the operator are not placed in the correct positions of hand guards, resulting in failure of activation of the brake.
3. The stop time of the brake is prolonged as a result of improper maintenance, causing poor braking effects.
4. The chain braking time is prolonged as a result of dust, grease, oil, resin and other debris in the working mechanisms.
5. The stop time of the chain brake is prolonged as a result of fatigue and wear of the brake spring and wear of the shoe pad, clutch shell and crankshaft hinge joint.
6. The chain brake may fail if the front baffle and brake strap are damaged.

Structural Diagram

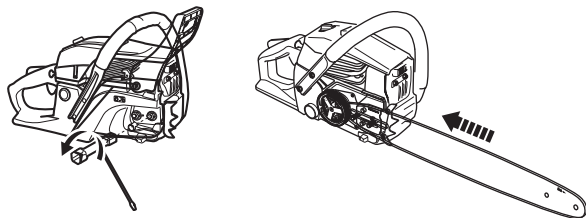


1. **Operation manual** — accompanying file. Please carefully read the operation manual before operation and properly keep the operation manual for future learning and reference. The operation manual provides safety operation skills and is necessary for the operator.
2. **Front baffle** — installed between the handle and chain and used to protect the hand of the operator from slipping off the carrying handle and being injured. The front baffle can also help to control the chain saw. The hand guard can also help to activate the chain brake to stop the chain.
3. **Carrying handle (held by the left hand)** — installed on the front part of the engine shell and used for supporting.
4. **Rear handle (held by the right hand)** — installed on the rear part of the engine shell and used for supporting.
5. **Hand guard of rear handle** — refer to the extension part under the rear handle, which is used to protect the hand from being injured by the chain broken or moving out of the slot.
6. **Right side plate** — used to protect the guide plate, chain, clutch and sprocket during operation of the chain saw.
7. **Tensioning device** — used to adjust the chain tension.
8. **Locking nut of right side plate** — used to fix the right side plate and fix and disassemble the guide plate of the chain.
9. **Guide plate** — used for supporting and guiding the saw chain.
10. **Chain** — used as a cutting tool.
11. **Fuel tank cover** — used to seal the fuel container. Tighten it by means of clockwise rotation.
12. **Oil tank cover** — used to seal the oil tank. Tighten it by means of clockwise rotation.
13. **Starter handle** — refer to the handle of the starter, used to start the engine.
14. **Stop switch** — used to disconnect and connect the ignition system to start and stop the engine.
15. **Starter cover** — refer to an important component for installation of the start-up system and a power-driven intake channel.
16. **Trigger** — activated by the finger and used to control the engine speed.
17. **Trigger control arm** — refer to a safety protection device. The trigger cannot be activated until the trigger control arm is pressed. The trigger control arm can be used to prevent misoperation of the throttle controller.
18. **Choke valve pulling rod** — used to adjust the mixing ratio of fuel and air in the carburetor and assist the engine start-up.
19. **Air filter locking nut** — used to fix the small cap of the air filter.
20. **Small cap of air filter** — used to protect the air filter.
21. **Large cap** — refer to the grids through which cooling air flows. The large cap is used to protect the cylinder, spark plug and muffler.
22. **Guide plate sleeve** — refer to a protective device used to cover the guide plate and chain when the chain saw is relocated or not in use.

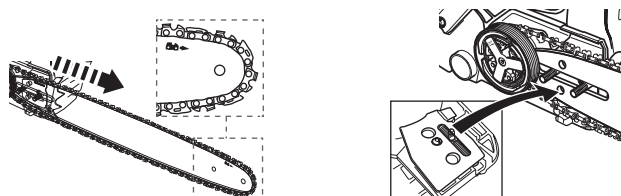
Installation and Operation

Installation of guide plate and chain

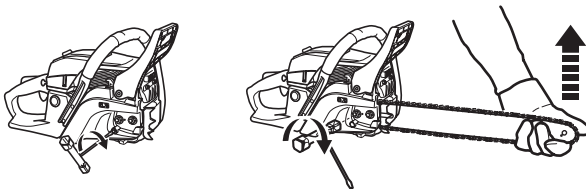
The guide plate and chain are separated from the body during delivery. Please take the following steps to install the guide plate and chain.



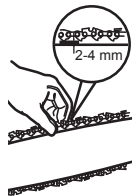
1. Loosen the nut and remove the right side plate.
2. Slowly slide the guide plate towards the clutch to facilitate installation of the chain.



3. Install the chain as shown in the figure (ensure that the saw teeth are set in the correct direction).
4. Release the chain brake. Install the right side plate on the guide plate fixing bolt, and carefully tighten the nut by hand. Check whether the chain tensioning regulator is properly installed through the hole of the guide plate.



5. Lift the head part of the guide plate, and rotate the regulator clockwise until the chain is neatly attached to the edge of the guide plate.
6. Lift the guide plate and tighten the nut.



7. Rotate the chain by hand along the guide plate. If the chain is too tight, loosen the regulator.
8. Make the engine operate at low speed. Then stop the engine. If the chain tension is not appropriate, readjust the chain.

Warning Danger

1. All kinds of adjustment must be done after the machine is cooled.
2. Wear gloves during operation of the chain saw.
3. Do not use the chain saw with a loose chain.

Check of chain tension

Attention

Loosen the fixing nut of the right side plate before adjusting the chain tensioning device; otherwise, the right side plate and chain tensioning device will be damaged.

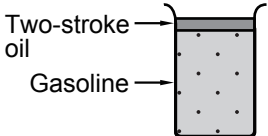


Always check the chain tension and adjust it as required during operation of the chain saw.

Maximize the chain tension. Even so, the chain can be easily pulled by hand along the guide plate.

Fuel

Fuel is a kind of mixture of unleaded gasoline of 90# or above and standard two-stroke oil. Do not use fuel with the methanol or ethanol content more than 10%.

Two-stroke oil	Gasoline (L)	Two-stroke oil (mL)	
		30:1	25:1
	1	33	40
	2	66	80
	4	133	160

Mixing ratio of gasoline and oil:

SURPASS pure two-stroke oil 30:1

Other standard two-stroke oil 25:1

Warning Danger

In any case, slowly loosen the fuel container cover until the pressure inside the container is basically equal to the external pressure and then remove the container cover to open the container.

- Do not directly mix fuel in the engine oil tank.
- Prevent gasoline and oil from spillage in the filling process.
Wipe the spilled fuel.
- Fuel is easy to burn. Use fuel with care.
- Keep fuel in the standard container with safety certificate.

Chain lubrication



The friction between the chain and guide plate can be reduced by means of good lubrication, thus, the service life of the chain and guide plate can be prolonged. Use high-quality special chain lubricating oil.

Do not use waste oil or oil of unknown brand, so as to avoid failure of the oil pump.

SAE30...used in summer.

SAE10...used in winter or for cutting of trees with a lot of resin.

Start-up operations

Start-up mode



1. Start-up on the ground

- Safely set the chain saw on the ground. Ensure that you can stably stand on the ground and the chain will not contact with any object or the ground.
 - Hold the front handle with the left hand. Press the chain saw on the ground, with the thumb under the handle.
 - Put the right foot in the right handle and press the chain saw.
2. Start-up between both knees or legs
- Clamp the rear handle with the thigh parts adjacent to the knees.
 - Hold the front handle with the left hand, with the thumb under the handle.

Start-up operations

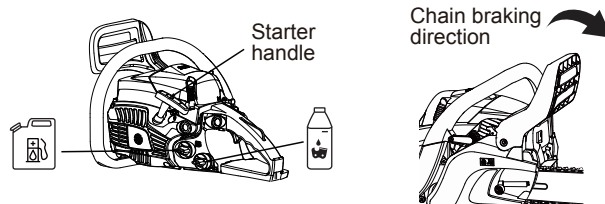
Carefully lift the starter handle with the right hand to the stop position. Then rapidly pull the handle with force and press the front handle down. Do not pull the start rope to the largest extent; otherwise, the start rope may be broken. Prevent free bounce of the starter handle. Instead, slowly lead the start rope into the shell so as to properly roll the rope.

Attention

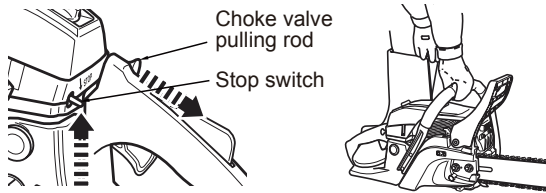
Do not pull the start rope to the largest extent.

Prevent sudden retraction of the starter handle in the opposite direction of the box.

Cold start of engine



1. Fill the mixed fuel into the fuel tank. Prevent fuel from overflow onto the fuel tank in the filling process.
2. Fill lubricating oil into the oil tank.
3. Press the front baffle forwards (in the position of chain brake activation).



4. Put the stop switch in the upper position.
5. Pull out the whole choke valve pulling rod.
6. Safely control the chain saw.
7. Check whether the guide plate and chain are free from contact with any object before starting the engine.
8. Pull the starter handle several times until the ignition sound is uttered by the engine.
9. Push in the whole choke valve pulling rod.
10. Pull the starter handle again until the engine is started.

Warning **Danger**

If the chain brake is not activated but the engine is started, the chain will rotate. Do not start the engine until the chain brake is activated.

If the engine cannot be started easily:

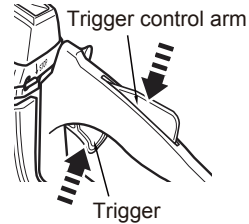
1. Check whether fuel and oil are filled.
2. Press the front baffle forwards (in the position of chain brake activation).
3. Put the stop switch in the upper position.
4. Safely control the chain saw.
5. Pull the starter handle.

Operation

Make the engine rotate at idle speed several minutes after start-up. Gradually press the throttle to accelerate the engine.

Warning

After the engine is started and the throttle is pressed, the clutch will be engaged, and the chain will rotate. After the engine is started, release the throttle and keep the engine operating at idle speed.



The chain will rotate when the engine speed is approximately 4,300rpm.

Check whether the acceleration is normal and whether the chain saw and guide plate are well lubricated.

Do not operate the engine at high speed unless otherwise required.

Check whether the chain saw stops running after the throttle is released.

Warning

1. After the engine is started, rapidly pull back the front baffle (to release the chain brake).
2. Do not accelerate the engine if the chain brake is still engaged.
3. The chain brake must be used in emergencies. Unless it is absolutely required, the chain brake must not be used.

Stop operations

Loosen the throttle to make the engine operate at idle speed.

Set the stop switch in the stop position.

Attention

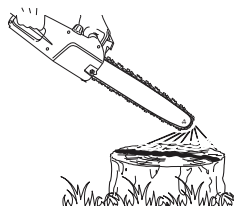
If the engine cannot be stopped, pull out the whole choke valve pulling rod to stop the engine. Restart the engine after inspection and maintenance of the ignition switch.

Cutting test

Be familiar with the chain saw before actual cutting. Therefore, it is wise to perform cutting tests with small logs or branches.

People or small animals must not enter the working area. Chain saw operators work in the same area must keep a sufficient safety distance.

Chain saw lubrication test



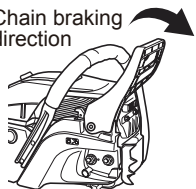
Control the chain to operate towards one dry surface and accelerate the throttle to operate at half speed for about 30s.

Check whether a clear oil line can be seen on the dry surface.

Chain brake

Check of braking performance of brake

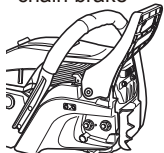
Chain braking direction



1. Place the chain saw on the ground.
2. Control the handle with both hands to accelerate the engine to high speed.
3. Trigger the front baffle by rotating the left wrist holding the front baffle, so as to enable the chain brake.
4. The chain is stopped immediately.
5. Loosen the throttle.

Release of chain brake

Direction of release of chain brake



The chain brake is released when the front baffle completely returns to the operator side.

If the chain cannot be stopped immediately, send the chain saw to SURPASS product distributor for maintenance.

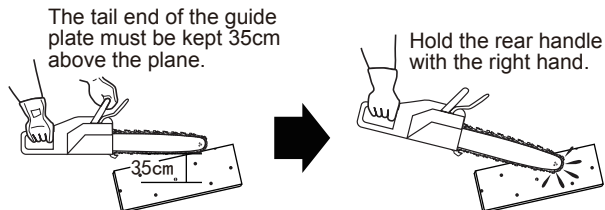
Warning Danger

Most of risks are caused by bounce of the guide plate, while bounce is caused when the top of the guide plate is subject to collision against wood or similar objects.

The chain brake can be used to reduce or avoid physical injury caused by bounce of the guide plate.

Check the effectiveness of the chain brake before using the chain saw each time.

Non-artificial invention of chain brake



Non-artificial invention of the chain brake means that the chain brake is stopped as a result of bounce of the tail end of the guide plate. In order to ensure the normal action of the chain brake free from artificial invention, take the following test steps.

- 1) Stop the engine of the chain saw.
- 2) Carefully control the front and rear handle by hand until the tail end of the guide plate is 35cm high, as shown in the above figure.
- 3) Carefully rotate the left hand holding the front handle until the front part or top of the guide plate hits the wood or similar objects under the chain saw. In this case, the chain saw is subject to impact (do not hold the rear handle too tightly with the right hand).
- 4) The impact will be transferred to the front baffle to activate the chain brake.

Attention

To exercise the operation, press the front baffle forwards to activate the brake in the process of cutting small trees. If the chain brake is stuck in wood chippings, the functions of the chain brake will be weakened. Always keep the system clean. Do not check the chain brake in the place with gasoline mist.

Cutting Guidance

Warning Danger

The front part or top end of the guide plate must not contact with any object during operation of the engine, so as to avoid bounce.

In any case, the chain saw must be operated by one person. The operator cannot ensure the safety during the first operations, therefore, it is preferable to appoint an assistant. After you master the basic skills of operation, the best assistant is good response capability.

The best way to control the chain saw is to stand on the left side of the chain saw and hold the carrying handle with the left hand. Thus the throttle can be controlled with the fingers of the right hand.

Before cutting large trees, fully get familiar with the control operations and corresponding responses of the chain saw, and cut small logs or large branches. Start the engine and check whether the engine rotates normally. Press the throttle to accelerate the chain saw and start cutting. The throttle must not be pressed excessively. If the edge is sharp, cutting can be done efficiently. If the saw pushing force is too large, the engine speed will be reduced, and the smoothness of actual cutting will be affected.

Some materials (such as palm acid, fertilizer, etc.) are not favorable for the shell of the chain saw. In order to prevent the shell of the chain saw from damage, debris such as sawdust on the clutch and guide plate must be cleared, and the clutch and guide plate must be cleaned.

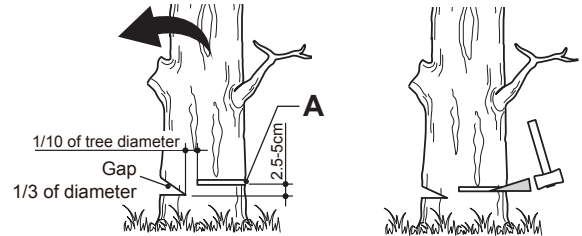
Tree cutting

Fallen trees may cause serious damage to any object, such as cars, houses, fences, power lines or other trees.

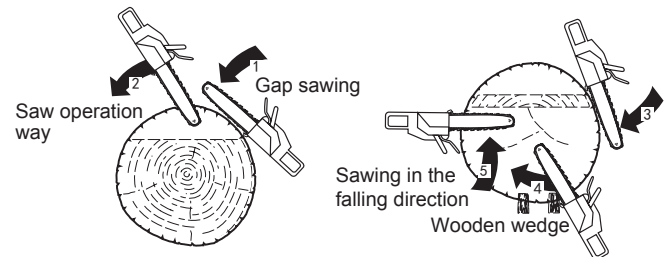


- You can control the falling direction of trees. However, you must determine the location of fallen tree.
- Clean debris around trees before cutting.

- You should select a good standing place to avoid any obstacle during cutting.
- Then select the retreat route.
- When the tree starts falling down, you must move back 3m with a 45-degree angle relative to the opposite direction of tree falling, so as to avoid bounce of the fallen tree.



- First saw the tree in the falling direction.
- Form a gap of approximate 1/3 of the tree diameter.
- Then saw the tree in the opposite direction of the gap to make the tree fall.
- Place the nail-shaped iron stopper at 2.5 - 5cm above the bottom of the gap. When the sawing place is about 1/10 the tree diameter away from the gap bottom, stop sawing. The left part is used like a hinge.
- Do not saw through the tree in the falling direction to the gap.
- The part between the gap and the sawed section in the falling direction is used like a hinge, so that the tree can fall in the determined direction.
- When the tree starts falling, stop the engine, place the saw on the ground and rapidly retreat along the determined route.

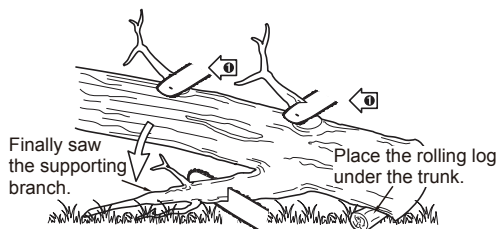


- If the diameter of the tree to be sawed is more than twice of the length of the guide plate, first cut the gas on one side and then saw to the other side along the gap. The gap depth should be approximately 1/3 of the tree diameter.

- Then start sawing from next point. Reserve the hinge part. Take out the saw to continue cutting.
- Insert the saw into the previous seam. Be careful of bounce.
- At last, pull the saw in the previous sawing direction to the final position.

Branch cutting

Branches are sawed in the same way as trees. Do not stand on trees to cut branches. Be careful of collision between the top of the guide plate and other branches. Operate the chain saw with both hands.



During branch cutting, the trunk and branches should be cut longitudinally, transversely and obliquely, and a lot of branches will be subject to bounce near the guide plate. Clean the site before cutting. Be concentrated in cutting, and prevent the collision against other branches in the bounce area of the guide plate.

Be careful to cut elastic branches and trees. Control the direction of bounce. Several gaps can be formed on parts which may be easily subject to bounce, to release the force of bounce. To cut the tree with a lot of branches, the rolling log can be placed under the tree to increase external support, and supporting branches should be left and cut at the end.

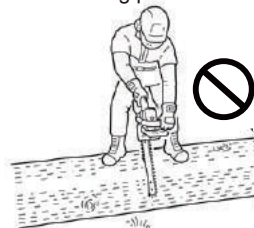


Do not cut branches higher than the chest or keep the guide plate vertical in the cutting process.

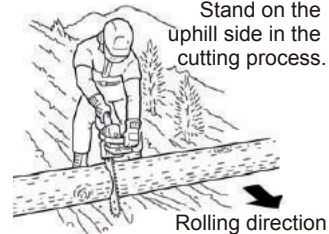
Otherwise, buffering cannot be realized to prevent possible injury in case of bounce of the chain saw.

Tree sawing

Do not stand on the log in the cutting process.



Stand on the uphill side in the cutting process.



Tree sawing refers to log cutting or tree splitting.

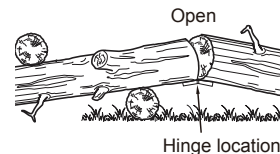
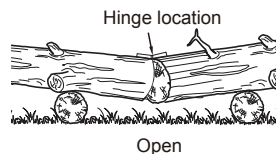
Observe the following suggestions during sorting and splitting of trees:

- Operate the chain saw with both hands in any case.
- If possible, support the log at last.
- Stand on the uphill side during cutting on the slope or at the foot of the hill.

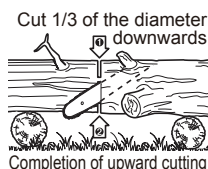
Warning Danger

1. Do not stand on the log in the cutting process.
2. Stand on the uphill side in the cutting process.

Cutting of pulled and pressed timber

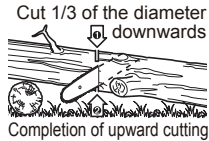
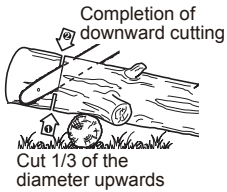


Judge the pulling and pressing points of the long log on the ground, according to main support points.



If the support points are at both ends, the upper part of timber is pressed, while the lower part is pulled.

In the process of cutting between the two points, cut approximately 1/3 of the diameter downwards and then upwards in the same position.

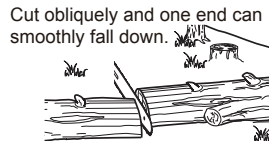
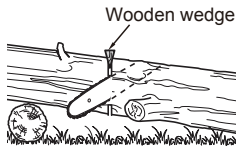


When the support point is at one end and the other end is free, the lower part is pressed and the upper part is pulled.

In this case, cut approximately $\frac{1}{3}$ of the diameter upwards and then downwards in the same position.

When both ends are supported, the upper part is pressed, and the lower part is pulled.

In this case, cut approximately $\frac{1}{3}$ of the diameter downwards and then upwards in the same position.



Warning

After operation of the chain saw, the hot cylinder head surface and muffler cover must not be touched.

Warning

If the pulled or pressed part of timber is not determined correctly and cutting is started in the wrong direction, the chain on the guide plate of the chain saw will be extruded and cannot be moved in the timber seam.

If the engine is rotating but the chain is stuck, the clutch of the chain saw will be burnt.

If the chain is stuck and the chain saw cannot be taken out of the chain, the saw must not be dragged out in a forced manner. Immediately stop the engine, insert the wooden wedge into the seam to expand the seam, and take out the chain.

Do not drag the chain saw if the chain is stuck.

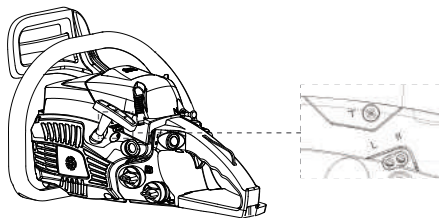
The blunt chain is not safe and the wear of the cutting edge will be increased. A good method to judge the chain bluntness is to check whether the sawdust is fine, instead of normal sawdust.

Maintenance and Servicing

Item	Maintenance	Page No.	Before use	On a monthly basis
Air filter	Clean/replace it.	18	√	
Fuel filter	Check/clean/replace it.	18	√	
Spark plug	Check/clean/adjust/replace it.	19		√
Carburetor	Adjust/replace it.	18		√
Cylinder cooling fin	Check/clean it.	19	√	
Muffler	Check/fasten/clean it.	——	√	
Oil filter	Check/clean/replace it.	18	√	
Clutch shell	Check/replace it.	19		√
Chain brake	Check/replace it.	13	√	
Start rope	Check/replace it.	——	√	
Guide plate	Check/clean it.	19	√	
Fuel supply system	Check/repair it.	18	√	
Screw/bolt/nut	Check/fasten/replace it.	——	√	

If you have any ambiguity, contact SURPASS product distributor.

Carburetor



Do not adjust the carburetor unless otherwise required.

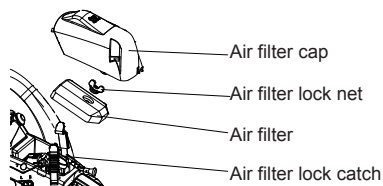
The carburetor is adjusted according to the following steps;

- Low-speed mixing regulator (L): rotate 1 - 1.25 turns.
- High-speed mixing regulator (H): rotate 1.5 - 2 turns.
- Idle-speed regulator (T): rotate the screw to the bottom mark and then clockwise until the saw chain rotates, followed by rotation of 1/2 turn.

Warning

Before start, the idle-speed regulator must be adjusted until the saw chain does not rotate. If any chemical fails, contact SURPASS product distributor.

Air filter



Check it before each use.

Loose the air filter lock catch, move the air filter cap and back out the air filter lock net, take out the air filter. Wipe the dust gently, or use the pressure-air to clean it; or change to use the new air filter.

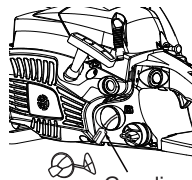
Install the air filter and air filter cap, lock the air filter lock net and lock catch.

Fuel supply system

Check whether fuel leaks out of the fuel pipe, sealing plug and fuel tank after fuel filling and before use.

Fire may be caused in case of fuel leakage. Immediately stop the machine, and send it to SURPASS product dealer for inspection and replacement.

Gasoline filter

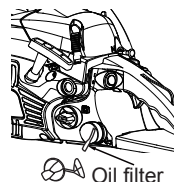


Gasoline filter

Check it on a regular basis.

- Prevent the fuel container from dust.
- If the filter is blocked, the engine cannot be started easily or rotates abnormally.
- Take the fuel filter out of the fuel inlet with the iron wire or similar tools.
- If the filter screen is too dirty, replace it.
- If there is dust in the fuel tank, clean the tank with gasoline.

Oil Filter

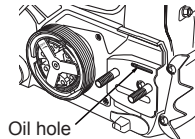
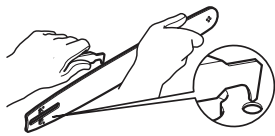


Oil filter

Check it on a regular basis.

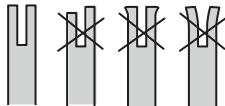
- Prevent the oil container from dust.
- If the oil filter screen is blocked, normal lubrication of the system will be affected.
- Take the oil filter screen out of the oil inlet with the iron wire or similar tools.
- If there is dirt on the filter, clean it with gasoline.
- If there is dirt in the oil tank, clean the tank with gasoline.

Guide plate



Clean it before use.

- Clean the groove of the guide plate with the screwdriver.
- Clean the oil hole with the thin iron wire.
- Reverse the guide plate on a regular basis.
- Check the sprocket and clutch and clean the guide plate connection before installing the guide plate.
- Replace the worn guide plate.



Attention

Contact SURPASS product distributor for replacement of the guide plate or saw chain.

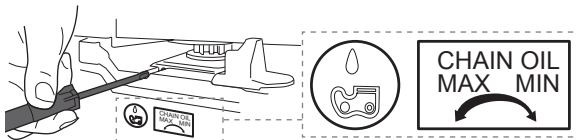
Clutch shell



If the clutch shell is damaged, the saw chain will be damaged or worn too early.

- If the sprocket clutch shell is worn 0.5mm or more, replace it.
- Check the clutch shell before replace the saw chain. Replace the worn clutch shell.

Oil pump

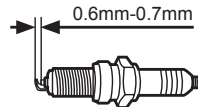


The capacity of the oil pump, which is set before delivery of the saw chain, is about 7ml/min when the engine speed is 7,000rpm.

Rotate the adjusting screw counterclockwise to increase the oil amount. The oil amount is the largest (13ml/min when the engine speed is 7,000rpm) when the adjusting screw cannot be rotated due to the effects of the stopper.

Do not rotate the adjusting screw when the oil amount is the largest or smallest.

Spark plug



Check it on a regular basis.

- The standard spark plug gap is 0.6 - 0.7mm.
- If the spark plug gap is more or less than the standard value, correct it.

Tightening torque: 15 - 17N.m (150 - 170kgf/cm)

Magneto

The machine is equipped with a CDI ignition system (capacitor discharge ignition device).

Check whether the wire is connected firmly.

Cylinder cooling fins

Check the fins on a regular basis.

If the cooling fins are blocked, the engine cooling effects will be weakened. Clean dust and dirt of cooling fins to strength cold air circulation.

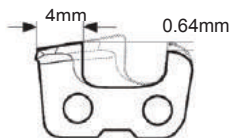
Faults and Troubleshooting

Phenomenon				Cause	Troubleshooting
The engine is started.	There is no oil in the carburetor.			The gasoline filter is blocked.	Clean or replace it.
				The fuel pipe is blocked.	Clean it.
				Carburetor	Consult the product distributor.
	There is oil in the carburetor.	There is fuel in the cylinder.		Carburetor	Consult the product distributor.
				There is oil in the muffler.	The fuel concentration is too high.
		Clean/replace the air filter.			
		Adjust the carburetor.			
		Consult the product distributor.			
		There is fuel in the cylinder.	The wire end or spark plug has no spark.	The stop switch is closed.	Open the stop switch.
				Electrical failure	Consult the product distributor.
				The spark plug gap is not appropriate.	Adjust the clearance to be 0.6 - 0.7mm.
				Carbon is deposited.	Clean or replace it.
				Fuel silting occurs.	Clean or replace it.
					The spark plug is damaged.
The engine cannot be started.			A fault occurs in the engine.	Consult the product distributor.	
The engine is rotating.	The machine cannot be easily stopped or accelerated.			The air filter is too dirty.	Clean or replace it.
				The gasoline filter is too dirty.	Clean or replace it.
				The air inlet is blocked.	Clean it.
				Spark plug	Clean and adjust/replace it.
				Carburetor	Adjust it.
				The cooling system is blocked.	Clean it.
				The exhaust port/muffler is blocked.	Clean it.

Warning Danger

- ☆ All the chain saw maintenance services and other repair services related to the faults which are not listed in the operation manual must be provided by the competent personnel.
- ☆ The fuel is volatile and easy to burn. Fire or explosion may be caused. Do not remove the spark plug or perform the ignition test near the spark plug mounting hole of the cylinder; otherwise, serious personal injury may be caused.

Chain Saw Maintenance

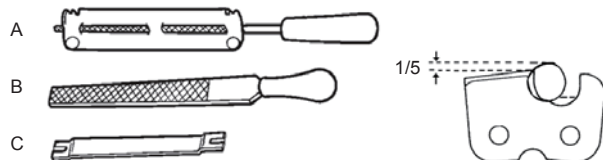


Do not use the chain saw with the blunt or damaged chain. If high pressure is required during operation of the chain saw and sawdust is fine instead of large chippings, check whether the edge on the chain is

damaged. Grind the edge to keep the edge angle the same as that of new product. The service life of the chain can be prolonged by grinding the edge. Check whether the chain saw is damaged or worn each time after fuel filling.

If the chain teeth are less than 4mm long as a result of wear, replace the chain.

Grinding tools



The following tools are required to properly grind the chain.

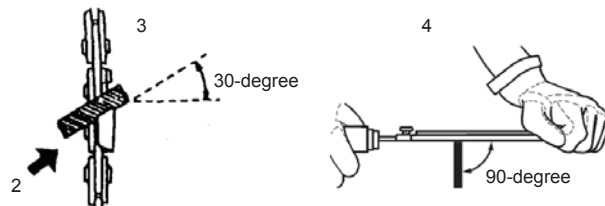
- A. Round file and clamp
- B. Flat file
- C. Depth gauge

Use the file (4.0mm round file) and clamp of appropriate specifications to achieve good grinding effects. Consult SURPASS product distributor for appropriate grinding tools and specifications.

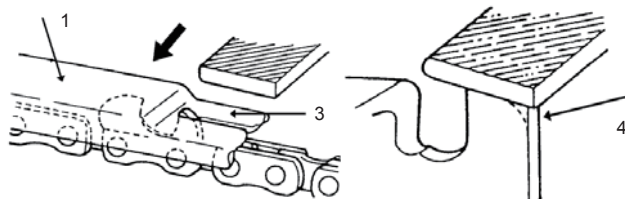
Warning Danger

- Shut down the engine before grinding the chain.
- Wear the conforming labor protection gloves.

Grinding precautions

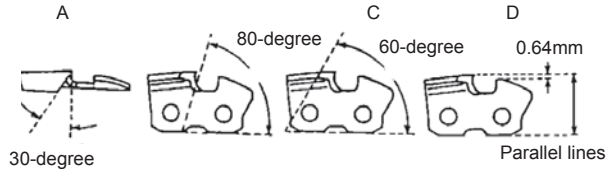


1. Fix the chain and push the hand guard forwards. Push the hand guard in the opposite direction of the front handle to rotate the chain.
2. The cutting edges for operation of the chain with the left and right hand are distributed alternately. Grinding must be done from inside to outside.
3. Keep the angle of the file clamp and the linear parallelism of the chain location and file the back of the cutting edge until the damaged part (lateral or top part) is ground.
4. Keep the file parallel.
5. Sharpen the seriously worn edge at first, and then grind all the edges to the same length.



1. The wood cutting thickness depends on the grinding depth. Therefore, the chain must be properly maintained during operation.
2. If the length of the cutting edge is reduced, the bottom height must be reduced at the same time.
3. Use the depth gauge for positioning, and file the protruding part.
4. Round the front part of the bottom to smooth the cutting process.

Correct angle of edge grinding



The correct angle of edge grinding is shown in the figure:

- A. 30-degree top angle;
- B. 80-degree lateral angle;
- C. 60-degree cutting angle for the top side;
- D. Depth measurement: 0.64mm.

The following errors may result in increase of bounce:

- 1) The top angle is too large.
- 2) The lateral angle is too small.
- 3) The file diameter is too small.
- 4) The depth is too large.

Attention

The angle parameters are suitable for Oregon 91VS, 91VG and Carlton N1C-BL chains. For the angles of other kinds of chains, refer to the instructions of the manufacturer.

Cleaning of guide plate slot

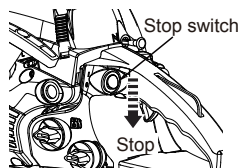
Drive the chain ring to clean sawdust in the guide plate slot.

Keep the lower drive edge sharp.

- Install the chain and immerse it in oil.
- After chain filing on the guide plate, fill enough oil, and slowly rotate the chain to clean iron chips before use.
- The wear of the chain and guide plate will be increased if the chain saw with the slot full of iron chips is used.
- If resin is adhered to the chain, clean the chain with kerosene or immerse the chain in oil.

Storage Management

Long-term Storage Management (more than 30 days)



Take maintenance measures before long-term storage (30 days or more), including:

1. Store the machine in a dry and dust-free place where children or irrelevant personnel cannot touch the machine.
2. Turn the stop switch into the stop position.
3. Remove the grease, fuel, dust and debris accumulated outside the saw chain.
4. Perform regular lubrication and necessary maintenance.
5. Tighten all screws, bolts and nuts.
6. Discharge all of fuel in the fuel tank. Pull the starter handle several times to discharge fuel in the carburetor.
7. Always keep fuel in the container with safety certificate.
8. Remove the spark plug. Fill fresh and clean two-stroke engine lubricating oil of about half a spoon into the cylinder through the opening of the spark plug.
 - A. Place a piece of clean cloth in the opening of the spark plug.
 - B. Pull the starter handle several times to disperse the filled oil into the engine.
 - C. Observe the piston position through the opening of the spark plug. Slowly pull the start rope, and move the piston to the highest point.
9. Install the spark plug (do not connect the ignition wire).
10. Cover the saw chain and guide plate with the guide plate sleeve before storing the machine in the warehouse.

Technical Specifications

Model		PK4014PK4018PK401418
Size	cm	43x26x29
Weight	kg	4.8
Volume		
Fuel tank volume	L	0.28
Oil tank volume	L	0.17
Fuel		Unleaded gasoline of 90# or above
Lubricating oil		Oil with the mixing ratio specified by Powerking or 2T oil of Class FB or above
Saw chain		
Pitch	Cun	3/8
Intermediate guide tooth thickness	mm	1.27
Guide plate size	Cun	14/18
Chain section number	Section	52/64
Lubrication mode		Variable-flow automatic oil pump
Sprocket tooth number		6
Engine		
Gasoline engine type		Air-cooled two-stroke single-cylinder engine
Start mode		Recoil start
Engine displacement	cc	40
Maximum output power	kw	1.45
Maximum operating speed	r/min	11500±500
Idle speed	r/min	3050±350
Other devices		Front baffle, chain stop, brake system and damping device

The technical parameters, structure and material list of the machine in the manual are the data at the time of publishing. Some items may be changed without prior notice.

The manual includes the optimized equipment and accessories, instead of all standard components.

QVTOOLS, LLC.

Warranty Statement

QVTOOLS, LLC warrants all gas power equipment 1 year for manufacture defects, Kohler engine 3 years from date of purchase. Proof of purchase date required for warranty repairs. Keep your receipt. QVTOOLS, LLC will provide parts and labor of Powerking products only at our approved service centers, Customer is responsible for delivery and pickup of the product to and from the service center. Please call us at 800-344-3371 for warranty claims and to be assigned a service center. Gas Equipment is non-returnable and will be serviced by authorized service centers only. Only authorized service centers have parts and can perform repairs as to not void your warranty. This warranty does not cover cosmetic defects such as paint, decals or wear items. This warranty does not cover failures or problems due to acts of God, or events or forces beyond the control of the QVTOOLS, LLC.

Warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, or accidents, repairs or alterations, or a lack of maintenance. QVTOOLS shall in no event be liable for death, injuries to persons or property, or for incidental, special, or consequential damages arising from the use of our products.

All NON-GAS products are covered with 1 year warranty from manufactures defects and will be repaired or replaced by QVTOOLS, LLC. with proof of purchase date. Please call 800-344-3371 PST to obtain an RGA number from our customer service department to return your product.



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