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You can read the recommendations in the user guide, the technical guide or the installation guide for HUSQVARNA 345 E. You'll find the answers to all your questions on the HUSQVARNA 345 E in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual HUSQVARNA 345 E
User guide HUSQVARNA 345 E
Operating instructions HUSQVARNA 345 E
Instructions for use HUSQVARNA 345 E
Instruction manual HUSQVARNA 345 E

Operator's manual
346XP, 346XPG, 346XP E-tech
346XPG E-tech
353, 353G, 353 E-tech
353G E-tech, TrioBrake

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:

Chain brake, activated (right) Chain brake, not activated (left) Both of the operator's hands must be used to operate the chain saw. Never operate a chain saw holding it with one hand only. The engine exhaust from this product contains chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Never let the guide bar tip come in contact with any object. **WARNING!** Kickback may occur when the nose or tip of the guide bar touches an object, and cause a lightning fast reverse reaction, kicking the guide bar up and towards the operator. May cause serious personal injury. Kickback may occur when the nose or tip of the guide bar touches an object, and cause a lightning fast reverse reaction, kicking the guide bar up and towards the operator. May cause serious personal injury. Decompression valve: The valve is to reduce the pressure in the cylinder and make starting easier. You should always use the decompression valve when starting the machine.

Ignition; choke: Set the choke control in the choke position. This should automatically set the stop switch to the start position. Air purge 2 – English **KEY TO SYMBOLS** Symbols in the operator's manual: Switch off the engine by moving the stop switch to the STOP position before carrying out any checks or maintenance. You will find the following labels on your chain saw: Always wear approved protective gloves. EPA I Regular cleaning is required.

EPA III Visual check. Protective goggles or a visor must be worn. The Emissions Compliance Period referred to on the Emission Compliance label indicates the number of operating hours for which the engine has been shown to meet Federal emissions requirements. Category C = 50 hours, B = 125 hours, and A = 300 hours. Maintenance, replacement, or repair of the emission control devices and system may be performed by any nonroad engine repair establishment or individual.

Filling with oil and adjusting oil flow. Refuelling. The chain brake must be engaged when the chain saw is started. **WARNING!** Kickback may occur when the nose or tip of the guide bar touches an object, and cause a lightning fast reverse reaction, kicking the guide bar up and towards the operator. May cause serious personal injury. English – 3 **CONTENTS Contents KEY TO SYMBOLS Symbols on the machine:**

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40 40 41 42 4 – English 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 Huskvarna River, for production of muskets. The location was logical, since water power was harnessed from the Huskvarna River to create the waterpowered plant. During over 300 years of continuous operation, 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. We develop, manufacture and market high quality motor driven products for forestry and gardening as well as for building and construction industry. Your purchase 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 authorized dealers, ask for the address of your nearest servicing dealer. 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 operator's 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 ever lend or sell this machine, make sure that the borrower or buyer gets the operator's manual, so they will also know how to properly maintain and use it. 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. For customer assistance, contact us at our website: www.usa.husqvarna.com

English – 5 WHAT IS WHAT? 27 32 26 25 18 19 24 31 4 1 2 5 6 7 8 9 20 21 22 23 10 11 12 13 14 15 16 17 30 29 28 What is what on the chain saw? 1 2 3 4 5 6 7 8 9 Product and serial number plate Throttle lockout Decompression valve Front handle Cylinder cover Front hand guard Muffler Bumper spike Bar tip sprocket 18 Starter handle 19 Chain oil tank 20 Starter 21 Fuel tank 22 Choke control/Start throttle lock 23 Rear handle 24 Stop switch 25 Adjuster screws carburetor 26 Air purge 27 Information and warning decal 28 Bar guard 29 Combination spanner 30 Operator's manual 31 Right-hand brake trigger 32 Switch for heated handle (346XPG TrioBrake, 353G TrioBrake) 33 Felling direction mark 10 Rear handle with right hand guard 11 Throttle

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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.



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So always use approved hearing protection. ! • • **WARNING!** Never allow children to use or be in the vicinity of the machine. As the machine is equipped with a spring-loaded stop switch and can be started by low speed and force on the starter handle, even small children under some circumstances can produce the force necessary to start the machine. This can mean a risk of serious personal injury. Therefore remove the spark plug cap when the machine is not under close supervision.

• **Important IMPORTANT!** This chain saw for forest service is designed for forest work such as felling, delimiting and cutting. 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. @@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!** 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.

Your warranty may not cover damage or liability caused by the use of nonauthorized accessories or replacement parts. **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!** This machine produces an electromagnetic field during operation. This field may under some circumstances interfere with active or passive medical implants. To reduce the risk of serious or fatal injury, we recommend persons with medical implants to consult their physician and the medical implant manufacturer before operating this machine. ! ! ! **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 combincwards, towards the front handle. • This movement activates a spring-loaded mechanism that tightens the brake band (C) around the engine drive system (D) (clutch drum). • Kickback can be very sudden and violent.

Most kickbacks are minor and do not always activate the chain brake. If this happens you should hold the chain saw firmly and not let go. • • The front hand guard is not designed solely to activate the chain brake. Another important feature is that it reduces the risk of your left hand hitting the chain if you lose grip of the front handle. The way the chain brake is activated, either manually or automatically by the 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. • The chain brake must be engaged when the chain saw is started to prevent the saw chain from rotating. • Use the chain brake as a "parking brake" when starting and when moving over short distances, to If the kickback is less violent or the kickback zone of the bar is closer to you the chain brake is designed to English – 9 **GENERAL SAFETY PRECAUTIONS** be activated manually by the movement of your left hand. Will my chain brake always protect me from injury in the event of a kickback? No. First, the chain brake must be in working order to provide the intended protection.

Second, it must be activated during the kickback as described above to stop the saw chain. Third, the chain brake may be activated but if the bar is too close to you the brake might not have enough time to slow down and stop the chain before the chain saw hits you. Only you and proper working technique can eliminate kickback and its danger. • In the felling position the left hand is in a position that makes manual activation of the chain brake impossible. With this type of grip, that is when the left hand is placed so that it cannot affect the movement of the front hand guard, the chain brake can only be activated by the inertia action.

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 move back to their original positions.

This arrangement means that the throttle control is automatically locked at the idle setting. A Will my hand always activate the chain brake during a kickback? No. It takes a certain force to move the hand guard forward. If your hand only lightly touches the front guard or slips over it, the force may not be enough to trigger the chain brake. You should also maintain a firm grip of the chain saw handles while working. If you do and experience a kickback, your hand may never leave the front handle and will not activate the chain brake, or the chain brake will only activate after the saw has swung around a considerable distance. In such instances, the chain brake might not have enough time to stop the saw chain before it touches you. There are also certain positions in which your hand cannot reach the front hand guard to activate the chain brake; for example, when the saw chain is held in felling position. B

Chain catcher The chain catcher is designed to catch the chain if it snaps or jumps off. @@This should not happen if the chain is properly tensioned (see instructions under the heading Assembly) and if the bar and chain are properly serviced and maintained (see instructions under the heading General working instructions).

Will my inertia activated chain brake always activate during kickback in the event of a kickback? No.



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First your brake must be in working order. Testing the brake is simple, see instructions under the heading Checking, maintaining and servicing chain saw safety equipment. We recommend you do before you begin each work session. Second the kickback must be strong enough to activate the chain brake. If the chain brake is too sensitive it would activate all the time which would be a nuisance. 10 – English GENERAL SAFETY PRECAUTIONS Right hand guard

Apart from protecting your hand if the chain jumps or snaps, the right hand guard stops branches and twigs from interfering with your grip on the rear handle. Stop switch Use the stop switch to switch off the engine. Muffler Vibration damping system Your machine is equipped with a vibration damping system that is designed to reduce vibration and make operation easier. The muffler is designed to keep noise levels to a minimum and to direct exhaust fumes away from the user.

! 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! The machine's vibration damping system reduces the transfer of vibration between the engine unit/cutting equipment and the machine's handle unit. The body of the chain saw, including the cutting equipment, is insulated from the handles by vibration damping units. In areas with a hot, dry climate there is a high risk of fires. These areas are sometimes subject to government rules requiring among other things the muffler must be equipped with an approved type of spark arrestor screen.

Cutting hardwoods (most broadleaf trees) creates more vibration than cutting softwoods (most conifers). Cutting with cutting equipment that is blunt or faulty (wrong type or badly sharpened) will increase the vibration level. 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! Overexposure to vibration can lead to circulatory damage or nerve damage in people who have impaired circulation. Contact your doctor if you experience symptoms of overexposure to vibration. Such symptoms include numbness, loss of feeling, tingling, pricking, pain, loss of strength, changes in skin colour or condition. These symptoms normally appear in the fingers, hands or wrists. These symptoms may be increased in cold temperatures. **! 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. If a spark arrestor screen is required in your area, never use the saw without or with a broken spark arrestor screen. Cutting equipment This section describes how to choose and maintain your cutting equipment in order to: ••• Reduce the risk of kickback.

Reduce the risk of the saw chain breaking or jumping off the bar. Obtain optimal cutting performance. English – 11 GENERAL SAFETY PRECAUTIONS •• Extend the life of cutting equipment. Avoid increasing vibration levels. 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. • 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. IMPORTANT! No saw chain design eliminates the danger of kickback.

WARNING! Any contact with a rotating saw chain can cause extremely serious injuries. General rules • Only use cutting equipment recommended by us! See instructions under the heading Technical data. • 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. 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 • 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. • Length (inches/cm) • 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. 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. Cutting equipment designed to reduce kickback • **! 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. 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. The only way to avoid kickback is to make sure that the kickback zone of the bar never touches anything. 12 – English GENERAL SAFETY PRECAUTIONS • Bar groove width (inches/mm). The groove in the bar must match the width of the chain drive links. difference in height between the two (depth gauge setting). • Chain oil hole and hole for chain tensioner.

The bar must be matched to the chain saw design. When you sharpen a cutting tooth there are four important factors to remember. 1 Filing angle Chain • Chain pitch (inches) 2 • Drive link width (mm/inches) Cutting angle 3 • Number of drive links. 4 File position Round file diameter Sharpening your chain and adjusting depth gauge setting General information on sharpening cutting teeth • Never use a blunt chain. 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. 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. • 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.



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Sharpening cutting teeth • 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 To sharpen cutting teeth you will need a round file and a file gauge. See instructions under the heading Technical English – 13 GENERAL SAFETY PRECAUTIONS data for information on the size of file and gauge that are recommended for the chain fitted to your chain saw.

Adjustment of depth gauge setting • • Check that the chain is correctly tensioned. A slack chain will move sideways, making it more difficult to sharpen correctly. 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. • • 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 and file the teeth on the other side. • 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. • File all the teeth to the same length.

When the length of the cutting teeth is reduced to 5/32 inch (4 mm) the chain is worn out and should be replaced. 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. Tensioning the chain ! WARNING! A slack chain may jump off the bar 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. ! WARNING! The risk of kickback is increased if the depth gauge setting is too large! Tension the chain as tightly as possible, but not so tight that you cannot pull it round freely by hand.

14 – English GENERAL SAFETY PRECAUTIONS • Loosen the bar nuts that hold the clutch cover/chain brake. Use the combination spanner. Then tighten the bar nuts by hand as tight as you can. Filling with chain oil • All our chain saws have an automatic chain lubrication system. On some models the oil flow is also adjustable.

• 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. • 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). • Use the combination spanner to tighten the bar nuts while lifting the tip of the bar at the same time.

Check that you can pull the chain round freely by hand and that it does not sag from the underside of the bar. • 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. After 1 minute running at 3/4 throttle you should see a distinct line of oil on the light surface. 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 ! Chain oil WARNING! Poor lubrication of cutting equipment may cause the chain to snap, which could lead to serious, even fatal injuries.

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 has a vegetable oil base.

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. If the chain lubrication is not working: • Check that the oil channel in the bar is not obstructed. Clean if necessary. • Check that the groove in the edge of the bar is clean. Clean if necessary. English – 15 GENERAL SAFETY PRECAUTIONS • 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. 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 5/32 inch (4 mm) the chain must be replaced. Bar Check regularly: If the chain lubrication system is still not working after carrying out the above checks and associated measures you should contact your servicing dealer. Chain drive sprocket • Whether there are burrs on the edges of the bar.

Remove these with a file if necessary. • The clutch drum is fitted with one of the following drive sprockets: A Spur sprocket (the chain sprocket is welded on the drum) B Rim sprocket (replaceable) • 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.

Regularly check the degree of wear on the drive sprocket. Replace if wear is excessive. Replace the drive sprocket whenever you replace the chain. Needle bearing lubrication • To prolong the life of the bar you should turn it over daily.



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Both versions of sprockets have a needle bearing on the drive shaft, which has to be greased regularly (once a week). CAUTION! Use only high quality bearing grease or engine oil. See instructions under the heading Maintenance, Needle bearing lubrication. Checking wear on cutting equipment ! WARNING! Most chain saw accidents happen when the chain touches the operator. Wear 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 'Machine's safety equipment. Use the recommended protective equipment and check its condition. See instructions under the heading General working instructions. Check that all the chain saw safety features are working. See instructions under the headings General working instructions and General safety precautions. 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. 16 – English ASSEMBLY Fitting the bar and chain Tension the chain by turning the chain tensioning screw clockwise using the combination spanner. See instructions under the heading Tensioning the chain. ! 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.

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. Remove the bar nuts and remove the clutch cover (chain brake). Take off the transportation ring (A). 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. Note: If clutch cover is difficult to remove, replace bar nuts, engage brake and rerelease (an audible click will be heard if released properly). 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 correctly located in the groove in the bar.

Tighten the bar nuts finger tight. English – 17 FUEL HANDLING Fuel Note! The machine is equipped with a two-stroke engine and must always be run using a mixture of gasoline 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. Gasoline, litre Two-stroke oil, litre 2% (1:50) 5 10 15 20 US gallon 1 2 1/2 0,10 0,43/0,20 0,30 0,40 US fl. oz. 2 1/2 6 1/2 12 7/8 ! WARNING! Always ensure there is adequate ventilation when handling fuel. Gasoline 5 Mixing ••Use good quality unleaded gasoline. 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 87 ((RON+MON)/2). If you run the engine on a lower octane grade than 87 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. ••Always mix the gasoline and oil in a clean container intended for fuel. Always start by filling half the amount of the gasoline to be used. Then add the entire amount of oil.

Mix (shake) the fuel mixture. Add the remaining amount of gasoline. 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. •••••Environment fuel HUSQVARNA recommends the use of alkylate fuel or environmental fuel for four-stroke engines blended with two-stroke oil as set out below. Note that carburetor adjustment may be necessary when changing the type of fuel (see instructions under the heading Carburetor). Running-in Avoid running at a too high speed for extended periods during the first 10 hours. 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. ••••Never use waste oil. 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 32°F (0°C) 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. •Mixing ratio 1:50 (2%) for all engines. •18 – English FUEL HANDLING

Fueling •1 Never start the machine: If you have spilled fuel or chain oil on the machine.

Wipe off the spillage and allow remaining fuel to evaporate. If you have spilled fuel on yourself or your clothes, change your clothes. Wash any part of your body that has come in contact with fuel. Use soap and water. If the machine is leaking fuel.

Check regularly for leaks from the fuel cap and fuel lines. 2 ! WARNING! Taking the following precautions, will lessen the risk of fire: 3 Do not smoke and do not place any hot objects in the vicinity of fuel. Always stop the engine and let it cool for a few minutes before refuelling. When refuelling, open the fuel cap slowly so that any excess pressure is released gently. Tighten the fuel cap carefully after refuelling.

Always move the machine away from the refuelling area before starting. •! WARNING! Never use a machine with visible damage to the spark plug guard and ignition cable. A risk of sparking arises, which can cause a fire. Transport and storage Always store the chain saw and fuel so that there is no risk of leakages or fumes coming into contact with sparks or naked flames from electrical equipment, electric motors, relays/switches, boilers and the like.



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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. Ask where you can dispose of waste fuel and chain oil at your local gas station. The bar guard must always be fitted to the cutting attachment when the machine is being transported or in storage, in order to prevent accident contact with the sharp chain. Even a non-moving chain can cause serious cuts to yourself or persons you bump into with an exposed chain. Secure the machine during transport.

Clean the area around the fuel cap. 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. Make sure the fuel is well mixed by shaking the container before refuelling. The capacities of the chain oil tank and fuel tank are carefully matched. You should therefore always fill the chain oil tank and fuel tank at the same time. ••••WARNING! Fuel and fuel vapor are highly flammable. Take care when handling fuel and chain oil. Be aware of the risks of fire, explosion and those associated with inhalation.

Long-term storage Empty the fuel/oil tanks in a well ventilated area. Store the fuel in approved cans in a safe place. Fit the bar guard. Clean the machine. See instructions under the heading Maintenance schedule.

Ensure the machine is cleaned and that a complete service is carried out before long-term storage. ! Fuel safety ••• Never refuel the machine while the engine is running. Make sure there is plenty of ventilation when refuelling or mixing fuel (gasoline and 2-stroke oil). Move the machine at least 10 ft (3 m) from the refuelling point before starting it. Min.

3 m (10 ft) English – 19 STARTING AND STOPPING Starting and stopping the machine has started the valve will automatically return to its original setting.

! WARNING! Note the following before starting: The chain brake must be engaged when the chain saw is started to reduce the chance of contact with the moving chain during starting. Never start a chain saw unless the bar, chain and all covers are fitted correctly. Otherwise the clutch can come loose and cause personal injuries. Place the machine on firm ground. Make sure you have a secure footing and that the chain cannot touch anything. Keep people and animals well away from the working area. A B Warm engine Use the same procedure as for starting a cold engine but without setting the choke control in the choke position. The correct choke/start throttle setting is obtained by moving the choke control to the choke position and then pushing it in again. Cold engine Starting: The chain brake should be activated when starting the chain saw.

Activate the chain brake by pushing the front hand guard forwards. Starting Ignition; choke: Set the choke control in the choke position. This should automatically set the stop switch to the start position. Start throttle: The correct choke/start throttle setting is obtained by moving the control to the choke position. Grip the front handle with your left hand. Hold the chain saw on the ground by placing your right foot through the rear handle. Pull the starter handle with your right hand and pull out the starter cord slowly until you feel a resistance (as the starter pawls engage) then pull firmly and rapidly. Never wrap the starter cord around your hand CAUTION! Do not pull the starter cord all the way out and do not let go of the starter handle when the cord is fully extended. This can damage the machine. If the machine is fitted with an air purge (A): Press the air purge repeatedly until fuel begins to fill the bulb. The bulb need not be completely filled. If the machine is fitted with a decompression valve (B): Press the valve to reduce the pressure in the cylinder and make starting easier. You should always use the decompression valve when starting the machine. Once Push in the choke control as soon as the engine fires and make repeated starting attempts. Immediately press and release the throttle when the engine starts.

That will disengage the throttle latch. As the chain brake is still activated the engine must return to idling speed as soon as possible by disengaging the 20 – English STARTING AND STOPPING throttle latch in order to avoid unnecessary wear on the clutch assembly. • Always hold the saw with both hands. The right hand should be on the rear 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. Note! Pull the front hand guard towards the front handle. The chain brake is now disengaged. Your saw is ready for use. Stopping ! • WARNING! Long term inhalation of the engine's exhaust fumes, chain oil mist and dust from sawdust can represent a health risk. Never start a chain saw unless the bar, chain and all covers are fitted correctly. 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. @@@@Check that the rear right hand guard 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 the chain catcher is in place and not damaged. @@3 CAUTION! @@@@cutting many small branches at the same time). @@This section describes basic safety rules for using a chain saw. @@@@Do not attempt any task that you are not sure you can handle! @@See instructions under the heading How to avoid kickback.

@@@Wear personal protective equipment. @@5 Take great care when cutting a tree that is under tension. @@@@Both situations can cause serious personal injury. @@Carry the chain saw with the bar and chain pointing backwards. @@This could damage the mechanism and disable the chain brake.

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 avoid cutting with the tip of the bar. Never use the chain saw one-handed! 7 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.



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Switch the engine off before leaving your chain saw for any length of time. ! **WARNING!** Sometimes chips get stuck in the clutch cover causing the chain to jam.

Always stop the engine before cleaning. General rules 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 rear 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. This grip minimizes the effect of kickback and lets you keep the chain saw under control. Do not let go of the handles! 5 In order to keep control of your saw, always maintain a firm foothold. Never work on a ladder, in a tree or on any other insecure support. 2 6 7 3 Most kickback accidents happen during limbing. Make sure you are standing firmly and that there is nothing in the way that might make you trip or lose your balance. Always use a fast cutting speed, i.e. full throttle.

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 with a pushing chain. The chain tries to push the chain saw back towards the English – 23 **WORKING TECHNIQUES** user.

If the saw chain is jamming, the saw may be pushed back at you. 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 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 can lead to a kickback. 2 Make sure the cutting equipment will not jam in the cut. Make sure the object you are cutting will not split. Cutting with the bottom edge of the bar, i.e. from the top of the object downwards, is known as cutting with a pulling chain. 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 with a pulling chain gives the operator better control over the chain saw and the position of the kickback zone. 3 Make sure the chain will not strike the ground or any other object during or after cutting. 4 Is there a risk of kickback? 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. 5 Basic cutting technique Do the conditions and surrounding terrain affect how safely you can stand and move about? ! General ••

WARNING! 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. 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. **IMPORTANT!** 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. The following instructions describe how to handle the common situations you are likely to encounter when using a chain saw.

Limbing When limbing thick branches you should use the same approach as for cutting. 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 with a pulling chain.

Cutting from below = Cutting with pushing chain. •• Cutting with a pushing chain increases the risk of kickback. See instructions under the heading How to avoid kickback. Terms Cutting = General term for cutting through wood. 24 – English **WORKING TECHNIQUES** Cut difficult branches piece by piece. Turn the log and finish the cut from the opposite side. 1 2 3 The log is supported at one end. There is a high risk that it will split. Cutting ! **WARNING!** Never attempt to cut logs while they are in a pile or when a couple of logs are lying together. Such procedures drastically increase the risk of kickback which can result in a serious or fatal injury.

Start by cutting from below (about 1/3 of the way through). If you have a pile of logs, each log you attempt to cut should be removed from the pile, placed on a saw horse or runners and cut individually. Remove the cut pieces from the cutting area. By leaving them in the cutting area, you increase the risk for inadvertently getting a kickback, as well as increasing the risk of losing your balance while working. Finish by cutting from above so that the two cuts meet. The log is supported at both ends. There is a high risk that the chain will jam. 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.

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.

If it is possible (can you turn the log?) stop cutting about 2/3 of the way through the log. Tree felling technique **IMPORTANT!** It takes a lot of experience to fell a tree. Inexperienced users of chain saws should not fell trees. Do not attempt any task beyond your experience level! Safe distance The safe distance between a tree that is to be felled and anyone else working nearby is at least 2 1/2 tree lengths. English – 25 **WORKING TECHNIQUES** Make sure that no one else is in this "risk zone" before or during felling.

there is high accident risk. See instructions under the heading Freeing a tree that has fallen badly. 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. Once you have decided which way you want the tree to fall you must judge which way the tree would fall naturally. Several factors affect this: •••••••• Lean of the tree Bend Wind direction Arrangement of branches Weight of snow Obstacles within the reach of the tree: for example, other trees, power lines, roads and buildings.



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Look for signs of damage and rot in the stem, this makes it more probably that the tree will break and start to fall before you expect it to. Remove any undergrowth from the base of the tree and check the area for obstacles (stones, branches, holes, etc.) so that you have a clear path of retreat when the tree starts to fall. Your path of retreat should be roughly 135 degrees away from the intended felling direction.

IMPORTANT! During critical felling operations, hearing protectors should be lifted immediately when sawing is completed so that sounds and warning signals can be heard. Clearing the trunk and preparing your retreat Delimb the stem up to shoulder height. It is safer to work from the top down and to have the tree between you and the saw. Da ng Retreat path You may find you are forced to let the tree 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. The main point to avoid is letting the tree fall onto another tree. It is very dangerous to remove a trapped tree and er zo ne gd llin Fe cti ire on Retreat path ng Da er zon e Da ng er zo ne Felling !
WARNING! Unless you have special training we advise you not to fell trees with a diameter larger than the bar length of your saw! Felling 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. 26 – English WORKING TECHNIQUES Directional cuts To make the directional cut you begin with the top cut.

Aim using to the saw's felling direction mark (1) toward a goal further forward in the terrain, where you would like the tree to fall (2). Stand on the right-hand side of the tree, behind the saw, and cut with a pull stroke. Next make the bottom cut so that it finishes exactly at the end of the top cut. The felling hinge controls the direction that the tree falls in. trunk diameter.

The uncut section of the trunk is called the felling hinge. 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°. 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.

When the felling cut and directional cut are complete the tree should start to fall by itself or with the aid of a felling wedge or breaking bar. Felling cut The felling cut is made from the opposite side of the tree and it must be perfectly horizontal. Stand on the left side of the tree and cut on the pull stroke. Make the felling cut about 1.5-2 inches (3-5 cm) above the bottom directional cut. 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 instructions under the heading Technical data section to find out which lengths of bar are recommended for your saw. Finish the felling cut parallel with the directional cut line so that the distance between them is at least 1/10 of the There are methods for felling trees with a diameter larger than the bar length. However these methods involve a English – 27 WORKING TECHNIQUES much greater risk that the kickback zone of the bar will come into contact with the tree. 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. General advice: Position yourself so that you will be clear of the tree or branch when the tension is released. Freeing a tree that has fallen badly Freeing a "trapped tree" It is very dangerous to remove a trapped tree and there is high accident risk. Never try to fell the tree that is trapped. 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! If you must cut across tree/limb, make two to three cuts, one inch apart, one to two inches deep. Never work in the risk zone of the hanging trapped tree. Continue to cut deeper until tree/limb bends and tension is released. Cut tree/limb from outside the bend, after tension has been released.

The safest method is to use a winch. • Tractor-mounted How to avoid kickback ! • Portable **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? 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. e. where it would break if it was bent even more). 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. 28 – English WORKING TECHNIQUES 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. Limbing ! **WARNING!** A majority of kickback accidents occur during limbing. Do not use the kickback zone of the guide bar. Be extremely cautious and avoid contacting the log, other limbs or objects with the nose of the guide bar. Be extremely cautious of limbs under tension. They can spring back toward you and cause loss of control resulting in injury. Make sure that you can stand and move about safely. Work on the left side of the trunk. Work as close as possible to the chain saw for maximum control.

If possible, let the weight of the chain saw rest on the trunk. Keep the trunk between you and the chain saw as you move along the trunk. Cutting the trunk into logs See instructions under the heading Basic cutting technique. English – 29 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).



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• 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. 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. Carburetor adjustment Due to existing environmental and emissions legislation your chain saw is equipped with movement limiters on the carburetor adjuster screws.

These limit the adjustment possibilities to a maximum of a 1/2 turn. H Basic settings and running in The basic carburetor settings are adjusted during testing at the factory. Avoid running at a too high speed for extended periods 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: 2700 rpm Your Husqvarna product has been designed and manufactured to specifications that reduce harmful emissions. Function • The carburetor governs the engine's speed via the throttle control. Air and fuel are mixed in the carburetor. The air/fuel mixture is adjustable. Correct adjustment is essential to get the best performance from the machine.

The satisfactory operation of a catalytic converter depends, among other factors, on the correct adjustment of the carburetor. Carefully follow the instructions below, using a tachometer as an aid. The setting of the carburetor means that the engine is adapted to local conditions, for example, the climate, altitude, fuel and the type of 2-stroke oil. The carburetor has three adjustment controls: - L = Low speed jet - H = High speed jet - T = Idle adjustment screw •••L T • 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) 30 – English L Fine adjustment 1/2 1/2 When the machine has been "run-in" the carburetor should be finely adjusted.

The fine adjustment should be carried out by a qualified person. First adjust the Ljet, then the idling screw T and then the H-jet. Conditions • Before any adjustments are made the air filter should be clean and the cylinder cover fitted. Adjusting the carburetor 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 idling 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 counterclockwise until the chain stops. A correctly adjusted idle speed setting occurs when the engine runs smoothly in H MAINTENANCE every position. It should also be good margin to the rpm when the chain starts to rotate.

Chain brake and front hand guard Checking brake band wear ! WARNING! Contact your servicing dealer, if the idle speed setting cannot be adjusted so that the chain stops at idle. Do not use the chain saw until it has been properly adjusted or repaired. Brush off any wood dust, resin and dirt from the chain brake and clutch drum. Dirt and wear can impair operation of the brake. 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 carburetor'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.

Regularly check that the brake band is at least 0.024 inch (0.6 mm) thick at its thinnest point. Checking the front hand guard Make sure the front hand guard is not damaged and that there are no visible defects such as cracks. Correctly adjusted carburetor When the carburetor is correctly adjusted the machine accelerates without hesitation and the machine 4-cycles a little at max. speed. It is also important that the chain does not rotate at idle. 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. Move the front hand guard forwards and back to make sure it moves freely and that it is securely anchored to the clutch cover.

Checking, maintaining and servicing chain saw safety equipment Note! All servicing and repair work on the machine requires special training. This is especially true of the machine's safety equipment. If your machine fails any of the checks described below we recommend you to contact our servicing dealer. Checking the inertia brake release With the engine turned off, hold the chain saw over a stump or other firm object. Let go of the front handle so English – 31 MAINTENANCE that the bar drops towards the stump as the chain saw rotates around the rear handle. 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. When the bar hits the stump the brake should be applied. Grasp the chain saw firmly, wrapping your fingers and thumbs around the handles.

Checking the right-hand brake trigger 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. Check that the right hand guard is not damaged and that there are no visible defects, such as cracks. Throttle lockout Push the trigger up and forwards to check that it moves freely and is securely hinged to the clutch cover.

• Make sure the throttle control is locked at the idle setting when the throttle lockout is released. Never carry or hang the saw by the trigger! This could damage the mechanism and disable the chain brake. • Press the throttle lockout and make sure it returns to its original position when you release it.



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