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You can read the recommendations in the user guide, the technical guide or the installation guide for HUSQVARNA 435. You'll find the answers to all your questions on the HUSQVARNA 435 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual HUSQVARNA 435
User guide HUSQVARNA 435
Operating instructions HUSQVARNA 435
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Instruction manual HUSQVARNA 435

Operator's manual
T435

Please read the operator's manual carefully and make sure you understand the instructions before using the machine.



English



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Manual abstract:

The machine's emission is specified in chapter Technical data and on label. Both of the operators hands must be used to operate the chain saw. Always wear approved protective gloves. Regular cleaning is required. Never operate a chain saw holding it with one hand only. Visual check. Never let the guide bar tip come in contact with any object. Protective goggles or a visor must be worn. Use appropriate protections for foot-leg and hand-arm. Refuelling. Filling with oil and adjusting oil flow. Never let the guide bar tip come in contact with any object. **WARNING! @@May cause serious personal injury. @@See operator's manual! @@@@Symbols in the operator's manual: ..**

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2 2 3 4 5 6 6 6 7 7 10 16 17 18 18 19 21 21 28 29 29 30 31 32 34 34 34 35 35 36 37 38 38 38 English 3 INTRODUCTION Dear Customer, Congratulations on your choice to buy a Husqvarna product! Husqvarna is based on a tradition that dates back to 1689, when the Swedish King Karl XI ordered the construction of a factory on the banks of the Husqvarna River, for production of muskets. The location was logical, since water power was harnessed from the Husqvarna River to create the waterpowered plant. During the more than 300 years of being, the Husqvarna factory has produced a lot of different products, from wood stoves to modern kitchen appliances, sewing machines, bicycles, motorcycles etc. In 1956, the first motor driven lawn mowers appeared, followed by chain saws in 1959, and it is within this area Husqvarna is working today. Today Husqvarna is one of the leading manufacturers in the world of forest and garden products, with quality as our highest priority.

The business concept is to develop, manufacture and market motor driven products for forestry and gardening as well as for building and construction industry. Husqvarnas aim is also to be in the front edge according to ergonomics, usability, security and environmental protection. That is the reason why we have developed many different features to provide our products within these areas. We are convinced that you will appreciate with great satisfaction the quality and performance of our product for a very long time to come. The purchase of one of our products gives you access to professional help with repairs and service whenever this may be necessary.

If the retailer who sells your machine is not one of our authorised dealers, ask for the address of your nearest service workshop. It is our wish that you will be satisfied with your product and that it will be your companion for a long time. Think of this operators manual as a valuable document. By following its content (using, service, maintenance etc) the life span and the second-hand value of the machine can be extended. If you will sell this machine, make sure that the buyer will get the operators manual. Thank you for using a Husqvarna product. Husqvarna AB has a policy of continuous product development and therefore reserves the right to modify the design and appearance of products without prior notice. 4 English WHAT IS WHAT? What is what on the chain saw? 1 2 3 4 5 6 7 8 9 Front hand guard Information and warning decal Top handle Adjuster screws carburettor Filter cover Fuel tank Spark plug cap Starter Starter handle 16 Throttle control 17 Stop switch 18 Bar 19 Chain 20 Bar tip sprocket 21 Fixing eye for safety line 22 Clutch cover 23 Product and serial number plate 24 Chain tensioning screw 25 Chain catcher 26 Spike bumper 27 Operators manual 28 Bar guard 29 Combination spanner 30 Screwdriver 10 Front handle 11 Chain oil tank 12 Oil pump adjustment screw 13 Air purge 14 Choke control 15 Throttle lockout English 5 GENERAL SAFETY PRECAUTIONS Before using a new chain saw · · Please read this manual carefully. Check that the cutting equipment is correctly fitted and adjusted. See instructions under the heading Assembly.

Refuel and start the chain saw. See the instructions under the headings Fuel Handling and Starting and Stopping. Do not use the chain saw until sufficient chain oil has reached the chain. See instructions under the heading Lubricating cutting equipment. Long-term exposure to noise can result in permanent hearing impairment. So always use approved hearing protection. Important IMPORTANT! The machine is only designed for cutting wood. You should only use the saw with the bar and chain combinations we recommend in the chapter Technical data. Never use the machine if you are fatigued, while under the influence of alcohol or drugs, medication or anything that could affect your vision, alertness, coordination or judgement. Wear personal protective equipment. See instructions under the heading "Personal protective equipment". Do not modify this product or use it if it appears to have been modified by others. Never use a machine that is faulty. Carry out the checks, maintenance and service instructions described in this manual. Some maintenance and service measures must be carried out by trained and qualified specialists.

See instructions under the heading Maintenance. Never use any accessories other than those recommended in this manual. See instructions under the headings Cutting equipment and Technical data. CAUTION! Always wear protective glasses or a face visor to reduce the risk of injury from thrown objects. A chain saw is capable of throwing objects, such as wood chips, small pieces of wood, etc, at great force.

This can result in serious injury, especially to the eyes. WARNING! Running an engine in a confined or badly ventilated area can result in death due to asphyxiation or carbon monoxide poisoning. WARNING! Faulty cutting equipment or the wrong combination of bar and saw chain increases the risk of kickback! Only use the bar/saw chain combinations we recommend, and follow the filing instructions. See instructions under the heading Technical data. · · · ! WARNING! Under no circumstances may the design of the machine be modified without the permission of the manufacturer. Always use genuine accessories. Non-authorized modifications and/or accessories can result in serious personal injury or the death of the operator or others.



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WARNING! A chain saw is a dangerous tool if used carelessly or incorrectly and can cause serious, even fatal injuries. It is very important that you read and understand the contents of this operator's manual. **WARNING!** The inside of the muffler contain chemicals that may be carcinogenic.

Avoid contact with these elements in the event of a damaged muffler. **WARNING!** Long term inhalation of the engine's exhaust fumes, chain oil mist and dust from sawdust can represent a health risk. **WARNING!** The ignition system of this machine produces an electromagnetic field during operation. This field may under some circumstances interfere with pacemakers. To reduce the risk of serious or fatal injury, we recommend persons with pacemakers to consult their physician and the pacemaker manufacturer before operating this machine. ! ! ! ! ! Always use common sense It is not possible to cover every conceivable situation you can face when using a chain saw. Always exercise care and use your common sense. Avoid all situations which you consider to be beyond your capability. If you still feel uncertain about operating procedures after reading these instructions, you should consult an expert before continuing. Do not hesitate to contact your dealer or us if you have any questions about the use of the chain saw.

We will willingly be of service and provide you with advice as well as help you to use your chain saw both efficiently and safely. Attend a training course in chain saw usage if possible. Your dealer, forestry school or your library can 6 English GENERAL SAFETY PRECAUTIONS provide information about which training materials and courses are available. · Fire Extinguisher and Shovel Generally clothes should be close-fitting without restricting your freedom of movement. Work is constantly in progress to improve the design and technology - improvements that increase your safety and efficiency.

Visit your dealer regularly to see whether you can benefit from new features that have been introduced. **IMPORTANT!** Sparks can come from the muffler, the bar and chain or other sources. Always have fire extinguishing tools available if you should need them. Help prevent forest fires. This top handle chainsaw is designed specifically for tree surgery and maintenance in the tree.

Due to the special compact handle design (closely spaced handles), there is an increased risk of losing control. For this reason these special chainsaws should be used only for work in a tree by persons who are trained in special cutting and working techniques and who are properly secured (lift bucket, ropes, safety harness). Regular chainsaws (with wider spaced handles) are recommended for all other cthe inertia release mechanism, depends on the force of the kickback and the position of the chain saw in relation to the object that the kickback zone of the bar strikes. If you get a violent kickback while the kickback zone of the bar is farthest away from you the chain brake is designed to be activated by the inertia in the kickback direction. 8 English GENERAL SAFETY PRECAUTIONS If the kickback is less violent or the kickback zone of the bar is closer to you the chain brake will be activated manually by the movement of your left hand. Throttle lockout The throttle lockout is designed to prevent accidental operation of the throttle control. When you press the lock (A) (i.e. when you grasp the handle) it releases the throttle control (B). When you release the handle the throttle control and the throttle lockout both commended by us! See instructions under the heading Technical data.

· Stop switch Use the stop switch to switch off the engine. Keep the chain's cutting teeth properly sharpened! Follow our instructions and use the recommended file gauge. A damaged or badly sharpened chain increases the risk of accidents. · Muffler The muffler is designed to keep noise levels to a minimum and to direct exhaust fumes away from the user. In areas with a hot, dry climate there is a high risk of fires. Maintain the correct depth gauge setting! Follow our instructions and use the recommended depth gauge clearance. Too large a clearance increases the risk of kickback. ! **WARNING!** The exhaust fumes from the engine are hot and may contain sparks which can start a fire. Never start the machine indoors or near combustible material! · Keep the chain properly tensioned! If the chain is slack it is more likely to jump off and lead to increased wear on the bar, chain and drive sprocket. **CAUTION!**

The muffler gets very hot during and after use.

This also applies during idling. Be aware of the fire hazard, especially when working near flammable substances and/or vapours. **WARNING!** Never use a saw without a muffler, or with a damaged muffler. A damaged muffler may substantially increase the noise level and the fire hazard. Keep fire fighting equipment handy.

· Keep cutting equipment well lubricated and properly maintained! A poorly lubricated chain is more likely to break and lead to increased wear on the bar, chain and drive sprocket. ! 10 English GENERAL SAFETY PRECAUTIONS Cutting equipment designed to reduce kickback · Number of drive links. The number of drive links is determined by the length of the bar, the chain pitch and the number of teeth on the bar tip sprocket. ! **WARNING!** Faulty cutting equipment or the wrong combination of bar and saw chain increases the risk of kickback! Only use the bar/saw chain combinations we recommend, and follow the filing instructions. See instructions under the heading Technical data.

· Bar groove width (inches/mm). The groove in the bar must match the width of the chain drive links. The only way to avoid kickback is to make sure that the kickback zone of the bar never touches anything. By using cutting equipment with "built-in" kickback reduction and keeping the chain sharp and wellmaintained you can reduce the effects of kickback. Bar The smaller the tip radius the lower the chance of kickback. Chain A chain is made up of a number of links, which are available in standard and low-kickback versions. **IMPORTANT!** No saw chain design eliminates the danger of kickback. · Drive link width (mm/inches) **WARNING!** Any contact with a rotating saw chain can cause extremely serious injuries. Chain · Chain pitch (inches) · Chain oil hole and hole for chain tensioner. The bar must be matched to the chain saw design.

! Some terms that describe the bar and chain To maintain the safety features of the cutting equipment, you should replace a worn or damaged bar or chain with a bar and chain combinations recommended by Husqvarna. See instructions under the heading Technical Data for a list of replacement bar and chain combinations we recommend. Bar · Length (inches/cm) · Number of drive links. Sharpening your chain and adjusting depth gauge setting General information on sharpening cutting teeth · Never use a blunt chain.



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When the chain is blunt you have to exert more pressure to force the bar through the wood and the chips will be very small. If the chain is very blunt it will produce wood powder and no chips or shavings. A sharp chain eats its way through the wood and produces long, thick chips or shavings. · Number of teeth on bar tip sprocket (T). · Chain pitch (inches). The spacing between the drive links of the chain must match the spacing of the teeth on the bar tip sprocket and drive sprocket.

English 11 GENERAL SAFETY PRECAUTIONS · The cutting part of the chain is called the cutter and consists of a cutting tooth (A) and the depth gauge (B). The cutters cutting depth is determined by the difference in height between the two (depth gauge setting). Sharpening cutting teeth To sharpen cutting teeth you will need a round file and a file gauge. See instructions under the heading Technical data for information on the size of file and gauge that are recommended for the chain fitted to your chain saw. When you sharpen a cutting tooth there are four important factors to remember.

1 Filing angle · Check that the chain is correctly tensioned. A slack chain will move sideways, making it more difficult to sharpen correctly. 2 Cutting angle · Always file cutting teeth from the inside face. Reduce the pressure on the return stroke. File all the teeth on one side first, then turn the chain saw over and file the teeth on the other side.

3 File position 4 Round file diameter · File all the teeth to the same length. When the length of the cutting teeth is reduced to 4 mm (0.16") the chain is worn out and should be replaced. It is very difficult to sharpen a chain correctly without the right equipment. We recommend that you use our file gauge. This will help you obtain the maximum kickback reduction and cutting performance from your chain. General advice on adjusting depth gauge setting · When you sharpen the cutting tooth (A) the depth gauge setting (C) will decrease. To maintain optimal cutting performance the depth gauge (B) has to be filed down to achieve the recommended depth gauge setting. See instructions under the heading Technical data to find the correct depth gauge setting for your particular chain. See instructions under the heading Technical data for information about sharpening your chain.

! WARNING! Departure from the sharpening instructions considerably increases the risk of kickback. ! 12 English WARNING! The risk of kickback is increased if the depth gauge setting is too large! GENERAL SAFETY PRECAUTIONS Adjustment of depth gauge setting · Loosen the bar nut that holds the clutch cover and chain brake. Use the combination spanner. · The cutting teeth should be newly sharpened before adjusting the depth gauge setting. We recommend that you adjust the depth gauge setting every third time you sharpen the cutting teeth. NOTE! This recommendation assumes that the length of the cutting teeth is not reduced excessively. You will need a flat file and a depth gauge tool. We recommend that you use our depth gauge tool to achieve the correct depth gauge setting and bevel for the depth gauge. · Raise the tip of the bar and stretch the chain by tightening the chain tensioning screw using the combination spanner. Tighten the chain until it does not sag from the underside of the bar.

· Place the depth gauge tool over the chain. Detailed information regarding the use of the depth gauge tool, will be found on the package for the depth gauge tool. Use the flat file to file off the tip of the depth gauge that protrudes through the depth gauge tool. The depth gauge setting is correct when you no longer feel resistance as you draw the file along the depth gauge tool. · Use the combination spanner to tighten the bar nut while holding up the tip of the bar.

Check that you can pull the saw chain round freely by hand, and that there is no slack on the underside of the bar. Tensioning the chain The position of the chain tensioning screw on our chain saws varies from model to model. See instructions under the heading What is what? to find out where it is on your model.

Lubricating cutting equipment !! WARNING! A slack chain may jump off and cause serious or even fatal injury. The more you use a chain the longer it becomes.

It is therefore important to adjust the chain regularly to take up the slack. Check the chain tension every time you refuel. NOTE! A new chain has a running-in period during which you should check the tension more frequently. Tension the chain as tightly as possible, but not so tight that you cannot pull it round freely by hand. WARNING! Poor lubrication of cutting equipment may cause the chain to snap, which could lead to serious, even fatal injuries. Chain oil Chain oil must demonstrate good adhesion to the chain and also maintain its flow characteristics regardless of whether it is warm summer or cold winter weather. As a chain saw manufacturer we have developed an optimal chain oil which, with its vegetable oil base, is also biodegradable. We recommend the use of our own oil for both maximum chain life and to minimise environmental damage. If our own chain oil is not available, standard chain oil is recommended. Never use waste oil! Using waste oil can be dangerous to you and damage the machine and environment.

IMPORTANT! When using vegetable based saw chain oil, dismantle and clean the groove in the bar and saw chain before long-term storage. Otherwise there is a risk of the saw chain oil oxidizing, which will result in the saw chain becoming stiff and the bar tip sprocket jamming. English 13 GENERAL SAFETY PRECAUTIONS Filling with chain oil · All our chain saws have an automatic chain lubrication system. On some models the oil flow is also adjustable. · Check that the groove in the edge of the bar is clean. Clean if necessary. · Check that the bar tip sprocket turns freely and that the lubricating hole in the tip sprocket is not blocked. Clean and lubricate if necessary. · The saw chain oil tank and the fuel tank are designed so that the fuel runs out before the saw chain oil. However, this safety feature requires that you use the right sort of chain oil (if the oil is too thin it will run out before the fuel), and that you adjust the carburetor as recommended (a lean mixture may mean that the fuel lasts longer than the oil) and that you also use the recommended cutting equipment (a bar that is too long will use more chain oil).

If the chain lubrication system is still not working after carrying out the above checks and associated measures you should contact your service agent. Chain drive sprocket Checking chain lubrication · Check the chain lubrication each time you refuel. See instructions under the heading Lubricating the bar tip sprocket. Aim the tip of the bar at a light coloured surface about 20 cm (8 inches) away.



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After 1 minute running at 3/4 throttle you should see a distinct line of oil on the light surface.

The clutch drum is fitted with a Spur sprocket (the chain sprocket is welded on the drum). Regularly check the degree of wear on the drive sprocket. Replace if wear is excessive. Replace the drive sprocket whenever you replace the chain. Checking wear on cutting equipment If the chain lubrication is not working: ·

Check that the oil channel in the bar is not obstructed.

Clean if necessary. Check the chain daily for: · Visible cracks in rivets and links. · Whether the chain is stiff. · Whether rivets and links are badly worn. Replace the saw chain if it exhibits any of the points above. We recommend you compare the existing chain with a new chain to decide how badly the existing chain is worn. When the length of the cutting teeth has worn down to only 4 mm the chain must be replaced. 14 English GENERAL SAFETY PRECAUTIONS Bar · To prolong the life of the bar you should turn it over daily. Check regularly: · Whether there are burrs on the edges of the bar. Remove these with a file if necessary.

! WARNING! Most chain saw accidents happen when the chain touches the operator. Wear personal protective equipment. See instructions under the heading "Personal protective equipment". Do not tackle any job that you feel you are not adequately trained for. See instructions under the headings Personal protective equipment, How to avoid kickback, Cutting equipment and General working instructions. Avoid situations where there is a risk of kickback. See instructions under the heading Machines safety equipment. Use the recommended protective equipment and check its condition. See instructions under the headings Technical data and General safety precautions. Check that all the chain saw safety features are working.

See instructions under the headings General working instructions and General safety precautions. Never use a chain saw by holding it with one hand. A chain saw is not safely controlled with one hand. Always have a secure, firm grip around the handles with both hands. · Whether the groove in the bar has become badly worn.

Replace the bar if necessary. · Whether the tip of the bar is uneven or badly worn. If a hollow forms on the underside of the bar tip this is due to running with a slack chain. English 15 ASSEMBLY Fitting the bar and chain correctly located in the groove in the bar. Tighten the bar nuts finger tight.

! WARNING! Always wear gloves, when working with the chain. Check that the chain brake is in disengaged position by moving the front hand guard towards the front handle. Tension the chain by turning the chain tensioning screw clockwise using the combination spanner. The chain should be tensioned until it does not sag from the underside of the bar. See instructions under the heading Tensioning the chain. The chain is correctly tensioned when it does not sag from the underside of the bar, but can still be turned easily by hand. Hold up the bar tip and tighten the bar nuts with the combination spanner. Unscrew the bar nut and remove the clutch cover (chain brake). Take off the transportation guard. When fitting a new chain, the chain tension has to be checked frequently until the chain is run-in.

Check the chain tension regularly. A correctly tensioned chain ensures good cutting performance and long life. Fit the bar over the bar bolts. Place the bar in its rearmost position. Place the chain over the drive sprocket locate it in the groove on the bar. Begin on the top edge of the bar. Fitting a spike bumper To fit a spike bumper contact your service agent. Make sure that the edges of the cutting links are facing forward on the top edge of the bar. Fit the clutch cover and locate the chain adjuster pin in the hole in the bar. Check that the drive links of the chain fit correctly over the drive sprocket and that the chain is 16 English FUEL HANDLING Fuel Note! The machine is equipped with a two-stroke engine and must always be run using a mixture of petrol and two-stroke oil.

It is important to accurately measure the amount of oil to be mixed to ensure that the correct mixture is obtained. When mixing small amounts of fuel, even small inaccuracies can drastically affect the ratio of the mixture. Mixing ratio 1:50 (2%) with HUSQVARNA two-stroke oil or JASO FC or ISO EGC GRADE. 1:33 (3%) with oils class JASO FB or ISO EGB formulated for air-cooled, two-stroke engines. Petrol, litre 5 10 15 20 Two-stroke oil, litre 2% (1:50) 0,10 0,20 0,30 0,40 3% (1:33) 0,15 0,30 0,45 0,60 ! Petrol WARNING! Always ensure there is adequate ventilation when handling fuel.

Mixing · · Use good quality unleaded or leaded petrol. CAUTION! Engines equipped with catalytic converters must be run on unleaded fuel mixtures. Leaded gasoline will destroy the catalytic converter and it will no longer serve its purpose. The green fuel cap on saws fitted with catalytic converters means that only unleaded gasoline can be used. The lowest recommended octane grade is 90 (RON).

If you run the engine on a lower octane grade than 90 so-called knocking can occur. This gives rise to a high engine temperature and increased bearing load, which can result in serious engine damage. When working with continuous high revs (e.g. limbing) a higher octane is recommended. · · · · · Environment fuel HUSQVARNA recommends the use of alkylate fuel, either Aspen two-stroke fuel or environmental fuel for four-stroke engines blended with two-stroke oil as set out below. Note that carburettor adjustment may be necessary when changing the type of fuel (see the instructions under the heading Carburettor).

Running-in Avoid running at a too high speed for extended periods during the first 10 hours. Always mix the petrol and oil in a clean container intended for fuel. Always start by filling half the amount of the petrol to be used.

Then add the entire amount of oil. Mix (shake) the fuel mixture. Add the remaining amount of petrol. Mix (shake) the fuel mixture thoroughly before filling the machine's fuel tank. Do not mix more than one month's supply of fuel at a time. If the machine is not used for some time the fuel tank should be emptied and cleaned. Chain oil · We recommend the use of special oil (chain oil) with good adhesion characteristics. Two-stroke oil · For best results and performance use HUSQVARNA two-stroke engine oil, which is specially formulated for our air-cooled two-stroke engines. Never use two-stroke oil intended for water-cooled engines, sometimes referred to as outboard oil (rated TCW). Never use oil intended for four-stroke engines.

A poor oil quality and/or too high oil/fuel ratio may jeopardise function and decrease the life time of catalytic converters. · · · Never use waste oil.



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This results in damage to the oil pump, the bar and the chain. It is important to use oil of the right grade (suitable viscosity range) to suit the air temperature. In temperatures below 0°C (32°F) some oils become too viscous.

This can overload the oil pump and result in damage to the oil pump components. Contact your service agent when choosing chain oil. English 17 . . . FUEL HANDLING Fuelling · Move the machine at least 3 m from the refuelling point before starting it. ! WARNING! Taking the following precautions, will lessen the risk of fire: Do not smoke and do not place any hot objects in the vicinity of fuel. Tighten the fuel cap carefully after refuelling. Wipe off the spillage and allow remaining fuel to evaporate. Wash any part of your body that has come in contact with fuel. Use soap and water. If the machine is leaking fuel. Clean the fuel and chain oil tanks regularly. The fuel filter must be replaced at least once a year. Contamination in the tanks causes malfunction. Always store fuel in an approved container designed for that purpose. For longer periods of storage or for transport of the chain saw, the fuel and chain oil tanks should be emptied. Fuel and fuel vapour are highly flammable.

Take care when handling fuel and chain oil. Store the fuel in approved cans in a safe place. Fit the bar guard. Clean the machine. See instructions under the heading Maintenance schedule. Choke: Set the choke control in the choke position. ! WARNING! Otherwise the clutch can come loose and cause personal injuries. Place the machine on firm ground. Keep people and animals well away from the working area. Activate the brake by moving the front hand guard forwards.

Never twist the starter cord around your hand. CAUTION! This can damage the machine. Keep on pulling the cord powerfully until the engine starts. IMPORTANT! The right hand should be on the top handle, and the left hand on the front handle. All people, whether right or left handed, should use this grip.

Use a firm grip with thumbs and fingers encircling the chain saw handles. ! WARNING! Long term inhalation of the engine's exhaust fumes, chain oil mist and dust from sawdust can represent a health risk. Stopping See instructions under the heading Assembly. Without a bar and chain attached to the chain saw the clutch can come loose and cause serious injury. The engine is stopped by pushing the stop switch to the stop position.

The chain brake should be activated when starting. See instructions under the heading Start and stop. Do not drop start. This method is very dangerous because you may lose control of the saw. Never start the machine indoors. Exhaust fumes can be dangerous if inhaled. 20 English WORKING TECHNIQUES Before use: 1 2 4 3 Basic safety rules 1 · Look around you: To ensure that people, animals or other things cannot affect your control of the machine. To make sure that none of the above might come within reach of your saw or be injured by falling trees. 6 8 1 2 3 4 5 6 7 8 9 Check that the chain brake works correctly and is not damaged. Check that the throttle lockout works correctly and is not damaged.

Check that the stop switch works correctly and is not damaged. Check that all handles are free from oil. Check that the anti vibration system works and is not damaged. Check that the muffler is securely attached and not damaged. Check that all parts of the chain saw are tightened correctly and that they are not damaged or missing. Check that the chain catcher is in place and not damaged. Check the chain tension. 3 CAUTION! Follow the instructions above, but do not use a chain saw in a situation where you cannot call for help in case of an accident. 2 All tree maintenance work above ground level must be carried out by two or more persons with the right training (see instructions under the heading Important). At least one person should be on the ground to carry out safe rescue procedures and/or get help should an emergency arise.

During tree maintenance work above ground level, the working area should always be secured and marked out with signs, tape or the like. The person(s) on the ground should always inform the person(s) working above before they enter the secure working area. Do not use the machine in bad weather, such as dense fog, heavy rain, strong wind, intense cold, etc. Working in bad weather is tiring and often brings added risks, such as icy ground, unpredictable felling direction, etc. Take great care when removing small branches and avoid cutting bushes (i.

e. cutting many small branches at the same time). Small branches can be grabbed by the chain and thrown back at you, causing serious injury. General working instructions 4 IMPORTANT! This section describes basic safety rules for using a chain saw. This information is never a substitute for professional skills and experience.

If you get into a situation where you feel unsafe, stop and seek expert advice. Contact your chain saw dealer, service agent or an experienced chain saw user. Do not attempt any task that you feel unsure of! Before using a chain saw you must understand the effects of kickback and how to avoid them. See instructions under the heading How to avoid kickback. Wear personal protective equipment. Take great care when working on sloping ground. Both situations can cause serious personal injury. 8 Before moving your chain saw switch off the engine and lock the chain using the chain brake. Carry the chain saw with the bar and chain pointing backwards. Fit a guard to the bar before transporting the chain saw or carrying it for any distance.

Have control over the workpiece. If the pieces you intend to cut are small and light, they can jam in the saw chain and be thrown towards you. Even if this does not need to be a danger, you may be surprised and lose control of the saw. Never saw stacked logs or branches without first separating them. Only saw one log or one piece at a time. Remove the cut pieces to keep your working area safe. 4 Never use the chain saw above shoulder height and try not to cut with the tip of the bar. Never use the chain saw one-handed! 9 When you put the chain saw on the ground, lock the saw chain using the chain brake and ensure you have a constant view of the machine. Switch the engine off before leaving your chain saw for any length of time. General rules 1 If you understand what kickback is and how it happens then you can reduce or eliminate the element of surprise.

By being prepared you reduce the risk. Kickback is usually quite mild, but it can sometimes be very sudden and violent. Always hold the chain saw firmly with your right hand on the top handle and your left hand on the front handle. Wrap your fingers and thumbs around the handles. You should use this grip whether you are right-handed or left-handed.



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This grip minimises the risk of injury from tree service chainsaws when working at height from a rope and harness. This chapter sets out working practices to reduce the risk of injury from tree service chainsaws when working at height from a rope and harness.

While it may form the basis of guidance and training literature, it should not be regarded as a substitute for formal training. General requirements working at height Operators of tree service chainsaws working at height from a rope and harness should never work alone. A competent ground worker trained in appropriate emergency procedures should assist them. Operators of tree service chainsaws for this work should be trained in general safe climbing and work positioning techniques and shall properly equipped with harnesses, ropes, strops, karabiners and other equipment for maintaining secure and safe working positions for both themselves and the saw. Preparing to use the saw in the tree The chain saw should be checked, fuelled, started and warmed up by the ground worker and the chain brake should be engaged before it is sent up to the operator in the tree. The chainsaw should be fitted with a suitable strop for attaching to the operator's harness: a) choke the strop around the attachment point on the rear of the saw. 7 Take great care when you cut with the top edge of the bar, i.e. when cutting from the underside of the object. This is known as cutting on the push stroke.

The chain tries to push the chain saw back towards the user. If the saw chain is jamming, the saw may be pushed back at you. 8 Unless the user resists this pushing force there is a risk that the chain saw will move so far backwards that only the kickback zone of the bar is in contact with the tree, which will lead to a kickback. Cutting with the bottom edge of the bar, i.e. from the top of the object downwards, is known as cutting on the pull stroke. In this case the chain saw pulls itself towards the tree and the front edge of the chain saw body rests naturally on the trunk when cutting. Cutting on the pull stroke gives the operator better control over the chain saw and the position of the kickback zone. b) provide suitable karabiners to allow indirect (i.e. via the strop) and direct attachment (i.e. at the attachment point on the saw) of saw to the operators harness. c) ensure the saw is securely attached when it is being sent up to the operator. d) ensure the saw is secured to the harness before it is disconnected from the means of ascent.

The saw should only be attached to the recommended attachment points on the harness. These may be at midpoint (front or rear) or at the sides. Where possible attaching the saw to centre rear mid-point will keep it clear of climbing lines and support its weight centrally down the operator's spine. When moving the saw from any attachment point to another, operators should ensure it is secured in the new position before releasing it from the previous attachment point. Using the chainsaw in the tree An analysis of accidents with these saws during tree service operations shows the primary cause as being inappropriate one-handed use of the saw.

In the vast majority of accidents, operators fail to adopt a secure work position which allows them to hold both handles of the saw. This results in an increased risk of injury due to: · not having a firm grip on the saw if it kicks back. English 23 9 Follow the instructions on sharpening and maintaining your bar and chain. When you replace the bar and chain use only combinations that are recommended by us. See instructions under the headings Cutting equipment and Technical data. WORKING TECHNIQUES · a lack of control of the saw such that it is more liable to contact climbing lines and operators body (particularly the left hand and arm) losing control from insecure work position resulting in contact with the saw (unexpected movement during operation of the saw) Freeing a trapped saw If the saw should become trapped during cutting, operators should: · switch off the saw and attach it securely to the tree inboard (i.e. towards the truck side) of the cut or to a separate tool line. pull the saw from the kerf whilst lifting the branch as necessary. if necessary, use a handsaw or second chain saw to release the trapped saw by cutting a minimum of 30 cm away from the trapped saw.

· Securing the work position for two-handed use To allow the operator to hold the saw with both hands, they should as general rule, aim for secure work position where they are operating the saw at: · hip level when cutting horizontal sections. solar plexus level when cutting vertical sections. · Where the operator is working close into vertical stems with a low lateral forces on their work position, then a good footing may be all that is needed to maintain a secure work position. However as operators move away from the stem, they will need to take steps to remove or counteract the increasing lateral forces by, for example, a re-direct of the main line via a supplementary anchor point or using an adjustable strop direct from the harness to a supplementary anchor point. Gaining a good footing at the working position can be assisted by use of a temporary foot stirrup created from an endless sling. Starting the saw in the tree When starting the saw in the tree, the operator should: a) apply the chain brake before starting. b) hold saw on either the left or right of the body when starting: 1 on the left side hold the saw with the left hand on the front handle and thrust the saw away from the body while holding the pull starter cord in the other hand. on the right side, hold the saw with the right hand on either handle and thrust the saw away from the body while holding the pull starter cord in the left hand. Whether a handsaw or a chainsaw is used to free a stuck saw, the release cuts should always be outboard (toward the tips of the branch), in order to prevent the saw being taken with the section and further complicating the situation. Basic cutting technique ! General · · WARNING! Never use a chain saw by holding it with one hand.

A chain saw is not safely controlled with one hand; you can cut yourself. Always have a secure, firm grip around the handles with both hands. Always use full throttle when cutting! Reduce the speed to idle after every cut (running the engine for too long at full throttle without any load, i.e. without any resistance from the chain during cutting, can lead to serious engine damage).

Cutting from above = Cutting on the pull stroke. Cutting from below = Cutting on the push stroke. · 2 Cutting on the push stroke increases the risk of kickback. See instructions under the heading How to avoid kickback.



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Terms Cutting = General term for cutting through wood.

Limbing = Cutting branches off a felled tree. Splitting = When the object you are cutting breaks off before the cut is complete. There are five important factors you should consider before making a cut: 1 Make sure the cutting equipment will not jam in the cut. The chain brake should always be engaged before lowering a running saw onto its stop. Operators should always check the saw has sufficient fuel before undertaking critical cuts. One-hand use of the chainsaw Operators should never use a chain saw onehanded. Operators should never: cut with the kickback zone at the tip of the chainsaw guide bar hold and cut' sections. attempt to catch falling sections. Cut in the tree when he/she is only secured with one rope, always use 2 secured lines. check condition of harness, belt and ropes at regular frequent intervals.

2 Make sure the object you are cutting will not split. 24 English WORKING TECHNIQUES 3 Make sure the chain will not strike the ground or any other object during or after cutting. - If it is possible (can you turn the log?) stop cutting about 2/3 of the way through the log. 4 Is there a risk of kickback? - Turn the log and finish the cut from the opposite side. The log is supported at one end. There is a high risk that it will split. 5 Do the conditions and surrounding terrain affect how safely you can stand and move about? Two factors decide whether the chain will jam or the object that you are cutting will split: the first is how the object is supported before and after cutting, and the second is whether it is in tension. In most cases you can avoid these problems by cutting in two stages; from the top and from the bottom. You need to support the object so that it will not trap the chain or split during cutting. Start by cutting from below (about 1/3 of the way through).

! WARNING! If the chain jams in the cut: stop the engine! Don't try to pull the chain saw free. If you do you may be injured by the chain when the chain saw suddenly breaks free. Use a lever to open up the cut and free the chain saw. - Finish by cutting from above so that the two cuts meet. The following instructions describe how to handle the commonest situations you are likely to encounter when using a chain saw.

Cutting The log is lying on the ground. There is little risk of the chain jamming or the object splitting. However there is a risk that the chain will touch the ground when you finish the cut. The log is supported at both ends. There is a high risk that the chain will jam.

- Start by cutting from above (about 1/3 of the way through). Cut all the way through the log from above. Avoid letting the chain touch the ground as you finish the cut. Maintain full throttle but be prepared for what might happen. - Finish by cutting from below so that the two cuts meet. English 25 WORKING TECHNIQUES Limbing When limbing thick branches you should use the same approach as for cutting. Cut difficult branches piece by piece. . . Arrangement of branches Weight of snow Felling technique for tree tops You may find you are forced to let the tree-top fall in its natural direction because it is impossible or dangerous to try to make it fall in the direction you first intended. Another very important factor, which does not affect the felling direction but does affect your safety, is to make sure the tree has no damaged or dead branches that might break off and hit you during felling. ! WARNING! It takes a lot of experience to fell a tree.

Inexperienced users of chain saws should not fell trees. Do not attempt any task that you feel unsure of! Safe distance During tree maintenance work above ground level, the working area must always be secured and marked out with signs, tape or the like. The safe distance between the top of the tree that is to be felled and the nearest workplace must be at least 2 1/2 times the height of the tree. Make sure that no-one else is in this risk zone before or during felling.

Felling direction The aim is to fell the tree in a position where you can limb and cross-cut the log as easily as possible. You want it to fall in a location where you can stand and move about safely. The main thing to avoid is that the falling tree top should get jammed in another tree. Taking down a "jammed" tree top is very dangerous (see point 4 in this section). ! WARNING! During critical felling operations, hearing protectors should be lifted immediately when sawing is completed so that sounds and warning signals can be heard. Topping a tree Topping a tree is done using three cuts.

First you make the directional cuts, which consist of the top cut and the bottom cut, then you finish with the felling cut. By placing these cuts correctly you can control the felling direction very accurately. Directional cuts To make the directional cuts you begin with the top cut. Try to take your position in the tree on the right side and cut on the pull stroke. Next make the bottom cut so that it finishes exactly at the end of the top cut.

Once you have decided which way you want the top of the tree to fall you must assess which way the top of the tree would fall naturally. Several factors affect this: . . . Lean of the tree Bend Wind direction 26 English WORKING TECHNIQUES The directional cuts should run 1/4 of the diameter through the trunk and the angle between the top cut and bottom cut should be 45°. The felling hinge controls the direction that the tree falls in. All control over the felling direction is lost if the felling hinge is too narrow or non-existent, or if the directional cuts and felling cut are badly placed. The line where the two cuts meet is called the directional cut line.

This line should be perfectly horizontal and at right angles (90°) to the chosen felling direction. We recommend that you use a bar that is longer than the diameter of the tree, so that you can make the felling cut and directional cuts with single cutting strokes. See the Technical data section to find out which lengths of bar are recommended for your saw. Felling cut The felling cut is made from the opposite side of the tree and it must be perfectly horizontal. Try to take a correct position so you are able to cut on the pull stroke. Make the felling cut about 3-5 cm (1.5-2 inches) above the bottom directional cut. There are methods for felling trees with a diameter larger than the bar length. However these methods involve a much greater risk that the kickback zone of the bar will come into contact with the tree. Set the spike bumper (if one is fitted) just behind the felling hinge.

Use full throttle and advance the chain/bar slowly into the tree. Make sure the tree-top does not start to move in the opposite direction to your intended felling direction. ! WARNING! Unless you have special training we advise you not to fell trees with a diameter larger than the bar length of your saw! Freeing a tree that has fallen badly Cutting trees and branches that are in tension Preparations: Work out which side is in tension and where the point of maximum tension is (i.



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e. where it would break if it was bent even more). Finish the felling cut parallel with the directional cut line so that the distance between them is at least 1/10 of the trunk diameter. The uncut section of the trunk is called the felling hinge. Decide which is the safest way to release the tension and whether you are able to do it safely. In complicated situations the only safe method is to put aside your chain saw and use a winch. English 27 WORKING TECHNIQUES General advice: Position yourself so that you will be clear of the tree or branch when the tension is released.

Cutting the trunk into logs See instructions under the heading Basic cutting technique. Make one or more cuts at or near the point of maximum tension. Make as many cuts of sufficient depth as necessary to reduce the tension and make the tree or branch break at the point of maximum tension. Never cut straight through a tree or branch that is in tension! How to avoid kickback! WARNING! Kickback can happen very suddenly and violently; kicking the chain saw, bar and chain back at the user. If this happens when the chain is moving it can cause very serious, even fatal injuries.

It is vital you understand what causes kickback and that you can avoid it by taking care and using the right working technique. What is kickback? The word kickback is used to describe the sudden reaction that causes the chain saw and bar to jump off an object when the upper quadrant of the tip of the bar, known as the kickback zone, touches an object. Kickback always occurs in the cutting plane of the bar. Normally the chain saw and bar are thrown backwards and upwards towards the user. However, the chain saw may move in a different direction depending on the way it was being used when the kickback zone of the bar touched the object.

Kickback only occurs if the kickback zone of the bar touches an object. 28 English MAINTENANCE General The user must only carry out the maintenance and service work described in this manual. IMPORTANT! Any maintenance other than that described in this manual must be carried out by your servicing dealer (retailer). · The T-screw regulates the throttle setting at idle speed. If the T-screw is turned clockwise this gives a higher idle speed; turning it anti-clockwise gives a lower idle speed. Basic settings and running in The basic carburettor settings are adjusted during testing at the factory. Avoid running at a too high speed during the first 10 hours. CAUTION! If the chain rotates while idling the T-screw must be turned anti-clockwise until the chain stops. Rec. idle speed: 2900 rpm Carburettor adjustment Due to existing environmental and emissions legislation your chain saw is equipped with movement limiters on the carburettor adjuster screws.

These limit the adjustment possibilities to a maximum of a 1/4 turn. Fine adjustment When the machine has been "run-in" the carburettor should be finely adjusted. The fine adjustment should be carried out by a qualified person. First adjust the L-jet, then the idling screw T and then the H-jet. Your Husqvarna product has been designed and manufactured to specifications that reduce harmful emissions. Function The carburettor governs the engine's speed via the throttle control. Air and fuel are mixed in the carburettor. The air/fuel mixture is adjustable. Correct adjustment is essential to get the best performance from the machine. · Adjusting the carburettor means that the engine is adapted to local operating conditions, e.

g. climate, altitude, petrol and the type of 2-stroke oil. · The carburettor has three adjustment controls: - L = Low speed jet - H = High speed jet - T = Idle adjustment screw · The L and H-jets are used to adjust the supply of fuel to match the rate that air is admitted, which is controlled with the throttle. If they are screwed clockwise the air/fuel ratio becomes leaner (less fuel) and if they are turned anti-clockwise the ratio becomes richer (more fuel). A lean mixture gives a higher engine speed and a rich mixture gives a lower engine speed.

H L 1/4 1/4 Changing the type of fuel Fine tuning may be required if the chain saw, after changing the type of fuel, performs differently with regard to starting, acceleration, maximum speed, etc. Conditions · Before any adjustments are made the air filter should be clean and the cylinder cover fitted.

Adjusting the carburettor while a dirty air filter is in use will result in a leaner mixture next time the filter is cleaned. This can give rise to serious engine damage. Do not attempt to adjust the L and H jets beyond either stop as this could cause damage.

Now start the machine according to the starting instructions and let it warm up for 10 minutes. Place the machine on a flat surface so that the bar points away from you and so that the bar and chain do not come into contact with the surface or other objects. · · · Low speed jet L Turn the low speed jet L clockwise until it stops. If the engine accelerates poorly or idles unevenly, turn the low speed jet L anticlockwise until good acceleration and idling are achieved. Fine adjustment of the idle speed T Adjust the idle speed with the T-screw. If it is necessary to re-adjust, turn the T-screw clockwise while the engine is running, until the chain starts to rotate. Then turn anticlockwise until the chain stops. When the idle speed is correctly adjusted the engine should run smoothly in every position and the engine speed should be safely below the speed at which the chain starts to rotate. ! WARNING! Contact your servicing dealer, if the idle speed setting cannot be adjusted so that the chain stops. Do not use the chain saw until it has been properly adjusted or repaired.

English 29 MAINTENANCE High speed jet H At the factory the engine is adjusted at sea level. When working at a high altitude or in different weather conditions, temperatures and atmospheric humidity, it may be necessary to make minor adjustments to the high speed jet. CAUTION! If the high speed jet is screwed in too far, it may damage the piston/cylinder. When test run at the factory, the high speed jet is set so that the engine satisfies the applicable legal requirements at the same time as achieving maximum performance. The carburettor's high speed jet is then locked using a limiter cap in the fully screwed out position. The limiter cap limits the potential to adjust the high speed jet to at most half a turn. Checking the front hand guard Make sure the front hand guard is not damaged and that there are no visible defects such as cracks. Move the front hand guard forwards and back to make sure it moves freely and that it is securely anchored to the clutch cover. Correctly adjusted carburettor When the carburettor is correctly adjusted the machine accelerates without hesitation and 4-cycles a little at full throttle. It is also important that the chain does not rotate at idle.



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If the L-jet is set too lean it may cause starting difficulties and poor acceleration. If the H-jet is set too lean the machine will have less power, poor acceleration and could suffer damage to the engine. Checking the brake trigger Place the chain saw on firm ground and start it. Make sure the chain does not touch the ground or any other object. See the instructions under the heading Start and stop.

Checking, maintaining and servicing chain saw safety equipment Note! All service and repair work on the machine demands special training. This is especially true of the machine's safety equipment. If your machine fails any of the checks described below we recommend that you take it to your service workshop. Chain brake and front hand guard Checking brake band wear Grasp the chain saw firmly, wrapping your fingers and thumbs around the handles. Brush off any wood dust, resin and dirt from the chain brake and clutch drum.

Dirt and wear can impair operation of the brake. Apply full throttle and activate the chain brake by tilting your left wrist forward onto the front hand guard.

Do not let go of the front handle. The chain should stop immediately. Regularly check that the brake band is at least 0.6 mm thick at its thinnest point. 30 English MAINTENANCE Throttle lockout Vibration damping system · Make sure the throttle control is locked at the idle setting when the throttle lockout is released. Regularly check the vibration damping units for cracks or deformation. · Press the throttle lockout and make sure it returns to its original position when you release it. Make sure the vibration damping units are securely attached to the engine unit and handle unit.

Stop switch · Check that the throttle control and throttle lockout move freely and that the return springs work properly. Start the engine and make sure the engine stops when you move the stop switch to the stop setting. · Start the chain saw and apply full throttle. Release the throttle control and check that the chain stops and remains stationary. If the chain rotates when the throttle control is in the idle position you should check the carburettor idle adjustment.

Muffler Chain catcher Never use a machine that has a faulty muffler. Check that the chain catcher is not damaged and is firmly attached to the body of the chain saw. English 31 MAINTENANCE Regularly check that the muffler is securely attached to the machine. mesh will cause the engine to overheat and may lead to serious damage. Note! The mesh must be replaced if it is damaged.

If the mesh is blocked the machine will overheat and this will cause damage to the cylinder and piston. Never use a machine with a muffler that is in poor condition. Never use a muffler if the spark arrestor mesh is missing or defective. Starter ! Loosen the screws (1 and 2). WARNING! When the recoil spring is wound up in the starter housing it is under tension and can, if handled carelessly, pop out and cause personal injury.

Care must be exercised when replacing the return spring or the starter cord. Wear protective glasses and protective gloves. Changing a broken or worn starter cord Push the muffler cover as shown in the picture. · Loosen the screws that hold the starter against the crankcase and remove the starter. Loosen the screws and nuts.

Remove and check that the muffler is ok. · Pull out the cord approx. 30 cm and hook it into the notch in the rim of the pulley. Release the recoil spring by letting the pulley rotate slowly backwards. The muffler is designed to reduce the noise level and to direct the exhaust gases away from the operator. The exhaust gases are hot and can contain sparks, which may cause fire if directed against dry and combustible material. The muffler is equipped with a special spark arrestor mesh. The spark arrestor mesh should be cleaned once a month. This is best done with a wire brush. A blocked 32 English MAINTENANCE · Undo the screw in the centre of the pulley and remove the pulley.

Insert and fasten a new starter cord to the pulley. Wind approx. 3 turns of the starter cord onto the pulley. Connect the pulley to the recoil spring so that the end of the spring engages in the pulley. Fit the screw in the centre of the pulley. Insert the starter cord through the hole in the starter housing and the starter handle. Make a secure knot in the end of the starter cord. Changing a broken recoil spring · Lift up the starter pulley. See instructions under the heading Changing a broken or worn starter cord. Remember that the recoil spring is coiled under tension in the starter housing.

Remove the cassette with the recoil spring from the starter. Lubricate the recoil spring with light oil. Fit the cassette with recoil spring in the starter. Fit the starter pulley and tension the recoil spring. · Tensioning the recoil spring · Hook the starter cord in the notch in the pulley and turn the starter pulley about 2 turns clockwise.

Note! Check that the pulley can be turned at least a further 1/2 turn when the starter cord is pulled all the way out. Fitting the starter · To fit the starter, first pull out the starter cord and place the starter in position against the crankcase. Then slowly release the starter cord so that the pulley engages with the pawls. Fit and tighten the screws that hold the starter. · English 33 MAINTENANCE Air filter Spark plug The air filter must be regularly cleaned to remove dust and dirt in order to avoid: · · · · Carburettor malfunctions Starting problems Loss of engine power Unnecessary wear to engine parts.

Excessive fuel consumption. Remove the air filter after taking off the air filter cover. When refitting make sure that the air filter seals tightly against the filter holder. Clean the filter by brushing or shaking it. The spark plug condition is influenced by: · · · Incorrect carburettor adjustment. An incorrect fuel mixture (too much or incorrect type of oil). A dirty air filter. These factors cause deposits on the spark plug electrodes, which may result in operating problems and starting difficulties. If the machine is low on power, difficult to start or runs poorly at idle speed: always check the spark plug first before taking any further action. If the spark plug is dirty, clean it and check that the electrode gap is 0.

65 mm. The spark plug should be replaced after about a month in operation or earlier if necessary. The filter can be cleaned more thoroughly by washing it in water and detergent. An air filter that has been in use for a long time cannot be cleaned completely. The filter must therefore be replaced with a new one at regular intervals. A damaged air filter must always be replaced. Note! Always use the recommended spark plug type! Use of the wrong spark plug can damage the piston/cylinder.



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