# Bäumr-AG


# Petrol Powered Pole Tools

## User Manual

[Revision 5.0 October 2019]

READ THIS MANUAL CAREFULLY BEFORE USE – FAILURE TO DO SO MAY RESULT IN INJURY, PROPERTY DAMAGE AND MAY VOID WARRANTY. • KEEP THIS MANUAL FOR FUTURE REFERENCE. • Products covered by this manual may vary in appearance, assembly, inclusions, specifications, description and packaging.

Products with 4-stroke engines are NOT supplied with engine oil, although traces of oil from the manufacturing process may be present. It is essential to add adequate engine oil of the correct type to the engine before use – see Engine Oil. **Failure to add engine oil will void the product warranty**.

# Safety

Safety messages are designed to alert you to possible dangers or hazards that could cause death, injury or equipment or property damage if not understood or followed. Safety messages have the following symbols:

You WILL be KILLED or SERIOUSLY INJURED if you do not follow instructions.

You CAN be KILLED or SERIOUSLY INJURED if you do not follow instructions.

You CAN be INJURED if you do not follow instructions or equipment damage may occur.

It is vital that you read and understand this user manual before using the product, including safety warnings, and any assembly and operating instructions. Keep the manual for future reference.

Safety precautions and recommendations detailed here must be fully understood and followed to reduce the risk of injury, fire, explosion, electrical hazard, and/or property damage.

Safety information presented here is generic in nature – some advice may not be applicable to every product. The term "equipment" refers to the product, be it electrical mains powered, battery powered or combustion engine powered.

- **Before Use** - If you are not familiar with the safe operation/handling of the equipment, or are in any way unsure of any aspect of suitability or correct use for your application, you should complete training conducted by a person or organization qualified in safe use and operation of this equipment, including fuel/electrical safety.
- Do NOT operate the equipment in flammable or explosive environments, such as in the presence of flammable liquids, gases or dust. The equipment may create sparks or heat that may ignite flammable substances.
- Keep clear of moving parts.
- Equipment may be a potential source of electric shock or injury if misused.
- Do NOT operate the equipment if it is damaged, malfunctioning or is in an excessively worn state.
- Do NOT allow others to use the equipment unless they have read this manual and are adequately trained.
- Keep packaging away from children - risk of suffocation!
- Operators must use the equipment correctly,consider conditions and pay due care to persons and property.
- Ensure that any property that may be damaged by equipment failure is not within the work area / operating range.

## General Work Area Safety

- Work areas should be clean and well it.
- Do not operate the equipment if bystanders, animals etc are within operating range of the equipment or the general work area.
- If devices are provided for connecting dust extraction / collection facilities, ensure these are connected and used properly. Dust collection can reduce dust-related hazards.

## General Personal Safety

- Wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect from eye and ear injury, poisoning, burns, cutting and crush injuries. Protective equipment such as safety goggles, respirators, non-slip safety footwear, hard hat, hearing protection etc should be used for appropriate equipment / conditions. Other people nearby should also wear appropriate personal protective equipment. Do not wear loose clothing or jewellery, which can be caught in moving parts. Keep hair and clothing away from the equipment.
- Stay alert and use common sense when operating the equipment. Do not over-reach. Always maintain secure footing and balance.
- Do not use the equipment if tired or under the influence of drugs, alcohol or medication.
- This equipment is not intended for use by persons with reduced physical, sensory or mental capabilities.

## General Fuel Safety

- Petrol/fuel/gasoline is extremely flammable – keep clear of naked flames or other ignition sources.
- Do not spill fuel. If you spill fuel, wipe it off the equipment immediately – if fuel gets on your clothing, change clothing.
- Do NOT smoke near fuel or when refuelling.
- Always shut off the engine before refuelling.
- Do NOT refuel a hot engine.
- Open the fuel cap carefully to allow any pressure build-up in the tank to release slowly.
- Always refuel in well ventilated areas.
- Always check for fuel leakage. If fuel leakage is found, do not start or run the engine until all leaks are fixed.

## General Carbon-Monoxide Safety

- Using a combustion engine indoors **CAN KILL IN MINUTES**. Engine exhaust contains carbon-monoxide – a poison you cannot smell or see.
- Use combustion engines OUTSIDE only, and far away from windows, doors and vents.

## General Equipment Use and Care

- The equipment is designed for domestic use only.
- Handle the equipment safely and carefully.
- Before use, inspect the equipment for misalignment or binding of moving parts, loose components, damage or any other condition that may affect its operation. If damaged, have the equipment repaired by an authorised service centre or technician before use.
- Prevent unintentional starting of the equipment - ensure equipment and power switches are in the OFF position before connecting or moving equipment. Do not carry equipment with hands or fingers touching any controls. Remove any tools or other items that are not a part of the equipment from it before starting or switching on.
- Do not force the equipment. Use the correct equipment for your application. Equipment will perform better and be safer when used within its design and usage parameters.
- Use the equipment and accessories etc. in accordance with these instructions, considering working conditions and the work to be performed. Using the equipment for operations different from those intended could result in hazardous situations.
- Always keep equipment components (engines, hoses, handles, controls, frames, housings, guards etc) and accessories (cutting tools, nozzles, bits etc) properly maintained. Keep the equipment clean and, where applicable, properly lubricated.
- Store the equipment out of reach of children or untrained persons. To avoid burns or fire hazards, let the equipment cool completely before transporting or storing. Never place or store the equipment near flammable materials, combustible gases or liquids etc.
- The equipment is not weather-proof, and should not be stored in direct sunlight, at high ambient temperatures or locations that are damp or humid.
- Do not clean equipment with solvents, flammable liquids or harsh abrasives.
- For specific equipment safety use and care, see Equipment Safety.

## General Electrical Safety

- Inspect electrical equipment, extension cords, power bars, and electrical fittings for damage or wear before each use. Repair or replace damaged equipment immediately.
- Ensure all power sources conform to equipment voltage requirements and are disconnected before connecting or disconnecting equipment.
- When wiring electrically powered equipment, follow all electrical and safety codes.
- Wherever possible, use a residual current device (RCD).
- High voltage / high current power lines may be present. Use extreme caution to avoid contact or interference with power lines. Electrical shock can be fatal.

## General Electrical Safety

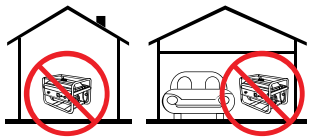
- Electrically grounded equipment must have an approved cord and plug and be connected to a grounded electrical outlet.
- Do NOT bypass the ON/OFF switch and operate equipment by connecting and disconnecting the electrical cord.
- Do NOT use equipment that has exposed wiring, damaged switches, covers or guards.
- Do NOT use electrical equipment in wet conditions or in damp locations.
- Do NOT use electrical cords to lift, move or carry equipment.
- Do NOT coil or knot electrical cords, and ensure electrical cords are not trip hazards.

## General Service Information

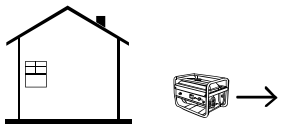
- The equipment must be serviced or repaired at authorised service centres by qualified personnel only.
- Replacement parts must be original equipment manufacturer (OEM) to ensure equipment safety is maintained.
- Do NOT attempt any maintenance or repair work not described in this manual.
- After use, the equipment and components may still be hot – allow the equipment to cool and disconnect spark plugs and/or electrical power sources and/or batteries from it before making adjustments, changing accessories or performing repair or maintenance.
- Do NOT make adjustments while the equipment is running.
- Perform service related activities in suitable conditions, such as a workshop.
- Replace worn, damaged or missing warning/safety labels immediately.

**⚠ DANGER ⚠**

**Using an engine or wood/charcoal/gas fuelled appliance indoors CAN KILL YOU IN MINUTES. Engine exhaust and wood/charcoal/gas fumes contain carbon monoxide. This is a poison you cannot see or smell.**



**NEVER use inside a building, home, garage, boat, caravan or tent EVEN IF doors and windows are open.**



**Only use OUTSIDE and far away from windows, doors, and vents.**

**Avoid other hazards - READ MANUAL BEFORE USE.**

GENERAL:
- Do not operate in a hazardous location. Such areas include where there is a risk of explosion of petrol fumes, leaking gas or explosive dusts.
- Do not operate in a confined area where exhaust gases or wood/charcoal/gas fumes could reach dangerous concentrations.

PRODUCTS FEATURING AN ENGINE
- Follow all warnings in the section titled "GENERAL".
- Explosion hazard - never smoke while refuelling.
- Take care not to spill fuel. When refuelling the engine, ensure that the engine has been allowed to cool. Prevent spilling of fuel as this may also ignite with a hot engine.
- Never refuel while engine is running.

GENERATORS
- Follow all warnings in the sections titled "GENERAL" and "PRODUCTS FEATURING AN ENGINE".
- The output of this generator is potentially lethal. The generator should not be connected to a fixed electrical installation except by an appropriately licensed person.
- Not weatherproof – protect your machine. This machine is not weatherproof and should not be exposed to direct sunlight, high ambient temperature, damp conditions, wet conditions or high humidity conditions.

# Safety Symbols

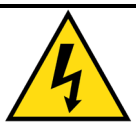
The product may have safety warning labels attached to it, explained below. Understand the symbols on your product and their meanings. If any stickers become unreadable, unattached etc, replace them.

**Flammable Material Hazard**
Flammable liquids, gases or substances etc may present. Avoid ignition sources and open flames. Danger of fire.

**Read User Manual**
Read and fully understand product safety warnings, operation, procedures etc before using the product.

**Use Hand Protection**
Wear appropriate hand protection and take due care as the product or use of the product may present hand hazards.


**Carbon-Monoxide Hazard**
Do not use the product in confined areas or without adequate ventilation. Carbon-monoxide poisoning can be fatal.



**Electrocution / Electrical Shock Hazard**
High voltage or high current electricity may be present or required by the product. Take due care when handling electrical products, cables, plugs and leads. Electrical shock can be fatal.

**Toxic Fumes hazard**
Using the product or by-products from use may produce fumes, smoke or particles that could be harmful if inhaled. Wear appropriate breathing protection and have adequate ventilation.

**Explosive Material Hazard**
Combustible liquids, gases or substances etc may be present. Avoid ignition sources and open flames. Danger of explosion.

**Cutting / Amputation Hazard**
The product may have blades, edges or mechanical devices that can cause severe cut injury to fingers, limbs etc. Take due care when handling and using the product.

**Crush Hazard**
The product may have blades, edges or mechanical devices that can cause severe crush injury to fingers, limbs etc. Take due care when handling and using the product.

**Single Operator Only**
The product must be operated by a single person only. More than one person operating the product may introduce additional hazards.

**Use Face Protection**
Wear appropriate full-face protection and take due care as the product or use of the product may present face and eye hazards.

**Use Foot Protection**
Wear appropriate foot protection and take due care as the product or use of the product may present foot hazards.

**Use Eye / Ear / Head Protection**
Wear appropriate eye and / or ear and / or head protection and take due care as the product or use of the product may present eye, hearing and head hazards.

**Running Hazard**
Do not run on or near the product as doing so may present a fall hazard.

**Diving Hazard**
Do not dive into the product as doing so may present a neck / head injury hazard.

**Adult Supervision Required**
Always supervise children and other users of a product to prevent drowning or injury.

**Skin Penetration / Puncture Hazard**
The product may produce pressure, emit liquids or objects that can cause severe injury to fingers, limbs, blood etc. Take due care when handling and using the product.

**Hot Surface Hazard**
Be aware that the product may produce high temperatures and hot surfaces that can cause burn injuries.

**Flying Debris Hazard**
Be aware that the product or use of the product may present hazards produced by flying debris. Wear appropriate clothing and protectiove devices.


**Moving Parts Hazard**
Be aware that the product contains or uses mechanical devices that move or rotate. Always wait for moving parts to stop fully before handling the product, adjusting, maintenence etc.

| | | | |
|---|---|---|---|
|  <br>**Carbon-Monoxide Hazard**<br>Do not use the product in confined areas or without adequate ventilation. Carbon-monoxide poisoning can be fatal. |  <br>**Pull Hazard**<br>Be aware that the product contains or uses mechanical devices that can pull in objects and can cause severe injury to fingers, limbs etc. Take due care when handling and using the product. |  <br>**Slope / Fall Injury Hazard**<br>Be aware that using the product on sloping surfaces or in slippery conditions may present additional dangers from falls and contact with blades, moving parts, hot surfaces etc. |  <br>**"Slam Dunk" Warning**<br>Do NOT attempt "slam dunk" maneouvres as this may result in severe injury due to falling, product breakage or collapse etc. |
|  <br>**Electrocution / Electrical Shock Hazard - Outdoor**<br>High voltage or high current electricity may be present or required by the product. Do NOT use in rain, damp or wet conditions. Electrical shock can be fatal. |  <br>**Electrocution / Electrical Shock Hazard - Disconnect**<br>High voltage or high current electricity may be present or required by the product. Always disconnect the product from the electrical supply before handling the product, adjusting, maintenence etc. |  <br>**Power Line Electrocution Hazard**<br>High voltage / high current power lines may be present. Use extreme caution to avoid contact or interference with power lines. Electrical shock can be fatal. |  <br>**"Kick-Back" Hazard**<br>High level of "kick-back" hazard that can cause the machine to suddenly rotate towards operator. Kick-back injury can be fatal. |
|  <br>**Winch Operator Position Hazard**<br>Do NOT stand between winch and load. Do NOT use winch to move people. |  <br>**Winch Lift Hazard**<br>Do NOT LIFT load vertically. Use machine to PULL only. |  <br>**Cable Hazard**<br>Ensure that load bearing cable is not kinked or knotted. |  <br>**Winch Cable Hazard**<br>Ensure that there is a minimum number of cable coils on winching mechanism. |
|  <br>**Winch Hook Hazard**<br>Carry hook to load – do NOT throw or run. | | | |

# Equipment Safety

Pole tool accessories are high-speed, fast-cutting equipment with exposed blades that can cause serious or fatal injury if not used correctly or without taking proper safety precautions.
**It is extremely important that you read and fully understand the information in this section and all other safety warnings / recommendations and usage instructions before using the equipment.**

## Operator

- If you are untrained in the use of a pole tool or particular accessory, such as a chainsaw, it is highly recommended that you be trained/instructed by a suitably qualified or experienced user before using the machine.
- Fully understand how to safely operate the machine and the various attachments to avoid "kick-back" or other hazards. See Operation.
- You must be in good physical condition to use a pole tool. NEVER operate the machine when tired, or under the influence of any substance (medication, alcohol, drugs etc) that may impair your judgement, alertness, physical strength, vision or dexterity.
- Maintain sure-footing and balance always when using or handling the machine and have full awareness of your surroundings and any possible hazards.
- Prolonged use may lead to health complications, such as carpal tunnel syndrome, due to vibration. To help reduce the possibility of such conditions, wear gloves, take breaks frequently, keep fingers and hands warm, and maintain the equipment for optimal operation and minimal vibration. It is recommended to seek medical advice if you feel numbness or burning sensations in fingers/hands.

## Clothing and Protective Equipment – All Operators and Assistants

- Wear approved safety goggles, or safety glasses with adequate top and side protection. In addition to eye protection, wearing a full-face shield is highly recommended.
- Wear suitable hearing protection.
- Wear an approved safety hard-hat.
- Wear heavy-duty, non-slip leather or protective gloves.
- Wear approved heavy-duty safety boots, with steel toe-caps and non-slip soles.
- Wear suitable overalls or work clothing that fits snugly, but does not restrict movement. Avoid loose fitting clothing, scarves, jewellery etc and keep long hair contained to avoid getting caught or pulled by the machine or by tree branches etc.

## Work Area Safety

- Use EXTREME CAUTION to avoid power lines – contact can be fatal. Do NOT cut branches touching power lines or that may fall onto power lines when cut.
- To operate the machine at height it is highly recommended to use a "scissor lift" or "cherry picker" and ensure that the work platform is completely stable. Do NOT use ladders, ropes or tree branches.
- Ensure that any person other than the operator and any assistants is kept a minimum 25m (75') away from where the equipment is being used or where there is any possibility of falling branches etc. Be aware of any property that may be affected by falling branches etc.
- Be aware of fire risks resulting from machine use. Ensure that the machine exhaust and spark arrestor (if equipped) is well maintained and that engine is tuned correctly.
- Refuel outdoors only. Avoid fuel spillage. Start the machine at least 3m (10') away from the fuelling location.

## Operational Safety

- Do NOT use the machine if the throttle or any safety guard or mechanism is not installed or is not operating correctly – have the machine inspected and repaired at an authorised service centre before using it again.
- Fully understand how to safely operate the machine and the various attachments to avoid "kick-back" or other hazards. See Operation.
- Always hold the machine firmly with both hands during operation. Always use the machine handles, straps etc.
- Do NOT use a ladder or tree branches as a platform when using the machine at height – always use a stable, flat platform such as a cherry-picker or scissor-lift.
- Do NOT use the equipment for purposes it is not designed for, such as wood chipping.
- Before cutting any branch, limb, pruning or cross-cutting, ensure that none of the materials to be cut is under tension that may be released unexpectedly during cutting.

## Transportation Safety

- Always STOP the engine and ensure all cutting devices have fully stopped before putting the machine down, transporting or working on it (refuelling, adjusting etc).
- Fit all blade covers or sheaths whenever transporting or storing the machine.
- When transporting the machine in a vehicle, ensure the engine is OFF. Secure the machine in an upright position to prevent tip-over, machine damage or fuel spills.

# Table of Contents

# Applicable Models

This manual applies to the following Bäumr-AG pole tools:

**SMX920**


**SMX750** (Honda 4-Stroke Engine)

**SMX720**


**SMX550** (Honda 4-Stroke Engine)

**SMX250** (Honda 4-Stroke Engine)

**SMX220**

**SMX120**


**SMX100**


**BCX720**

**BCX750** (Honda 4-Stroke Engine)

**CVB760** Concrete Vibrator

# Parts Identification

The equipment comes with all parts required for normal domestic use, with various attachments supplied depending on model, or may be purchased separately. A basic toolkit may also be included. It is strongly recommended that you familiarise yourself with all major components of the machine before using it or performing any maintenance tasks. Some parts may come pre-assembled.

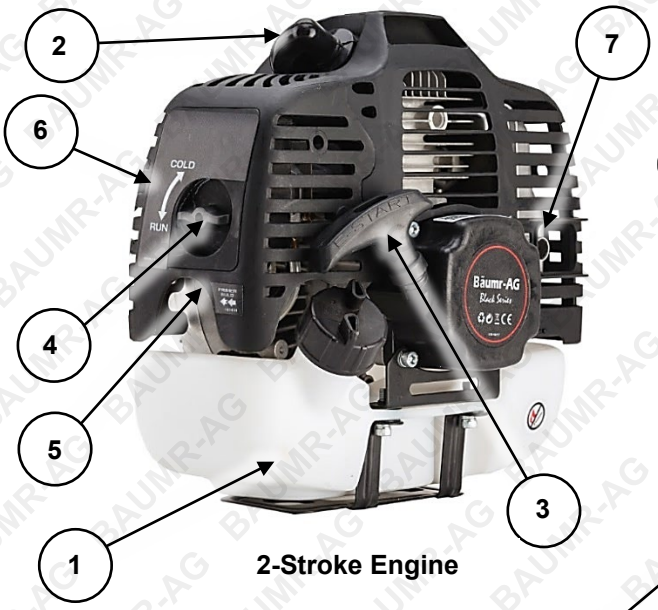
Products detailed in this manual may vary in appearance, inclusions, description and packaging from those shown or described. This section shows typical major components of a pole tool kit – cutting accessories and the number of components may vary between models.


| No. | Name | No. | Name |
|---|---|---|---|
| 1 | Pole Tool (includes engine and throttle assembly) | 15 | 8-Tooth Cutter (where applicable) |
| 2 | Cutter Drive Shaft (where applicable) | 16 | Toothed Cutter (where applicable) |
| 3 | Extension Shaft (where applicable) | 17 | Concrete Vibrator (where applicable) |
| 4 | Cutter Guard (where applicable, bracket and trimming blade included) | 18 | Tiller (where applicable) |
| 5 | Chainsaw (where applicable, sheath included) | 19 | Heavy-Duty Edger (where applicable) |
| 6 | Hedge Trimmer (where applicable) | 20 | Blower (where applicable) |
| 7 | Strap | 21 | Tools / Fasteners (as applicable):<br>4 / 5 / 6mm Allen Key<br>Screwdriver<br>Spanner<br>Spark Plug Tool<br>Handle Fasteners (4)<br>Cutter Guard Fasteners (2)<br>Trimmer Blade Fasteners (2)<br>Drive Shaft Fasteners (4)<br>Fuel Bottle |
| 8 | Extension Drive Shaft (where applicable) | | |
| 9 | Handle (typical) | | |
| 10 | Grass Cutter "Bump" Head (where applicable) | | |
| 11 | Grass Cutter Fixed Line Head (where applicable) | | |
| 12 | 3-Blade Cutter (where applicable) | | |
| 13 | Lawn Edger (where applicable) | | |
| 14 | Brush Saw (where applicable) | | |

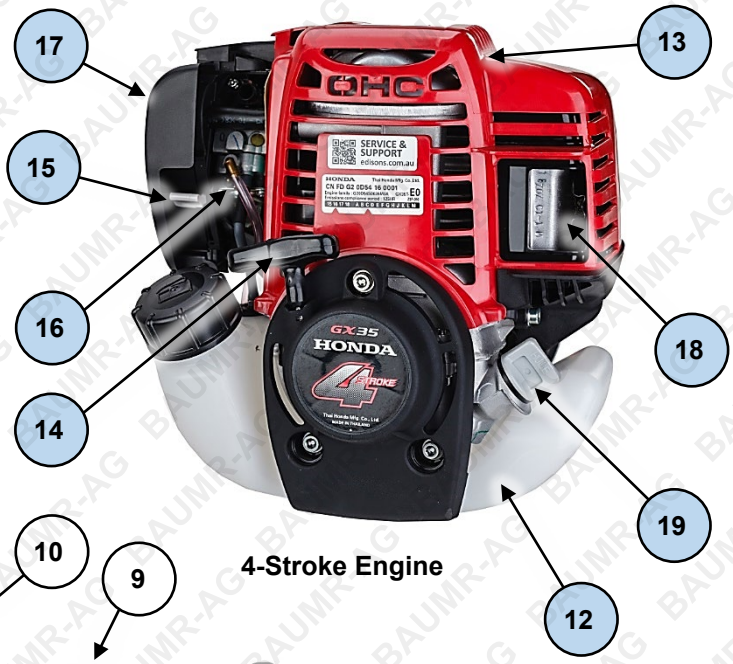
# Parts Identification - Engines

Pole tools come with all parts required for normal domestic use, with various attachments supplied depending on model, or may be purchased separately. A basic toolkit may also be included. It is strongly recommended that you familiarise yourself with all major components of the machine before using it or performing any maintenance tasks.

Products detailed in this manual may vary in appearance, inclusions, description and packaging from those shown or described. This section shows typical major engine components for 2-stroke and 4-stroke (highlighted in blue) petrol powered machines.




2-Stroke Engine




4-Stroke Engine


Typical Throttle

| No. | Name | No. | Name |
|---|---|---|---|
| 1 | Fuel Tank | 11 | Throttle Limiter / Throttle Lock (where applicable) |
| 2 | Spark Plug | 12 | Fuel Tank |
| 3 | Starting Cord | 13 | Spark Plug (under top cover) |
| 4 | Choke Control | 14 | Starting Cord |
| 5 | Fuel Primer (under air filter cover) | 15 | Choke Control |
| 6 | Air Filter Cover (filter inside) | 16 | Fuel Primer (under air filter cover) |
| 7 | Exhaust | 17 | Air Filter Cover (filter inside) |
| 8 | Throttle Control | 18 | Exhaust |
| 9 | Throttle Lockout | 19 | Engine Oil Filler / Dipstick |
| 10 | Engine ON / OFF Switch | | |

# Before Use Checklist

Ensure that you carry out all procedures below before starting the engine or operating the equipment. All procedures described are generic in nature and slight variations between different models may exist. **Failure to follow the checklist and carry out the procedures correctly may result in making the product warranty void**. • Wear suitable gloves when handling cutting devices.

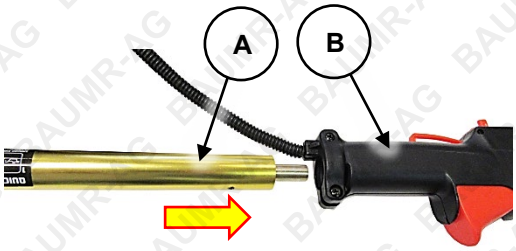
Products with 4-stroke engines are NOT supplied with engine oil, although traces of oil from the manufacturing process may be present. It is essential to add adequate engine oil of the correct type to the engine before use – see Engine Oil. **Failure to add engine oil will void the product warranty**.

## Basic Tool Assembly

Typically, the main pole tool requires minimal assembly, however, due to the modular nature of the design, various attachments may require some assembly. Prior to assembly, unpack all components and check that all items have been received. The following assembly instructions may not apply to all models as some are pre-assembled or partially pre-assembled.

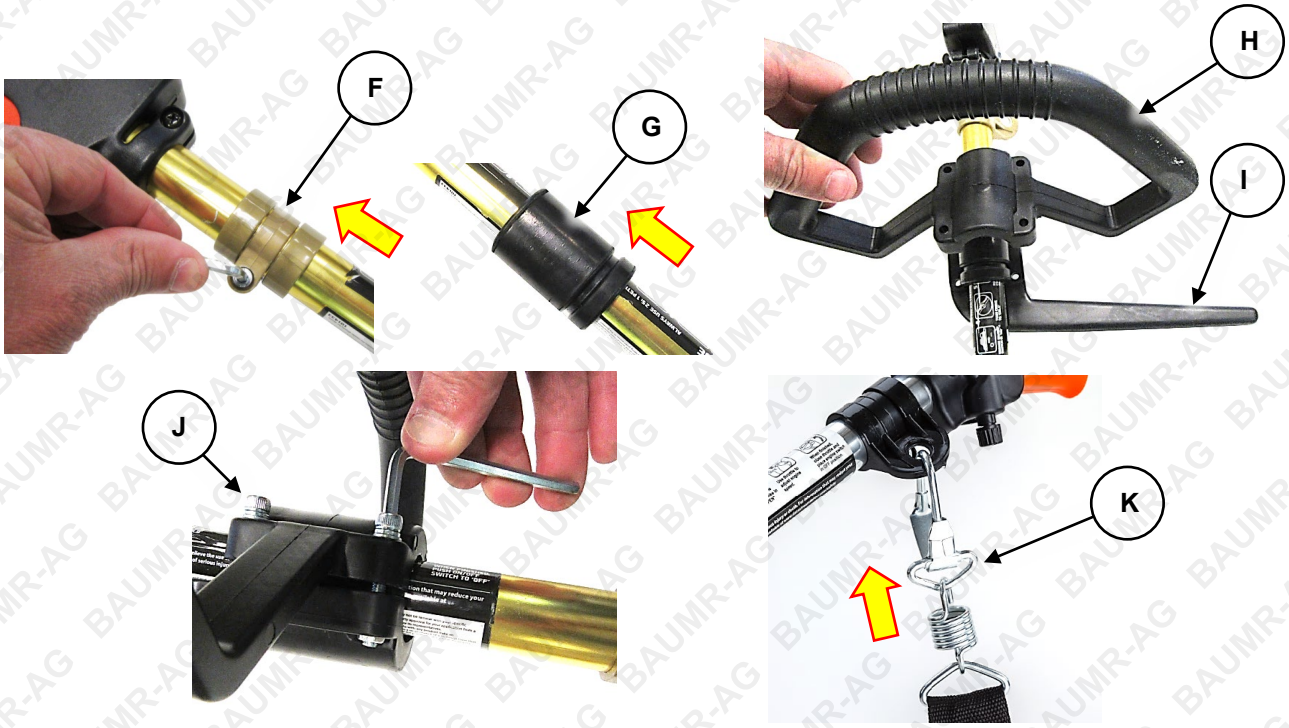
### Drive Shaft, Handle, Throttle and Strap

1. Slide the drive shaft (**A**) through the throttle assembly (**B**). Be careful not to stretch or pull on the throttle assembly wiring. Secure the throttle assembly in position using the screws and nuts (**C**) on either end of the throttle.
2. Bring the driven end (**C**) of the drive shaft up to the motor, then slide it over the motor output clutch (**D**). Secure the drive shaft to the motor using 4 M6 cap screws (**E**) – tighten the screws progressively and from opposite corners to help ensure that drive shaft is mounted squarely against the engine.



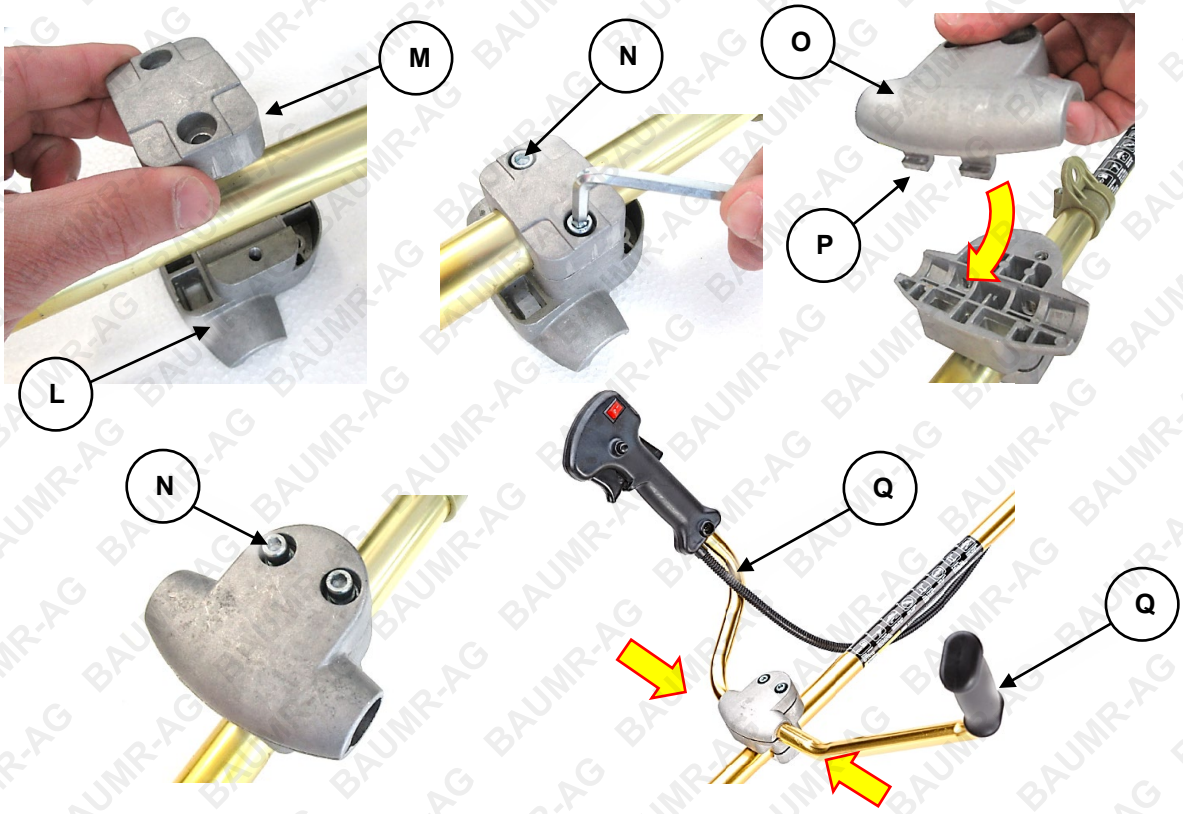



3. Slide the swivel collar (**F**) onto the drive shaft, to a position where the strap will be effective and comfortable to use. Tighten the swivel screw to secure it.
4. Slide the rubber vibration isolator (**G**) onto the drive shaft, to a position where the handle will be effective and comfortable to use. Clamp the 2 handle components (**H** and **I**) over the rubber vibration isolator and secure it using 4 screws and nuts (**J**).
5. Clip the strap (**K**) to the swivel collar.




If the tool features a "bull horn" type handle, it will include the handle poles, attachment yoke and fasteners. Assemble it as follows:

1. Place the yoke (**L**) and lower clamp (**M**) onto the drive shaft in a position where the handle will be effective and comfortable to use. Firmly secure the yoke and clamp in position using 2 screws (**N**).
2. Hook the tabs (**P**) on the underside of the upper clamp (**O**) to the yoke, then insert 2 screws (**N**), however, do not tighten them yet.
3. Insert the handle tubes (**Q**) into the yoke as desired – orient the handle tubes, throttle etc so they are in a comfortable position, then firmly tighten the upper clamp screws.

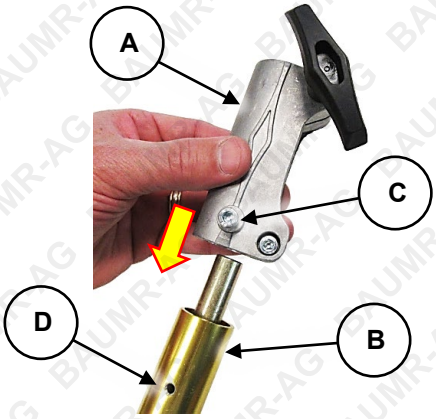



Once the engine, drive shaft, throttle and handle are assembled, the machine is ready for use by attaching a cutter etc to it.

# Pole Assembly

The machine may feature extension poles to increase reach. The system uses a "collar" that locks to the end of the pole, and clamps to the next pole. If it is necessary to assemble a collar to a pole:

1. Slide the collar (**A**) over the end of the pole (**B**), with the locking screw (**C**) and hole (**D**) in the pole aligned.
2. Firmly tighten the locking screw, however, be careful not to over-tighten as the screw is threading into aluminium.
3. Firmly tighten the clamping screw (**E**), however, be careful not to over-tighten as the screw is threading into aluminium.

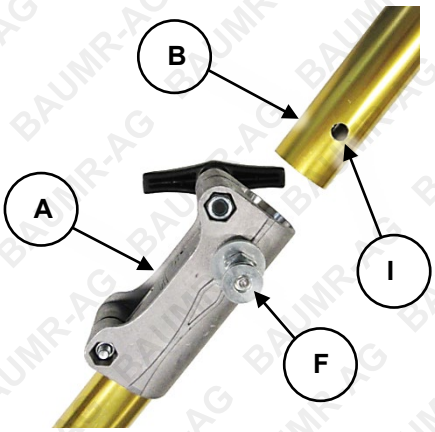


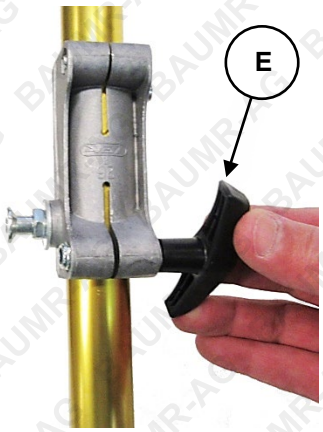


The collar features a spring loaded locking pin (**F**) and a clamping screw (**G**). The system allows secure attachment of poles without any tools required. Internally, the driven shafts connect using a square drive coupling (**H**).

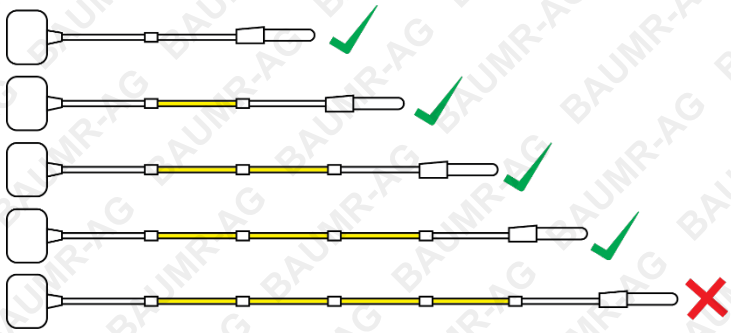

Extension poles and attachments that include a pole; for example, chainsaw and hedge trimmer, are connected as follows. Disconnection of parts is a reversal of the connection procedure.

1. Position the collar (**A**) and pole (**B**) so the locking pin (**F**) and hole (**I**) are aligned.
2. Pull up and hold the locking pin, then insert the pole into the collar. It may be necessary to rotate the pole so the internal square drive coupling engages. Push the pole fully into the collar, then release the locking pin.
3. Rotate the pole until the locking pin "pops" into the hole, then firmly tighten (rotate right / clockwise) the clamping screw (**E**) by hand.



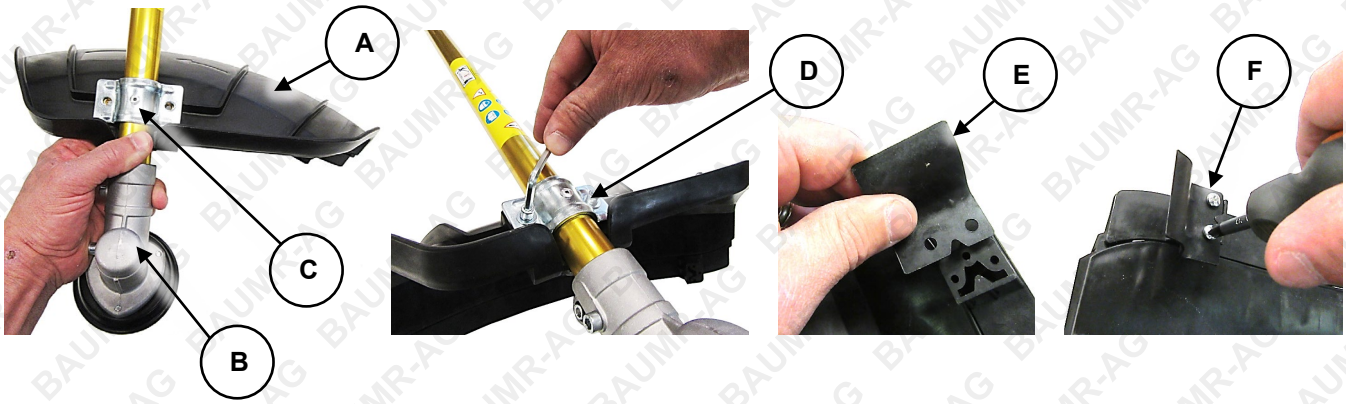



When assembling extension poles and attachments, do NOT exceed 5 pole lengths from the engine to the cutter. For example, no more than 3 extension poles between the drive shaft and chainsaw attachment – see adjacent diagram (extension poles are shown in yellow). **Over extending the tool may damage it and / or render it a hazard and will void warranty**. • When the overall length of the tool exceeds 3m (10'), it may be necessary to have an assistant help support the weight of the tool.



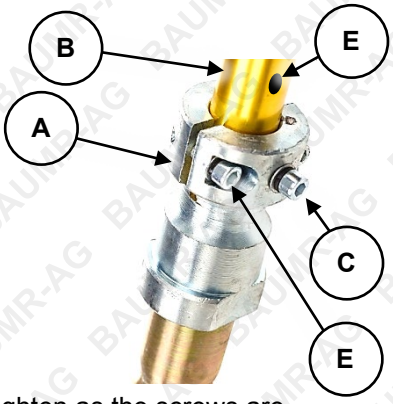
## Cutting Guard Assembly

1. Bring the cutter guard (**A**) into position with the cutter drive shaft (**B**) as shown, and align the mounting bracket (**C**) holes with the threaded inserts in the guard.
2. Secure the cutter guard to the bracket using 2 M5 cap screws (**D**).
3. Place the trimming blade (**E**) into position on the underside of the cutter guard and secure it using 2 self-tapping screws (**F**). Be careful not to over-tighten the screws as they are screwing into plastic.




# Concrete Vibrator Assembly

Do NOT use extension poles with the vibrator attachment.




The concrete vibrator attachment (where applicable) requires assembly. This attachment uses a slightly different connection method to "standard" attachment collar due to the additional vibrational stresses.

1. Slide the vibrator collar (**A**) over the end of the drive shaft (**B**), with the locking screw (**C**) and hole (**D**) in the drive shaft aligned. It may be necessary to rotate the pole so the internal square drive coupling engages.
2. Firmly tighten the locking screw, however, be careful not to over-tighten as the screw is threading into aluminium.
3. Firmly tighten the 2 clamping screws (**E**), however, be careful not to over-tighten as the screws are threading into aluminium.

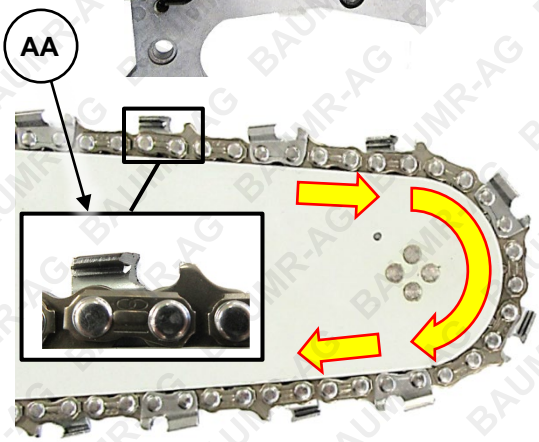
# Chainsaw Attachment Assembly

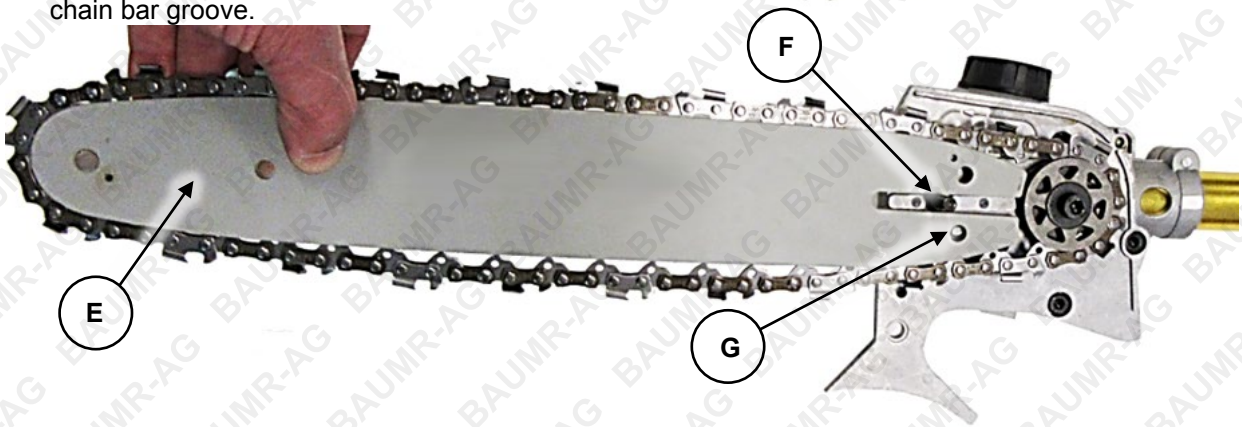
Do NOT attach or detach cutting tools when the engine is running. • Wear suitable gloves when handling cutting devices. • Always check that the blades or cutting accessories are undamaged, safe to use and are properly and securely fastened to the machine. • Ensure that the saw chain is installed so it rotates in the direction of the cutting edges. • Do NOT use cutting equipment that is cracked, bent, chipped or damaged in any way. Replace damaged parts.

The chainsaw attachment (where applicable) requires assembly.

1. Remove the chain drive cover (**A**) nut (**B**), then remove the cover from the chainsaw attachment.


2. Place the saw chain (**C**) into position and engage it with the drive sprocket (**D**). Ensure that the sharp edges of the saw chain cutters (**AA**) are facing the correct direction.
3. Place the chain bar (**E**) into position so the drive chain cover stud (**F**) protrudes through the slot in the chain bar, and that the chain tension spigot (**G**) engages with its hole in the chain bar (it may be necessary to adjust the position of the chain tension spigot – see Adjusting Saw Chain Tension).
4. Wrap the chain around the chain bar so it is sitting in the chain bar groove.




5. Place the chain drive cover in position over the drive cover stud. Re-install the drive chain cover nut, and tighten to "finger-tight" only at this stage. Ensure you thoroughly read Adjust Chain Tension before proceeding.

## Saw Chain Lubricant

The saw chain and drive system for the chainsaw accessory requires adequate lubricant of the correct type to operate safely and efficiently. The machine is shipped without chain lubricant. Check the chain lubricant level and ensure that it is at the recommended level. See Chain Lubricant.

## Saw Chain Tension

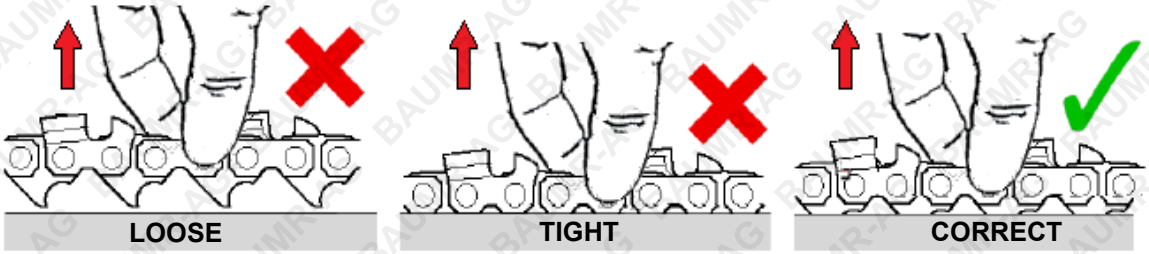
Ensure that the saw chain is correctly tensioned and the chain drive cover nuts are properly tightened before use and during cutting. • The saw chain will "stretch" with use, so it is important to check chain tension before and during use • Wear suitable gloves when handling cutting devices. • **Do NOT check chain tension with the engine running**. • **Do NOT adjust chain tension with the engine running**.

Correct saw chain tension is extremely important in terms of both machine efficiency and operator safety. Check chain tension before each use. Check chain tension frequently during use – whenever the machine is put down (engine MUST be stopped first).

### Checking Tension

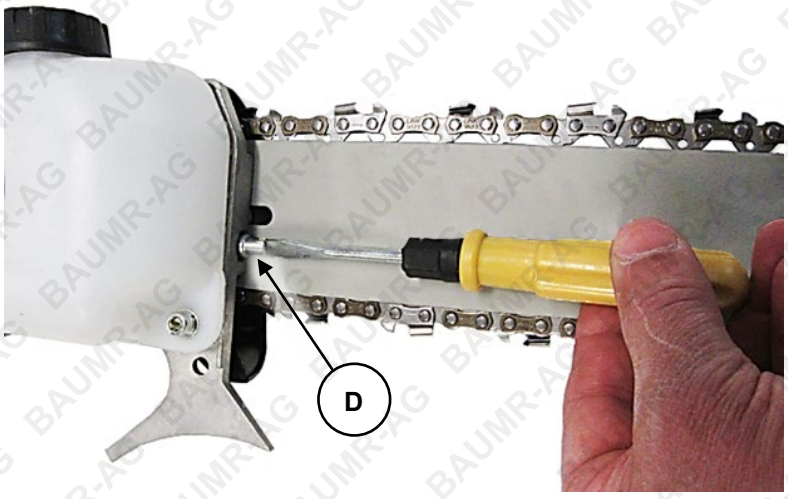
Ensure engine is not running when adjusting chain tension.

- The saw chain should fit snugly into the groove in the chain bar and it must be possible to pull the chain along the bar with a gloved hand. You should be able to lift the saw chain just out of the chain bar groove without excessive effort.
- If the chain "sags" under the chain bar or can be lifted well out of the chain bar groove, it is too loose.
- If the chain is snug in the chain bar groove but cannot be lifted out slightly or be pulled around the bar by hand, it is too tight.




### Adjusting Tension

1. Clean the chain (if necessary), chain bar and tensioning mechanism.
2. Ensure the cover nut holding the chain drive on **is only "finger-tight".**
3. Lift and hold the end of the chain bar up, then using a suitable screwdriver, rotate the adjustment screw (**D**) as required – rotate right (clockwise) to increase tension; rotate left (anti-clockwise) to reduce tension.
4. While still holding the end of the chain bar up, **securely tighten the cover nut** with the tools provided.
5. Check chain tension and re-adjust, if necessary. Ensure the cover nut is **loosened again** to "finger tight" before making tension adjustments. Once the tension is correct, ensure the cover nut is **securely tightened** with the tools provided.



# Attaching Cutting Tools

Do NOT attach or detach cutting tools when the engine is running. • Wear suitable gloves when handling cutting devices. • Always check that the blades or cutting accessories are undamaged, safe to use and are properly and securely fastened to the machine. • Ensure that brush cutter and brush saw blades are installed so that they rotate in the direction of the cutting edges. • Do NOT use cutting equipment that is cracked, bent, chipped or damaged in any way. Replace damaged parts. • The toothed cutter and brush saw are not designed to be re-sharpened.

Cutting tools may include the following types. Use the cutter appropriate for the job, type of grass/brush etc:


*Toothed Cutter*


*3-Blade Cutter*


*8-Tooth Cutter*


*Brush Saw*

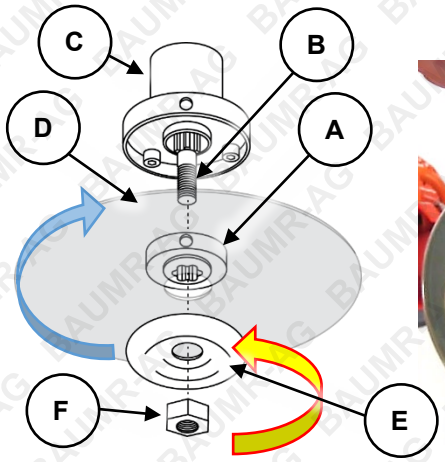

*Lawn Edger*

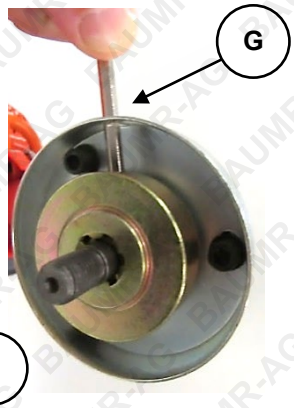
1. Place the drive washer (**A**) on to the drive shaft (**B**) protruding from the attachment head (**C**). Ensure that the grooves in the washer align with the splines on the drive shaft.
2. Place the attachment on to the drive washer:

   For the brush cutter and saw type attachments:

   a. Place the cutter attachment (**D**) on to the drive washer. Ensure that direction of the cutting teeth or blades faces the direction shown by the blue arrow. Ensure that the hole in the centre of the attachment sits squarely on the raised portion of the drive washer.

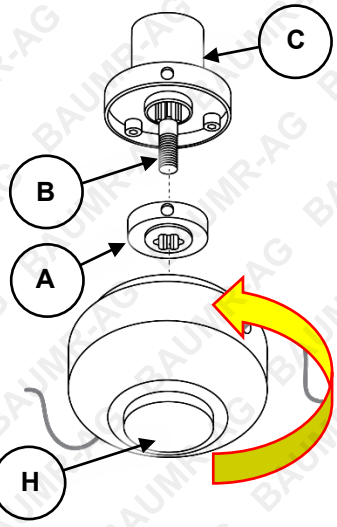
   b. Place the cup washer (**E**) over the drive shaft, then secure the assembly with the nut (**F**). The thread on the drive shaft is "left-hand". This means that you must rotate the nut to the left (anti-clockwise) to screw it on as shown by the yellow arrow. Firmly tighten the nut using the supplied spanner. To prevent the drive shaft from rotating as you tighten the nut, insert a suitable object (**G**) (Allen key, screwdriver etc) through the hole in the attachment head and into the hole in the drive washer when tightening – you may need to rotate the drive washer until the holes are aligned. Remove the object when the nut is secured.




   For grass cutting "bump" head:

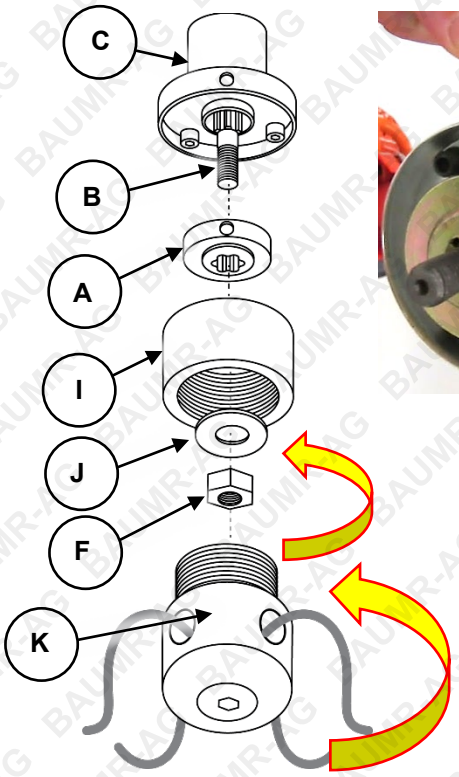
   a. Screw the grass cutting head (**H**) on to the drive shaft. The thread on the drive shaft is "left-hand". This means that you must rotate the grass cutting head to the left (anti-clockwise) to screw it on as shown by the yellow arrow. Firmly tighten the grass cutting head by hand. To prevent the drive shaft from rotating as you tighten the grass cutting head, insert a suitable object (**G**) (Allen key, screwdriver etc) through the hole in the attachment head and into the hole in the drive washer when tightening – you may need to rotate the drive washer until the holes are aligned. Remove the object when the grass cutting head is secured.




For grass cutting "fixed line" head:

a. Place the grass cutting head coupler (**I**) over the drive shaft – it must locate centrally to the to the raised section of the drive washer (**A**).

b. Place the washer (**J**) (supplied with the fixed line grass cutting head) over the drive shaft, then secure the assembly with the nut (**F**). The thread on the drive shaft is "left-hand". This means that you must rotate the nut to the left (anti-clockwise) to screw it on as shown by the yellow arrow. Firmly tighten the nut using the supplied spanner. To prevent the drive shaft from rotating as you tighten the nut, insert a suitable object (**G**) (Allen key, screwdriver etc) through the hole in the attachment head and into the hole in the drive washer when tightening – you may need to rotate the drive washer until the holes are aligned.





c. Screw the grass cutting head (**K**) in to the coupler. The thread on the coupler is "left-hand". This means that you must rotate the grass cutting head to the left (anti-clockwise) to screw it in as shown by the yellow arrow. Firmly tighten the grass cutting head by hand. To prevent the drive shaft from rotating as you tighten the grass cutting head, insert a suitable object (**G**) (Allen key, screwdriver etc) through the hole in the attachment head and into the hole in the drive washer when tightening – you may need to rotate the drive washer until the holes are aligned. Remove the object when the grass cutting head is secured.

## Loading the Grass Cutting "Bump" Head

**Video Tutorial:**
Loading a Grass Cutting "Bump" Head

Do NOT attach or detach cutting tools when the engine is running. • Ensure that parts are cool enough to touch before attaching or detaching cutting tools. • Do NOT use cutting equipment that is cracked, bent, chipped or damaged in any way. Replace damaged parts. • Use 1.6 to 3mm (1/16 to 1/8") plastic cutting line only. Non-plastic cutting line may not function properly and may damage the machine. • If the grass cutting head is dirty, clean it.

To load the grass cutting bump head with cutting line:

1. Remove the grass cutting head from the drive shaft. The thread on the drive shaft is "left-hand". This means that you must rotate the grass cutting head to the right (clockwise) to unscrew it. To prevent the drive shaft from rotating as you loosen the grass cutting head, see here.
2. Place the grass cutting head (**A**) on a solid surface, then press down and rotate the "bumper" (**B**) to the right (clockwise) until the cutting line holes are aligned (**X**) and you can see through the head.

**Note**: If there is remaining cutting line in the head, press down and rotate the "bumper" to the left (anti-clockwise) one step, then pull the cutting line out from either side of the head. Repeat until you can pull the line out completely from the grass cutting head.

3. Insert the new line (**C**) through the grass cutting head so that the lengths of line on each side of the head are the same (in other words, the head is at the centre of the length of cutting line).
4. Hold the grass cutting head firmly, then rotate the "bumper" to the right (clockwise) to wind in the cutting line. Stop winding when there is approximately 50mm (2") of cutting line outside of the head.
5. Install the grass cutting head.


## Loading the Grass Cutting "Fixed Line" Head

Do NOT attach or detach cutting tools when the engine is running. • Ensure that parts are cool enough to touch before attaching or detaching cutting tools. • Do NOT use cutting equipment that is cracked, bent, chipped or damaged in any way. Replace damaged parts. • Use 3mm (1/8") plastic cutting line only, in 2 equal length strands – smaller diameter lines will not be held properly in the grass cutting head. Non-plastic cutting line may not function properly and may damage the machine. • If the grass cutting head is dirty, clean it.

To load the fixed line grass cutting head with cutting line:

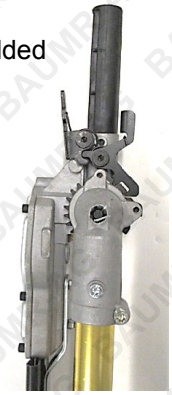
1. To prevent the grass cutting head (**A**) from rotating, insert a suitable object (**X**) (Allen key, screwdriver etc) through the hole in the attachment head and into the hole in the drive washer – you may need to rotate the drive washer until the holes are aligned. Remove the object when the screw is loose.
2. Using a suitable Allen key, loosen (rotate left / anti-clockwise) the fixing screw (**B**) sufficiently so that the cutting lines can be removed / inserted through the cutting head.
3. Insert 2 pieces of cutting line (**C**) approximately 350mm (14") long through the cutting head so the length of line on either side of the head is equal.
4. Grip the grass cutting head firmly, then using a suitable Allen key, tighten (rotate right / clockwise) the fixing screw (**B**) sufficiently so that the cutting lines are held securely.
5. Install the grass cutting head.

## Adjusting Hedge Trimmer Angle

Do NOT attach or detach cutting tools when the engine is running. • Wear suitable gloves when handling cutting devices. • Always check that the blades or cutting accessories are undamaged, safe to use and are properly and securely fastened to the machine. • Do NOT use cutting equipment that is cracked, bent, chipped or damaged in any way. Replace damaged parts.

The hedge trimmer attachment is designed so the angle of the cutters in relation to the supporting pole can be changed to allow cutting the tops of hedges etc.

Folded

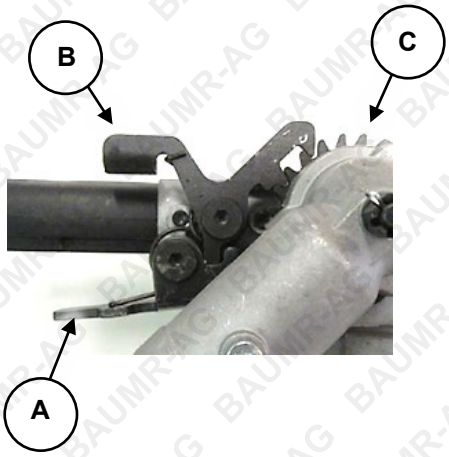


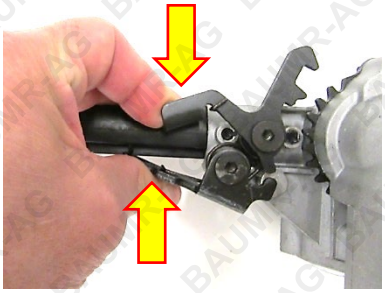
Straight

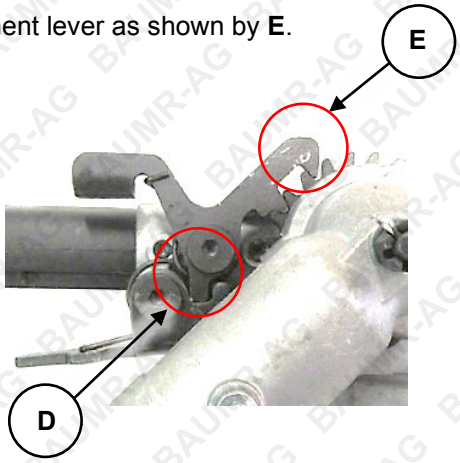
90° (Right-Angle)

To adjust the trimmer angle:

1. Press on the locking lever (**A**) so it disengages from the adjustment lever (**B**) and hold in this position.
2. Press on the adjustment lever so it is clear of the positioning teeth (**C**) and hold in this position.
3. Rotate the cutting blade to the required angle.
4. Release the adjustment lever, and ensure that it engages with the positioning tooth as shown by **D**.
5. Release the locking lever, and ensure that it engages with the adjustment lever as shown by **E**.






# Air Filter

The air filter is used to prevent dirt and other particles from possibly entering the engine and causing internal damage to it. The air filter requires regular maintenance.

Always check the air filter before starting the engine. See Air Filter.

# Fuel

Petrol/fuel/gasoline is extremely flammable – keep clear of naked flames or other ignition sources. • The engine must be OFF and cool before refuelling. • For 2-stroke engines, always pre-mix the fuel before placing it in the fuel tank. • **For 2-stroke engines, the fuel to 2-stroke engine oil mixture ratio is 25:1.**

Adequately fill the fuel tank with the correct fuel type.

- For 4-stroke engines, use non-ethanol unleaded petrol (higher RON values will provide best engine performance). Do not use old or contaminated fuel/oil.
- For 2-stroke engines, use non-ethanol unleaded petrol mixed at a **25:1** ratio with 2-stroke engine oil (higher RON values and good quality 2-stroke oil will provide best engine performance). Do not use old or contaminated fuel/oil. Fuel/oil mix ratio examples are shown below.

| **Petrol (Litre)** | 1 | 2 | 5 | 10 |
|---|---|---|---|---|
| **Oil (Millilitre)** | 40 | 80 | 200 | 400 |

| **Gas (US Gal)** | 0.5 | 1 | 2 | 3 |
|---|---|---|---|---|
| **Oil (Fl. Oz)** | 2.56 | 5.12 | 10.24 | 15.36 |

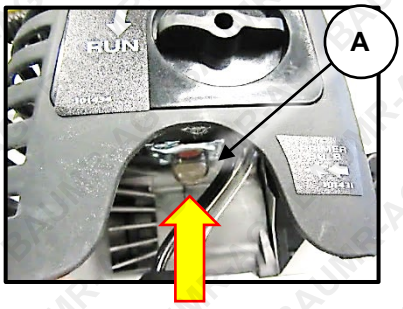
To fill or top up fuel:

1. Place the machine in a horizontal position on a flat and level surface with the fuel filler cap facing up.
2. Clean the machine around the fuel filler so that no dirt or other material enters the engine when the cap is removed.
3. Remove (rotate left) the fuel filler cap.
4. Using a funnel, carefully fill the tank with fuel. Do not fill above the top of the strainer (if equipped) or otherwise overfill the tank.
5. When finished, reinstall (rotate right) the fuel filler cap until firm. Wipe away any residual fuel from the machine. If fuel has been spilt, move the machine away from the spillage before starting the engine.

## Priming the Fuel System

When an engine is new, or has completely run out of fuel it may be necessary to "prime" the fuel system before attempting to start the engine. This means removing any air from the fuel line. To prime:

1. Ensure the fuel tank is filled with fuel.
2. Press the fuel primer (**A**) bulb repeatedly until you feel resistance or pressure in the bulb – this indicates that it is full of fuel.




# Spark Plug

The spark plug may come disconnected from the spark plug lead. If this is the case, place the electrical lead over the spark plug terminal and push it down so that it connects firmly with the terminal. See Spark Plug.

# Engine Starting and Stopping

Before starting the engine, ensure that you have followed all procedures described in the Before Use Checklist. **Failure to follow the checklist and carry out the procedures correctly may result in making the product warranty void**. • Once the engine is running at sufficient speed, the clutch will engage and begin rotating the cutting attachment. • **Do NOT start the engine with the machine cutting attachment touching any object**. • If the engine is new or is being re-started after completely running out of fuel, it may be necessary to pull the starter cord several times for fuel to reach the carburettor.

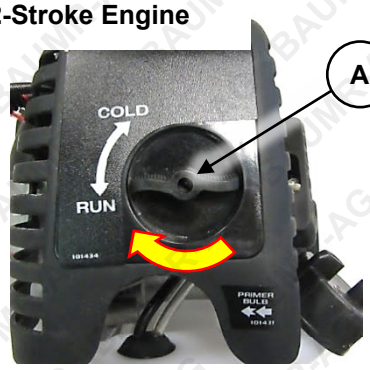
## Starting the Engine

**Video Tutorial:**
**Starting 2-Stroke Engines**
**Starting 4-Stroke Engines**

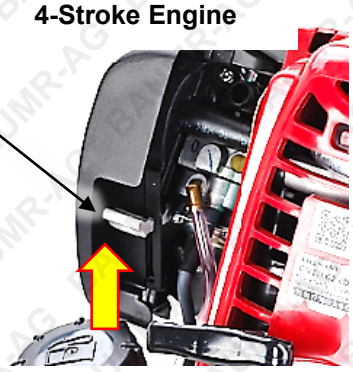
1. **PRIME** – If necessary, "prime" the fuel system.
2. **CHOKE** – If the engine is cold, place the choke (**A**) in the "COLD" or "CLOSED" position. If the engine is warm or the ambient temperature is high, place the choke in the "RUN" or "OPEN" position.
3. **IGNITION** – Place the engine ON/OFF switch (**B**) in the "ON" ("**I**") position.
4. **START** – It is recommended to have the tool on the ground and held firmly in place when starting (for example, using your foot on the drive shaft). Slowly pull out the starter cord (**C**) until you feel it engage with the engine, then pull it out rapidly (use both hands if necessary). The engine should start. Allow the starter cord to rewind slowly – do not let it "snap" back.
5. **WARM-UP** – Allow the engine to warm-up and run smoothly. If choke is being applied, place the choke (**A**) in the "RUN" or "OPEN" position.

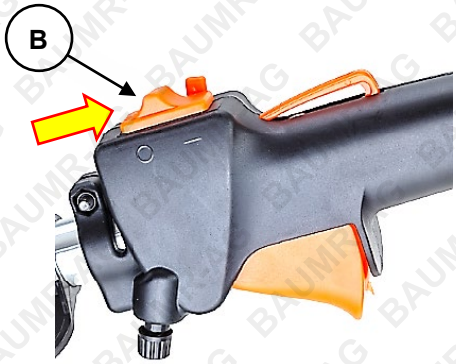
If the engine does not start, repeat step 4 onward. If the engine fails to start after several attempts, refer to Troubleshooting.

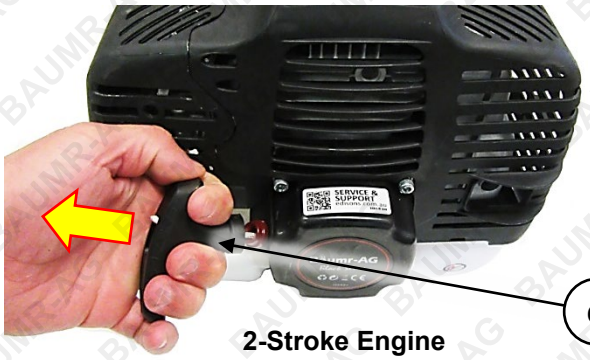
**2-Stroke Engine**




**4-Stroke Engine**




**2-Stroke Engine**


**4-Stroke Engine**

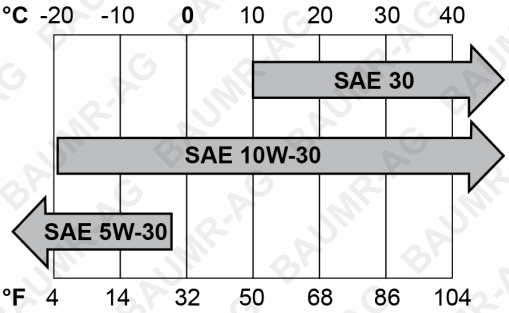
## Stopping the Engine

To stop the engine, release the throttle and place the engine ON/OFF switch in the "OFF" position.

# Environmental Considerations

**Altitude** – If the engine is being used in altitudes at or above 1500m (approximately 5000'), adjustments to the carburettor may be required. This is because there is less oxygen in the air as altitude increases, which effectively "enriches" the ratio of fuel to air going into the engine, and the higher the altitude, the richer the fuel mixture becomes. If the engine is being permanently operated at high altitude, it is recommended to have an authorized service centre make the necessary carburettor adjustments. If the engine is used occasionally at altitude (not extreme altitudes), no adjustments should be required, however, a slight decrease in engine performance can be expected.

**Temperature (4-Stroke Engines)** – If the engine is being used in extremely cold or hot environments; for example, desert or snow conditions, the type of engine oil may need to be changed to suit environmental temperatures. Oil thickens as the temperature decreases and thins as temperature increases, which means that if the engine oil is not suited to the temperature its ability to properly lubricate the engine may be affected. Use the following chart to determine the correct engine oil:



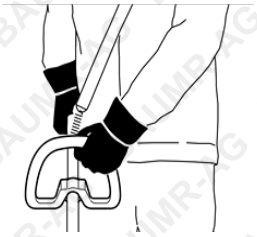
# Operation

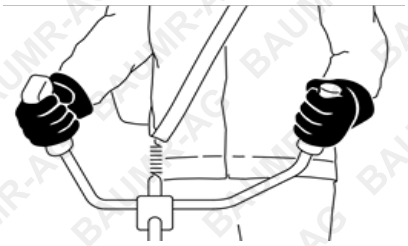
Petrol powered pole tools and attachments are high-speed, fast-cutting equipment with exposed blades that can cause serious or fatal injury if not used correctly or without taking proper safety precautions. **It is extremely important that you read and fully understand the information in this section and all other safety warnings / recommendations and usage instructions before using the equipment**. • Always wear suitable protective clothing and equipment when using the machine. • Inspect the machine before each use and check for wear or damage. If the machine is damaged, have it inspected and repaired at an authorised service centre before using it again. • If you experience excessive vibration from the machine during operation, this may indicate wear or damage. It is recommended to have it inspected and repaired before using it again. • Be aware that once the engine is running, the cutting blades will be rotating and parts of the machine may be extremely hot. • For chainsaw attachments, ensure that the saw chain is correctly tensioned and the chain drive cover nut is properly tightened before use and during cutting. • Always release chain tension after finishing work to prevent damage through over-tension as the saw chain cools and contracts.

When the engine is idling (slowest continuous running speed), the clutch should disengage, preventing the cutting attachment from being rotated. As engine speed increases, the clutch engages and rotates the cutting attachment. Note the following recommendations:

- Operate the engine at full speed when cutting, particularly when using the chainsaw attachment.
- When using the chainsaw attachment, cut using the underside of the chain bar – NEVER use the nose or top of the chain bar. If in doubt, do NOT cut – seek professional advice.
- To use line feed action of the grass cutting "bump" head, tap it quickly against the ground while it is spinning – line will feed out through the spinning action. Excess line will be cut by the trimming blade.
- Always use the strap, over the shoulder, and adjust it so the tool is comfortable to hold and operate.
- Always use both handles to hold the tool steady.

**Straight Handle**



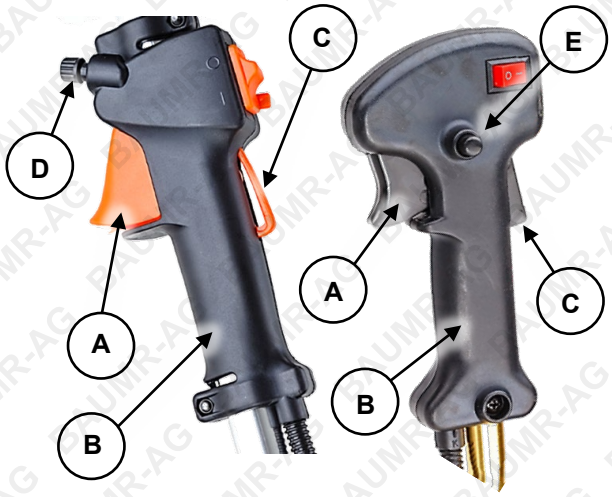


**Bull-Horn Handle**

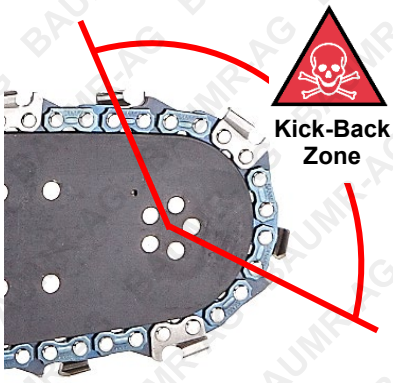
## Using the Throttle and Adjusting Engine Speed

The throttle trigger (**A**) is used to adjust the engine speed, which in turns controls speed of the cutting attachment. To adjust the throttle, grip the throttle handle (**B**) so that the throttle safety switch (**C**) is pushed in – this allows the throttle to be adjusted – squeeze to increase engine speed. The throttle may feature a limiting screw (**D**) that stops it from being opened further or a throttle lock (**E**) that when pressed in conjuction with the trigger then released, locks at full throttle until the trigger is pulled again. Note the following:

- The throttle safety switch must be pushed in, in order to adjust the throttle. When the throttle safety switch is released it is not possible to adjust the throttle.
- It is recommended to set the limiting screw (if equipped) when an effective cutting speed is attained. Generally, most cutting attachments are most efficient at full engine speed. Turn the screw right to reduce the throttle opening limit (slower speed). Turn the screw left to increase the throttle opening limit (faster speed).



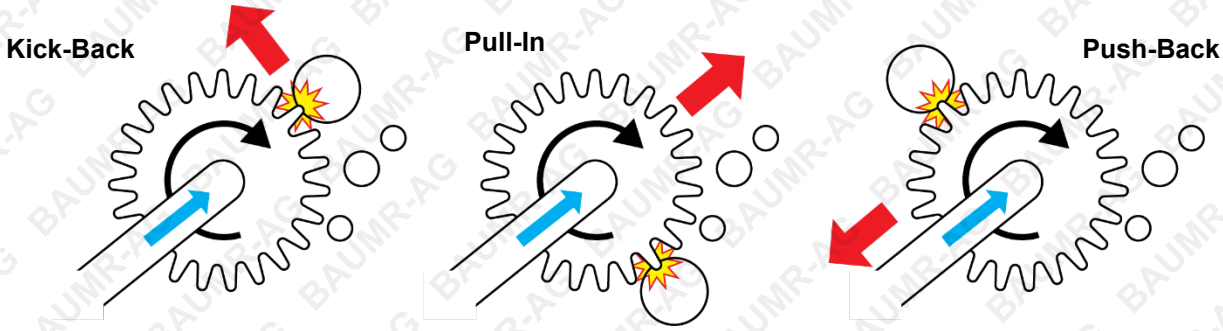
# Understanding and Avoiding "Kick-Back" and Other Reactionary Forces




**NEVER ALLOW ANY OBJECT TO COME INTO CONTACT WITH THE KICK-BACK ZONE**

**Reactionary forces can cause loss of control of the tool, particularly when using chainsaw attachments, and can result in serious, even fatal injury – use the tool in ways to avoid reactive forces at all times.**

When the cutting attachment or chainsaw is rotating, many forces are created, such as the ability to cut. The contact point between the cutting tool and object to cut is critical, especially when using the chainsaw attachment. If the cutting tool is not used correctly, cutting forces may become "reactionary", in that instead of the cutting tool or chain rotating, a reactionary force is created. Many factors affect the occurrence and force of reaction, such as cutter speed, contact angle, density of material being cut, and cutting tool condition.




## Kick-Back

"Kick-back" is a reactionary force that causes the tool to rotate against the direction of cut. Kick-back can also be thought of as the cutters "digging in" to an object and momentarily stop or significantly slow cutter rotation. For chainsaw attachments, kick-back can occur if the cutters at the tip of the chain bar – the "kick-back zone", "digging in" to an object and momentarily stop or significantly slow saw chain rotation, which causes the tool to suddenly and quickly rotate backwards towards the operator. To avoid kick-back:

- Do NOT use the tip of the cutter for cutting or allow it to make contact with any object.
- Always hold the machine firmly with both hands when operating.
- Maintain cutter sharpness.
- Use extreme caution when re-inserting the cutter into an unfinished cut.
- Be alert to branches shifting or other forces that may close over or pinch the cutter.

## Pull-In

"Pull-in" is a reactionary force that causes the cutter to pull forward in the direction of cut. Pull-in can also be thought of as the cutters on the non-cutting side of the cutting attachment being caught, pinched or "digging in" to an object and momentarily stop or significantly slow cutter rotation, which causes the tool to suddenly and quickly pull forward in the direction of cut. To avoid pull-in:

- Be aware of objects on the non-cutting side of the cutter and avoid making contact with them.
- Use cutters with greater numbers of teeth or blades.

## Push-Back

"Push-back" is a reactionary force that causes the cutter to push backward against the direction of cut. Push-back can also be thought of as the cutters on the cutting side of the cutting attachment being caught, pinched or "digging in" to an object and momentarily stop or significantly slow cutter rotation, which causes the tool to suddenly and quickly push away from the direction of cut. To avoid push-back:

- Cut one piece of timber at a time.
- Avoid twisting the cutter when withdrawing it from material.

# Maintenance


Running combustion engines in confined areas **CAN KILL IN MINUTES**. Engine exhaust fumes contain carbon-monoxide – a deadly gas that you cannot smell or see. NEVER run a combustion engine in confined areas EVEN IF windows and doors are open. ONLY run combustion engines OUTDOORS and away from doors, windows and vents. • Petrol / fuel / gasoline is extremely flammable – keep clear of naked flames or other ignition sources. • Do not have the engine running during inspection and maintenance unless specifically required. • The engine should be cool enough to touch before performing maintenance activities. • Some maintenance activities may be beyond the scope of some users. Do NOT attempt procedures that you are not comfortable with, or do not have the necessary tools, experience or knowledge for – take the unit to an authorised service centre or qualified technician for servicing. • Harsh operating environments such as extreme temperatures, dust etc may necessitate more frequent maintenance. • **Failure to follow the maintenance schedule, using incorrect or non-compatible accessories or replacements parts, or general negligence may result in making the product warranty void**.

To keep the machine performing at optimal efficiency, regular checks and maintenance is required. The maintenance schedule below specifies preventative maintenance checks and necessary maintenance tasks and how often they should be performed. The schedule applies to multiple engines; some engines may not include some components, so maintenance on those components is not applicable.

## Maintenance Schedule

Use the following maintenance schedule for a list of regular maintenance tasks and how often they need to be performed. Maintenance frequency is based on average usage. Be aware of how much the machine is used and be sure to follow the schedule according to time or usage, whichever comes first.

Towards the end of this document is a form you can use for maintenance record keeping. It is recommended that you keep a reference of all maintenance.

**Major Servicing and "Heavy-Duty" Usage** - For engines that are subject to "heavy-duty" use, which can be defined as being used under loads of 85% or more and / or in use more than approximately 300 hours per year (for example, generators and water pumps), more frequent "Major Service" maintenance is required. In addition to normal service requirements, and as with many smaller machine and off-road bike engines, the following parts (as applicable for petrol, diesel or 2-stroke engines) may require replacement during a major service:

- Piston rings.
- Big-end bearings.
- Small-end bearings.
- Gudgeon pin.
- Oil rings.
- Gaskets and seals.
- Valve seats.

Inspection of the following items is required:

- Piston for cracks and stress fractures.
- Bore for wear requiring reconditioning.
- Full machine for broken, worn or loose parts.

**Failure to follow the maintenance schedule, using incorrect or non-compatible accessories or replacements parts, or general negligence may result in making the product warranty void**.

# Maintenance Schedule – 2-Stroke Engine / Machine

| Component / Task | Every Use | After First 5 Hours Use | 3 Months / 25 Hours Use | 6 Months / 50 Hours Use | 12 Months / 100 Hours Use | Major Service – Normal Use 24 Months / 200 Hours Use | Major Service – Heavy-Duty Use Every 200 Hours Use |
|---|---|---|---|---|---|---|---|
| **Engine / Machine Fasteners** | Check. Tighten as necessary | | | | | | |
| **Air Filter** | Check | Clean. Replace as necessary | | | | Replace | |
| **Spark Plug** | | | Check | | Replace | | |
| **Spark Arrestor** * | | | | | | | |
| **Fuel Filter** * | | | Clean. Replace as necessary | | | Replace | |
| **Fuel Strainer** * | Check | | | | | | |
| **Float Bowl** * | | | | | Clean | | |
| **Fuel Lines / Hoses** | Check | Replace as necessary | | | | | |
| **Fuel Tank** | | | | | Flush and clean | | |
| **Idle Speed** | | | | | Check. Adjust as necessary | | |
| **Engine Tune** | | | Check. Adjust as necessary | | | | |
| **Cylinder Head Fasteners** | | | | | Check. Tighten as necessary | | |
| **Combustion Chamber** | | | | | Check. Clean / de-coke as necessary | | |
| **Major Service** | | | | | | Perform | |
| **Cutting Blade / Chain** * | Check | Sharpen. Replace as necessary | | | | | |
| **Chain Lubricant** * | | Check. Add as necessary. | | | | | |
| **Chain Lubricant Strainer** * | | | | | Clean. Replace as necessary | | |
| **Gearbox / Joints** * | | | | | Grease | | |

* Where applicable.

# Maintenance Schedule – 4-Stroke Engine / Machine

| Component / Task | Every Use | After First 5 Hours Use | 3 Months / 25 Hours Use | 6 Months / 50 Hours Use | 12 Months / 100 Hours Use | Major Service – Normal Use 24 Months / 200 Hours Use | Major Service – Heavy-Duty Use Every 200 Hours Use |
|---|---|---|---|---|---|---|---|
| **Engine Oil ****** | Check level. Adjust as necessary | Replace | | | | | |
| **Engine Oil Filter *** | | | | | Replace | | |
| **Engine / Machine Fasteners** | Check. Tighten as necessary | | | | | | |
| **Air Filter** | Check | Clean. Replace as necessary | | | | Replace | |
| **Spark Plug** | | | Check | | Replace | | |
| **Spark Arrestor *** | | | | | | | |
| **Fuel Filter *** | | | Clean. Replace as necessary | | | Replace | |
| **Fuel Strainer *** | Check | | | | | | |
| **Float Bowl *** | | | | | Clean | | |
| **Fuel Lines / Hoses** | Check | Replace as necessary | | | | | |
| **Fuel injector *** | | | | | Check. Clean | | |
| **Fuel Pump *** | | | | | | | |
| **Fuel Tank** | | | | | Flush and clean | | |
| **Idle Speed** | | | | | Check. Adjust as necessary | | |
| **Valve Clearance** | | | | | Check. Adjust as necessary | | |
| **Cylinder Head Fasteners** | | | | | Check. Tighten as necessary | | |
| **Combustion Chamber** | | | | | Check. Clean / de-coke as necessary | | |
| **Battery Electrolyte *** | | Check level. Adjust as necessary | | | | | |
| **Major Service** | | | | | | | Perform |
| **Cutting Blade / Chain *** | Check | Sharpen. Replace as necessary | | | | | |
| **Water Pump Oil **** | Check level. Adjust as necessary | | | | | Replace | |
| **Hydraulic Fluid ***** | Check level. Adjust as necessary | | | | | Replace | |
| **Drive Belt *** | Check tension. Adjust as necessary | | | | | Check. Replace as necessary | |
| **Gearbox / Joints *** | | | | | Grease | | |

* Where applicable. ** Pressure washers with non-sealed water pumps. *** Log splitters only.
**** Briggs & Stratton "EXi" engines do NOT require engine oil changes; just ensure that oil level is correct.

# Grass Cutting "Bump" Head

A dirty grass cutting "bump" head may not feed out cutting line properly or reliably. • If the grass cutting head is no longer serviceable, replace it. • If there is cutting line in the head, it may unravel when the head is disassembled. It is recommended to remove the cutting line. Load the cutting line after cleaning and reassembling the grass cutting head.

## Inspection and Cleaning

Inspect the grass cutting "bump" head for dirtiness and debris etc that may affect the line feeding action. Clean or replace the grass cutting head as necessary. To clean the grass cutting "bump" head:

- Thoroughly clean the base (**A**), cover (**B**), and "bumper" (**C**) using a brush or similar to remove all traces of grass, dirt etc from the parts. If desired, wash the parts in warm water and mild detergent, then rinse and dry.

## Removal/Installation

1. Remove the grass cutting head from the drive shaft. The thread on the drive shaft is "left-hand". This means that you must rotate the grass cutting head to the right (clockwise) to unscrew it. To prevent the drive shaft from rotating as you loosen the grass cutting head, see here.
2. Place the grass cutting head on a solid surface, then press in a locking tab (**X**) on the side of the head until the upper and lower sections of the head can be separated.

To assemble, insert the spring (**D**) into the base. Place the bumper on top of the spring, then place the cover over the assembly – ensure that the holes in the sides of the cover are aligned with the locking tabs in the base – then press the cover down until it "clips" into place and is securely held by the locking tabs.

Check that the bumper can be moved in and out of the head and can be rotated in either direction – if not, the parts are not clean or not assembled correctly. To install the grass cutting head, see here.

# Saw Chain and Chain Bar (Chainsaw Attachment)

Ensure that the saw chain is correctly tensioned and the chain drive cover nuts are properly tightened before use and during cutting. • The saw chain will "stretch" with use, so it is important to check chain tension before and during use • The saw chain cutters are very sharp – wear suitable protective gloves when handling the saw chain. • Use replacement parts from, or recommended by, the manufacturer. • Always replace the saw chain and/or chain bar with replacements of the correct type (see Specifications). • Turn the chain bar over whenever the saw chain is changed or sharpened to help prevent uneven wear on the chain bar. • It is recommended to have saw chains sharpened professionally.

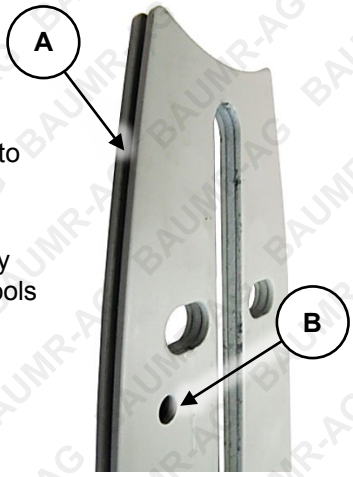
## Inspection and Cleaning

It is essential for efficient operation and safety that the saw chain and chain bar are properly maintained. Replace the saw chain if it:

- Shows signs of damage, such as broken or chipped cutters, damaged rivets, corrosion etc.
- Can no longer be properly tensioned due to "stretch".
- Can no longer be sharpened properly.

To clean the saw chain, soak it in a proprietary saw chain cleaning solution, solvent, or mixture of ammonia and water for approximately 15 minutes to help remove dirt, grease and resin/sap. After soaking, brush the saw chain thoroughly with a saw chain brush or stiff bristle wire brush to remove any stubborn particles, then lubricate the chain. Replace the chain bar if it:

- Shows signs of damage, such as bending, cracks, chips or corrosion.
- The top edges of the chain bar groove become worn unevenly.
- The depth of the saw chain groove is no longer deep enough for the saw chain to seat correctly and run along the top edges of the chain bar groove.

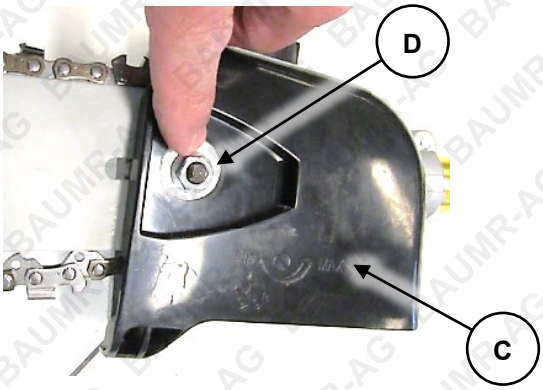


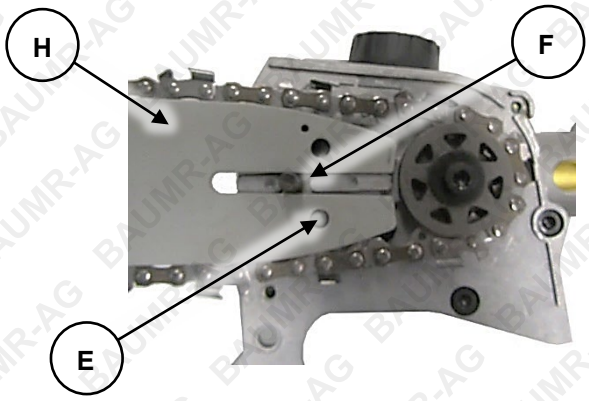

To clean the chain bar, use a proprietary saw chain cleaning solution, solvent, or mixture of ammonia and water to help remove dirt, grease and resin/sap, particularly from within the saw chain groove (**A**) and the lubricant inlet hole (**B**). Use suitable tools or objects to help dislodge any stubborn particles from within the saw chain groove.

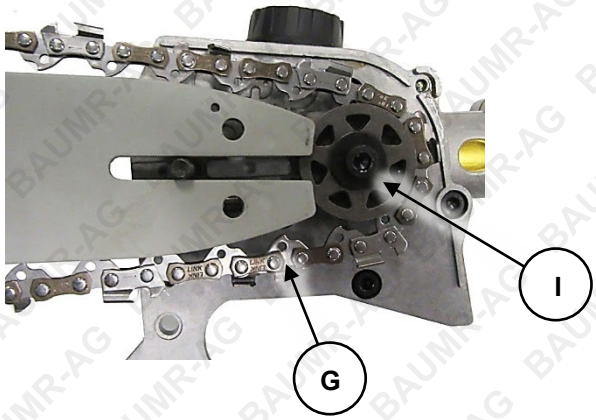
## Removal/Installation

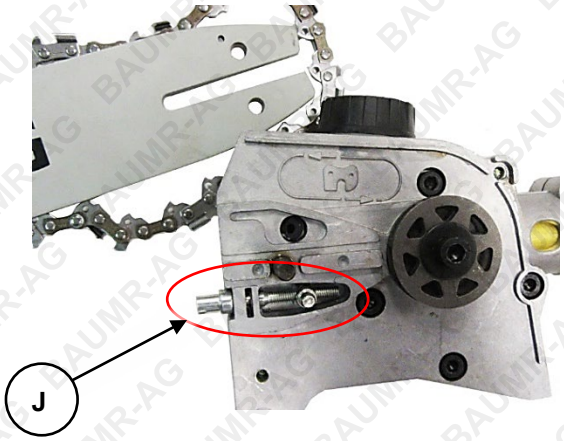
1. Switch the engine OFF and ensure that the chain has stopped rotating.
2. Remove the chain drive cover nut (**D**), and remove the cover (**C**). Be careful to prevent the chain bar falling out.
3. Lift the chain bar (**H**) so it is clear of the tensioner spigot (**E**) and chain drive cover stud (**F**).
4. Carefully extract the saw chain (**G**) from the chain bar groove and chain drive gear (**I**), then remove the saw chain.
5. Remove any sawdust, wood particles, dirt etc from the chain drive cover, tension adjustment mechanism and threads (**J**) – it is easy to damage the threads if adjustment is attempted on a dirty mechanism.

To install the saw chain, chain bar and chain drive cover, see here. To tension the saw chain, see here.






## Chain Lubricant (Chainsaw Attachment)

Always check the chain lubricant level before using the machine and ensure it is at or close to the recommended level. • Use a suitable chainsaw lubricant. • **Do NOT operate the machine without adequate chain lubricant – failure to do so will damage the saw chain, chain bar and/or other parts of the machine, and is not covered under warranty**.

To check chain lubricant level:

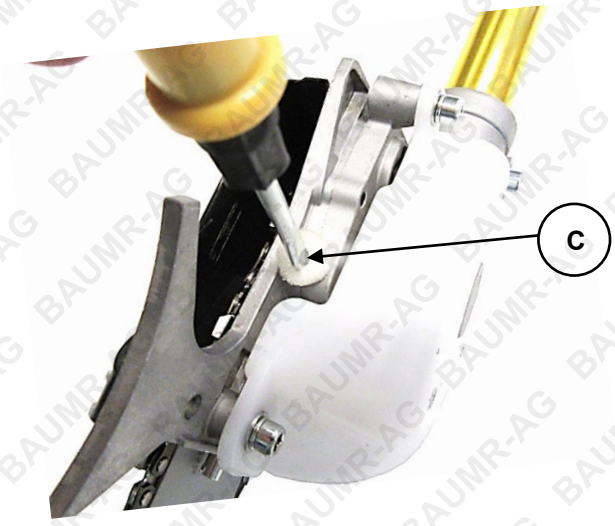
1. Place the tool on a flat and level surface with the chain lubricant tank cap (**A**) facing up.
2. View the lubricant level through the tank body.

To add chain lubricant:

1. Remove (rotate left) the chain lubricant tank cap (**A**).
2. Using a funnel, carefully add chain lubricant to the tank (**B**) until its level is close to the filler hole.
3. When finished, re-install (rotate right) the chain lubricant tank cap until firm. Wipe off any residual oil from the tool.

To adjust chain lubricant flow:

1. Rotate the screw (**C**) on the underside of the chainsaw attachment – rotate right (clockwise) to reduce lubricant flow; rotate left (anti-clockwise) to increase lubricant flow.

## Gear Head

To increase the lifespan of the gear head, follow the below guidelines.

1. Do not attempt to cut branches greater than 100mm in diameter.
2. When the branch drops, ensure the bar and chain are not pinched or get jammed.
3. Follow the instructions of the sticker located on the shaft “Chain not to be spinning prior to cutting. Align chain on target and activate trigger slowly”.

# Air Filter

Operating the machine without a functional air filter may cause severe engine damage and will void any warranty. • A dirty or oil saturated air filter will restrict air flow, which can be mistaken as fuel system problems. Check the condition of the air filter before adjusting engine idle speed, where applicable. • If the air filter is damaged (torn, broken, disintegrating), replace it.

The air filter is used to prevent dirt and other particles from possibly entering the engine and causing internal damage to it. The air filter requires regular maintenance as per the maintenance schedule.

## Inspection and Cleaning

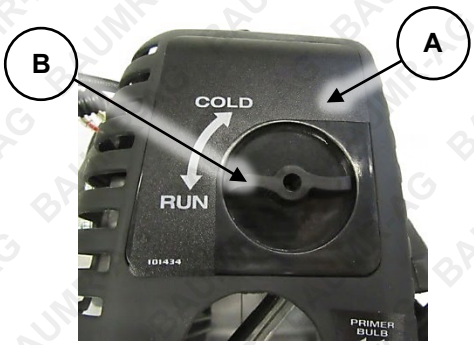
Inspect the air filter for dirtiness and debris, damage etc. Clean or replace the filter element as necessary. To clean air filters:

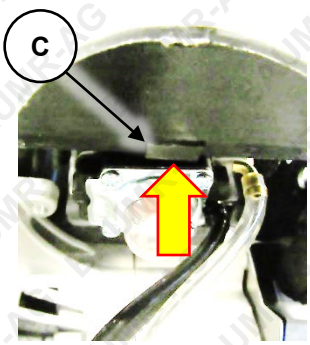
- For foam filters, wash the filter in warm water and mild detergent, then rinse and allow to dry.
- For paper filters, use compressed air to blow particles from it, if possible. The air should be blown from the engine side of the filter. Tapping the filter element against a hard surface and brushing the pleats using a soft brush may also help remove debris from the filter.
- For foam filters, place a few drops of clean engine oil on the filter then squeeze it a few times to spread the oil through the filter material and remove any excess oil.
- It is recommended to clean the air filter cover and air intake assembly of any dirt, cuttings etc.

## Removal/Installation – 2-Stroke Engine

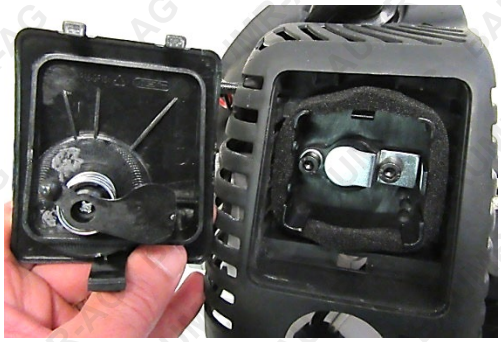
To remove the air filter:

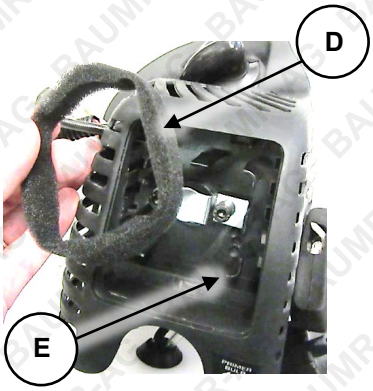
1. Place the choke control (**B**) in the "RUN" position – this prevents the choke mechanism from stopping the filter cover (**A**) from being removed.
2. Push up the tab (**C**) from the underside of the cover until it unclips (it may be necessary to use a screwdriver to help "pop" the cover out). Then, rotate the bottom of the air filter cover upward until it can be released from the engine.
3. Carefully remove the filter element (**D**).









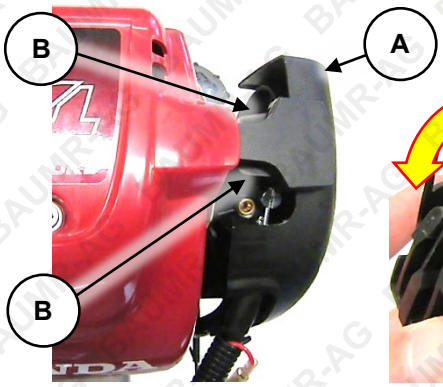

To install the air filter:

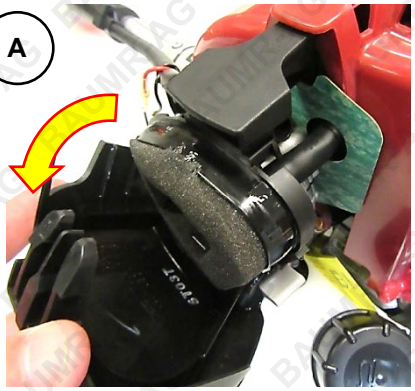
1. Insert the air filter element, and ensure it is correctly positioned in relation to the locating tabs (**E**) around the air intake.
2. Ensure that the choke control on the air filter cover is in the "RUN" position, then insert the top of the cover to the slots at the top of the air intake, then rotate the bottom of the cover down until it "clicks" into position.

## Removal/Installation – 4-Stroke Engine

To remove the air filter:

1. Squeeze in and hold the tabs (**B**) at the top of the air filter cover (**A**) then, rotate the top of the air filter cover downward until it can be released from the engine.
2. Carefully remove the filter element (**D**).




To install the air filter:

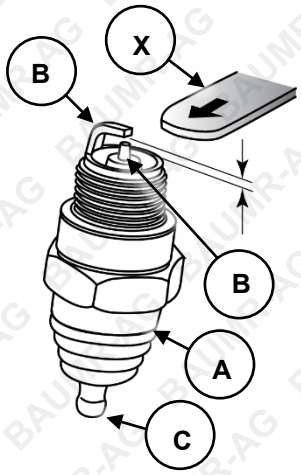
1. Insert the air filter element, and ensure it is correctly positioned in relation to the air intake assembly as it will seat properly in one position only.
2. Locate the bottom of the cover in the hooks at the bottom of the air intake, then rotate the top of the cover up until it "clicks" into position.

# Spark Plug

If the spark plug is damaged (cracked insulator, broken or eroded electrodes etc), replace it. • Always use spark plugs of the correct "heat range" - see Specifications. • Depending on model, the spark plug may be accessible directly, or may be located underneath the air filter cover.

The spark plug is used to ignite the air/fuel mixture inside the engine. The spark plug has electrodes on one end and an electrical terminal on the other. The spark plug requires regular maintenance.

## Cleaning and Gap Checking




The spark plug should be checked and cleaned as per the maintenance schedule.

1. Remove any carbon deposits on the spark plug (**A**) electrodes (**B**) with a wire brush.
2. Clean the spark plug threads and the electrical terminal (**C**) on the top.

To check and adjust the spark plug "gap":

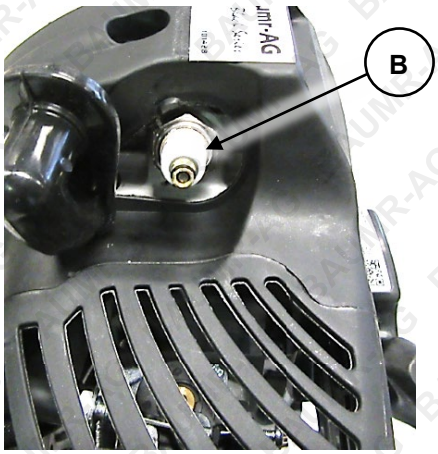
1. Use "feeler" or "thickness" gauges (**X**) to measure the existing gap. The gauge must drag a little when being slid between the electrodes (**2**) – this means the measurement is fairly accurate.
2. Adjust the gap to within specification (see Specifications). If the gap needs to be reduced, gently tap the electrode as required. If the gap needs to be increased, use pliers to gently pull the electrode as required.
3. Measure the gap again and ensure it is within the specified range before re-installing the spark plug.

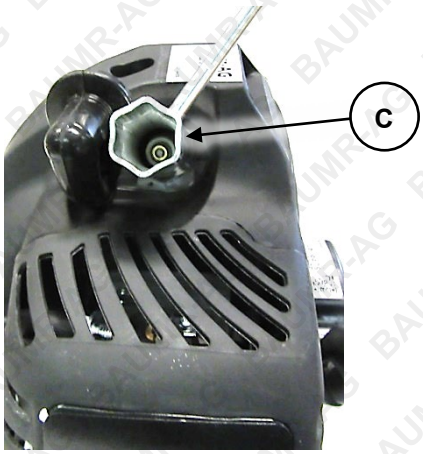
## Removal/Installation – 2-Stroke Engine

1. Pull the electrical lead / rubber boot (**A**) from the terminal on top of the spark plug (**C**).
2. Clean the area around the spark plug so that no dirt or other material can enter the engine when the spark plug is removed.
3. Use the spark plug tool (**C**) to remove the spark plug (rotate left).

To re-install the spark plug:

1. Place the spark plug in its hole and screw it in (rotate right) until "finger tight".
2. Use the spark plug tool to tighten the spark plug approximately one quarter turn (do not over-tighten).
3. Place the electrical lead over the spark plug terminal and push it down so that it connects firmly and the rubber boot is seated firmly against the machine body.

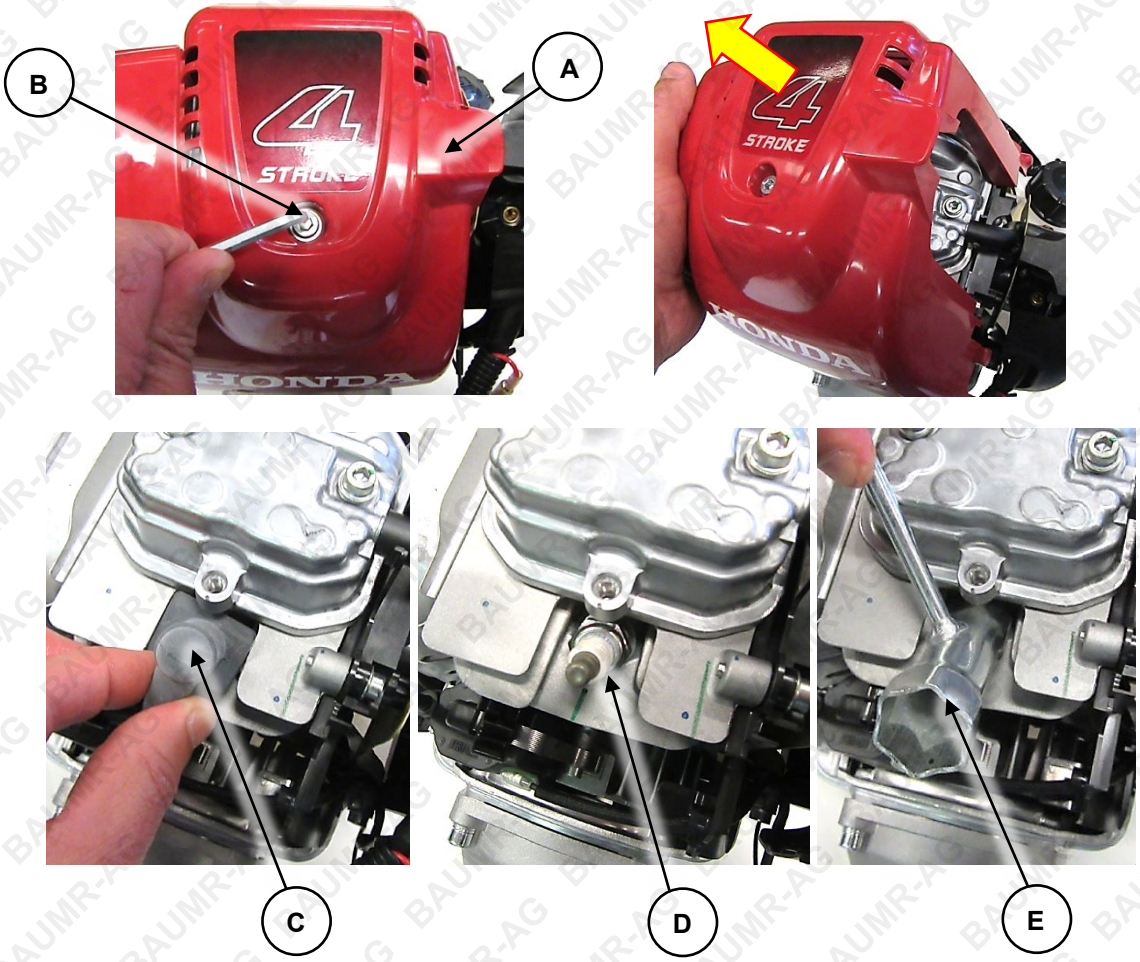



## Removal/Installation – 4-Stroke Engine

1. Loosen the screw (**B**) securing the top engine cover (**A**), then remove the cover to access the engine and spark plug.
2. Pull the electrical lead / rubber boot (**C**) from the terminal on top of the spark plug (**D**).
3. Clean the area around the spark plug so that no dirt or other material can enter the engine when the spark plug is removed.
4. Use the spark plug tool (**E**) to remove the spark plug (rotate left).

To re-install the spark plug:

1. Place the spark plug in its hole and screw it in (rotate right) until "finger tight".
2. Use the spark plug tool to tighten the spark plug approximately one quarter turn (do not over-tighten).
3. Place the electrical lead over the spark plug terminal and push it down so that it connects firmly and the rubber boot is seated firmly against the engine.
4. Re-install the top engine cover, then tighten the screw to secure it.



# Fuel Strainer

A dirty or blocked fuel strainer will restrict fuel flow, which can reduce performance and be mistaken as fuel system problems. Check the condition of the fuel strainer before adjusting engine idle speed, where applicable. • If the fuel strainer is no longer serviceable, replace it.

The fuel strainer (if equipped) is used to prevent dirt and other particles from possibly entering the fuel system and engine and causing internal damage to it. The fuel strainer requires regular maintenance as per the maintenance schedule.

## Inspection and Cleaning

Inspect the strainer for dirtiness and debris etc. Clean or replace the strainer as necessary. To clean strainers:

- Wash the strainer in clean solvent.
- If possible, use compressed air to assist in removing any blockages. Blow air into the strainer from where it connects to the tube.

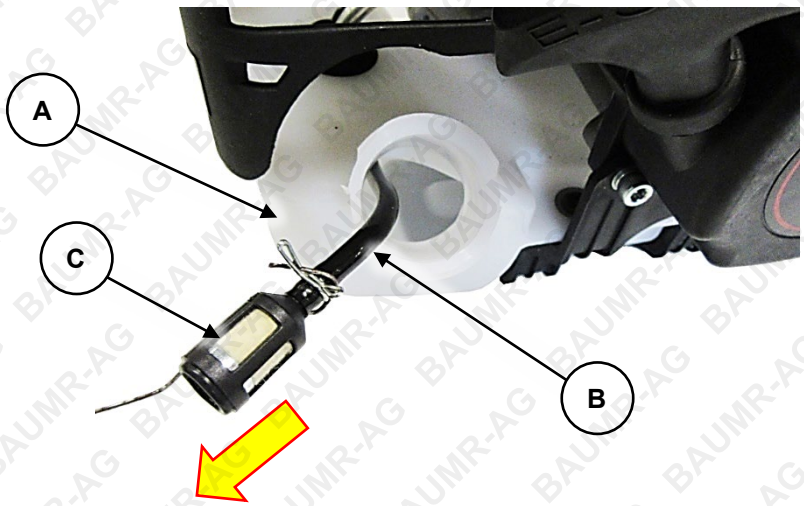
## Removal/Installation

To remove the strainer:

1. Place the machine in a horizontal position on a flat and level surface with the fuel filler cap facing up.
2. Remove the fuel tank cap (rotate left) and empty the fuel tank (**A**).
3. Use a hooked object to capture the fuel intake tube (**B**) inside the fuel tank and gently pull it from the tank.
4. The strainer (**C**) is installed on the end of the tube – to remove it, twist and pull it from the end of the tube

To install the strainer:

1. Firmly push the strainer onto the fuel intake tube.
2. Place the tube back inside the fuel tank – it should rest along the bottom of the tank. Then, re-install the tank cap.



# Engine Oil – 4 Stroke Engine

Engines are NOT supplied with engine oil, although traces of oil from the manufacturing process may be present. It is essential to add adequate engine oil of the correct type to the engine before use. **Failure to add engine oil will void the product warranty**. • Always check engine oil level when the machine is in an upright position on a flat and level surface. • Do not use used or contaminated engine oils. • Use only engine oils of the correct type (see Specifications). • Perform the first oil change within the first 10 hours of use. Subsequently, change the oil every 20 hours of use. • It is recommended that the engine be warm, but not hot, when performing oil changes. When the oil is warm it drains faster. • Using dirty or incorrect engine oil may cause engine damage and void any warranty • Always use suitable tools. • Always dispose of used oil in an environmentally responsible manner and according to regulations. • Some engines feature oil level detection, which will prevent the engine being started or automatically stop a running engine if there is insufficient oil. • **Always check the oil level and ensure is at or near the "MAX" indicator before using the machine**.

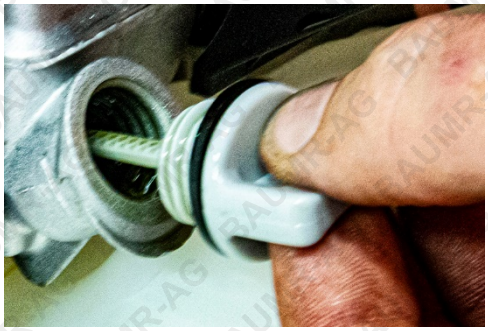
4-stroke engines require engine oil in the crankcase for lubrication of internal components. Severe or irreparable damage may occur if the engine is allowed to run without engine oil. The engine oil level requires regular maintenance as per the maintenance schedule.

To check engine oil level:

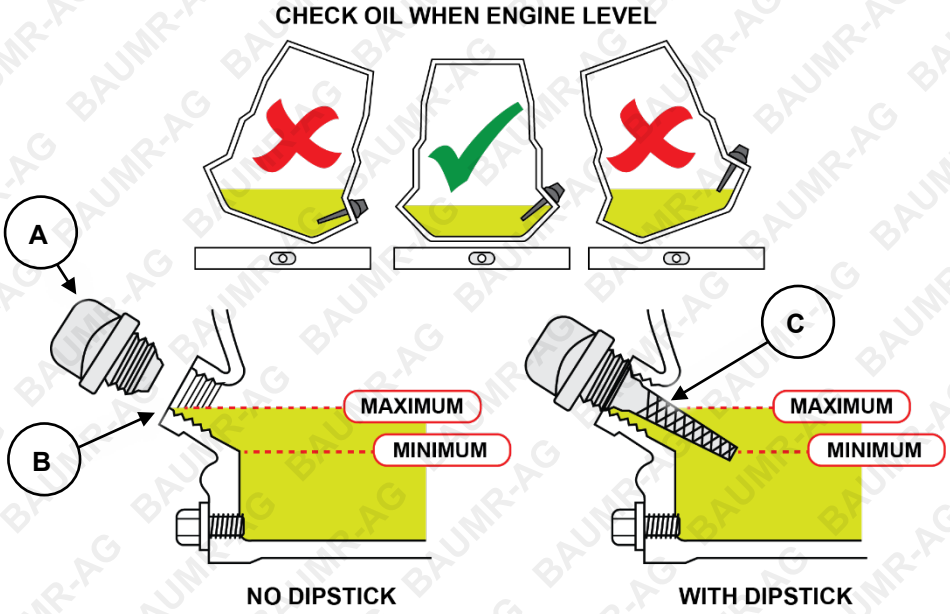
1. Place the machine on a flat and level surface.


2. Clean the machine around the oil filler cap (**A**) so that no dirt or other material enters the engine when the cap is removed.
3. Remove the oil filler cap (rotate left) until fully unscrewed. For machines without a dipstick, the oil level is determined by how close the oil is to the edge of the filler hole (**B**). For machines equipped with an oil level dipstick:
   a. Remove the dipstick (**C**) and wipe clean with a piece of cloth or paper.
   b. Insert the dipstick into the oil filler but do not screw it in.
   c. Remove and inspect the dipstick – the oil level is determined by where oil can be seen on it.

4. Ensure that the oil level is at or just under the "maximum". If the oil level is low, add additional oil until the correct level is reached. If the oil level is too high, drain some oil until the correct level is reached.



5. When finished, re-install (rotate right) the oil filler cap until firm. Wipe off any residual oil from the machine.



To change the engine oil:

1. Place the machine on a suitable work surface that is flat and level and have a container ready to catch drained oil.
2. Clean the machine around the oil filler cap (**A**) and oil filler cap/dipstick so that no dirt or other material enters the engine when the plug or cap is removed.
3. Unscrew (rotate left) and remove the oil filler cap/dipstick.
4. Tilt the machine and drain all oil from the engine. Once drained, allow the machine to sit level again.
5. Clean away any residual oil from the engine.
6. Using a funnel, carefully add oil to the engine until the "maximum" level is reached. Double-check the oil level (described above).
7. When finished, re-install (rotate right) the oil filler cap/dipstick until firm. Wipe off any residual oil from the machine.

# Greasing Gearboxes / Joints

Cutting tool attachments or accessories that REQUIRE greasing will have grease nipples. The example below shows a hedge trimmer attachment with 2 grease nipples. It is recommended to grease applicable components approximately every 6 months, possibly more frequently if used often. Users will require a grease gun and grease - normal automotive wheel bearing grease is suitable. Attach the grease gun hose to the nipple and inject one squeeze of grease.

# Cleaning Guidelines

Do not use solvents, chemicals or abrasives when cleaning the machine, as some surfaces may be damaged. • Wear gloves or use suitable tools to assist in cleaning – do not use bare hands. • Clean the machine after every use to ensure best performance and longest service life.

- Use a slightly damp cloth and mild detergent for cleaning.
- Use a brush for parts that are difficult to reach.
- Ensure air vents and surfaces designed for heat dissipation are clean and free of obstructions or debris.
- For chainsaw attachments, remove the drive chain cover and clean away any sawdust, wood particles, dirt etc from the tension adjustment mechanism, chain bar and saw chain.
- It is recommended to lightly oil cutting blades, saw chain etc after cleaning to help prevent corrosion.
- Ensure all guards and safety devices are clean and functioning correctly.
- Ensure that spring-loaded parts, such as the throttle, return to the normal position when released.
- Ensure that all control cables, levers, switches etc are clean and operate normally and smoothly.

## Cleaning and Lubricating Cutters

Cutters and blades must be cleaned and lubricated after every use. Failure to do so will reduce cutting performance and may also damage the machine. **Faults or failure resulting from not maintaining the cutting blades correctly is not covered under warranty**.

- Use a non-metallic brush to remove debris from all surfaces of the cutting blades. Wipe away any sap etc from all blade surfaces and ensure the blades are dry.
- Spray the cutting blades with spray lubricant or wipe down with light machine oil.
- Keep the blades protected using the blade sheath.

# Engine Tuning Guidelines


Running combustion engines in confined areas **CAN KILL IN MINUTES**. Engine exhaust fumes contain carbon-monoxide – a deadly gas that you cannot smell or see. NEVER run a combustion engine in confined areas EVEN IF windows and doors are open. ONLY run combustion engines OUTDOORS and away from doors, windows and vents. • Petrol / fuel / gasoline is extremely flammable – keep clear of naked flames or other ignition sources. • Do not have the engine running during inspection and maintenance unless specifically required. • The engine should be cool enough to touch before performing maintenance activities. • Some maintenance activities may be beyond the scope of some users. Do NOT attempt procedures that you are not comfortable with, or do not have the necessary tools, experience or knowledge for – take the unit to an authorised service centre or qualified technician for servicing. • **Failure to follow the maintenance schedule, using incorrect or non-compatible accessories or replacements parts, or general negligence may result in making the product warranty void**. • Improper tuning can lead to engine failure – **engine failure due to improper tuning is not covered under warranty**. • If you cannot tune the engine, contact an authorised service centre for assistance or have the machine checked by a small engine specialist. • The carburettor is supplied factory-set and should run properly. Engine tuning should be attempted only if the machine shows signs of requiring adjustment. • A tachometer is recommended for setting engine idle and full throttle speeds.

The engine must be maintained in a reasonable "state of tune" to ensure best performance and safety. If the engine is running roughly, emitting excessive smoke, not revving properly, not idling properly, showing signs of reduced power, not responding crisply to the throttle etc, it may require "tuning". Before any engine tuning:

- Service the air filter.
- Service the spark plug.
- Use fresh fuel.

## 2-Stroke Engine

Basic tuning for 2-stroke engines by owners is not difficult, however, care should be taken in understanding the tuning process and learning how to recognise the symptoms for when engine tuning is required and where and how to make adjustments. Note that factors such as altitude, fuel mixture, ambient temperature etc may all affect engine running characteristics. There are two basic engine conditions that determine improper tune:

- **Rich** - An adjustment that is too rich will cause the engine to smoke, have insufficient power, result in additional carbon build up and may damage the engine. The proportion of fuel in the air/fuel mixture is so high that the fuel does not burn well. The partially burned mixture is expelled into the exhaust and exits the engine as smoke. Carbon build-up may affect the performance of the spark arrestor (if equipped) and cylinder ports if run for a period of time. Outside of carburettor adjustments this can also be caused by having too much oil mixed with the fuel, and/or old fuel.
- **Lean** - An adjustment that is too lean will also cause the engine to have insufficient power and is more likely to damage the engine than a rich mixture. The proportion of fuel in the air/fuel mixture is so low that there is not enough fuel to burn. Lean running causes the cylinder temperature to rise, which often leads to engine seizure, and for excessive revving which may result in connecting rod bearing failure. Other causes for a lean running condition include lack of oil in the fuel mix, and when the fuel tank runs empty.

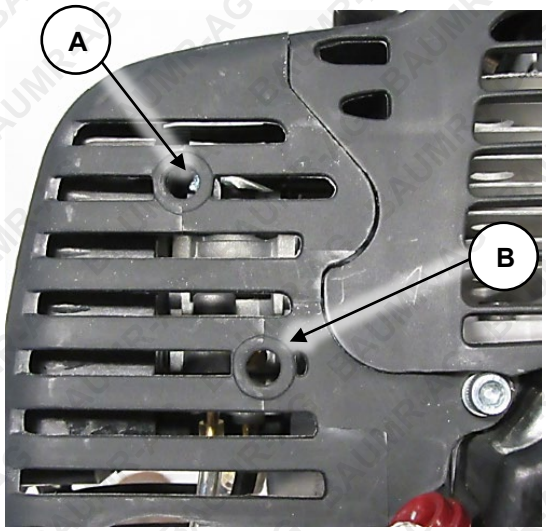
### Carburettor Adjustments

The carburettor has 2 adjustments available:

- **Idle Speed** – Controls how open the throttle is when released. If idle speed is too low, the engine may stop when the throttle is released due to a lack of air/fuel mixture. If idle speed is too high, the engine may idle at a speed that engages the clutch and cause the cutting attachment to rotate – this is a dangerous condition that should never be allowed.
- **High Speed Mixture** – Controls the proportion of fuel in the air/fuel mixture at working speed. If the high speed mixture is too rich, the engine may not reach the speed necessary for maximum power, emit excessive smoke and respond poorly to throttle movement. If the high speed mixture is too lean, the

engine may reach speeds where bearing failure and piston seizure are possible. It will also lack power and tend to run very hot.

The idle speed screw (**A**) and high speed mixture screw (**B**) are accessed from the rear of the engine.




### Factory Settings

Each adjustment screw has a general "factory setting", which is measured from the adjustment screw being rotated "IN" (right / clockwise) until fully seated (but not tight). From this point, the setting is made by counting the number of full rotations of the screw "OUT" (rotate left / anti-clockwise). Factory settings are:

- **Idle Speed** – Approximately 5 turns out.
- **High Speed Mixture** – Approximately 2 turns out.

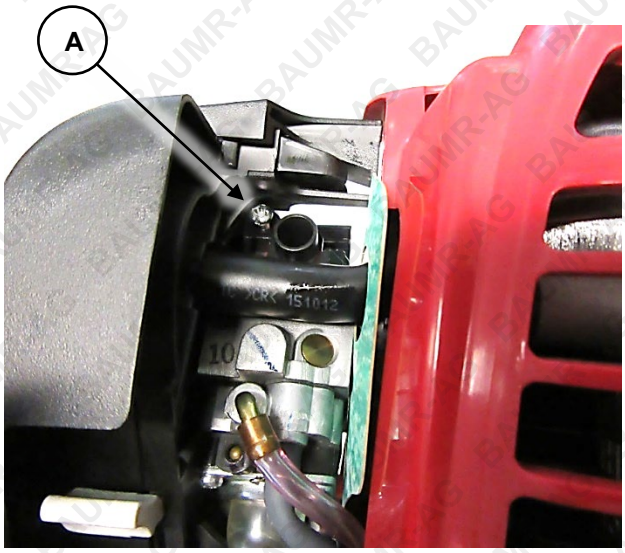
Use the factory settings as the basis for tuning. Set all adjustment screws to factory settings, then test the engine before further tuning. Use a suitable flat-blade screwdriver and ensure that the screwdriver is properly engaged with the adjustment screw before rotating.

### Tuning

1. Start and allow the engine to idle until it is warmed up – tuning a cold engine will result in rich running when the engine is warm. If the engine does not idle, use the throttle to keep the engine running ("blip" the throttle; do not run the engine continuously at high speed).
2. **Adjust Idle Speed** – Rotate the adjustment screw one quarter (¼) turn at a time – rotate "IN" (right / clockwise) to increase idle speed; rotate "OUT" (left / anti-clockwise) to reduce idle speed. Set the speed so the engine idles as fast as possible without engaging the clutch. Never set the idle so the cutter attachment rotates when the throttle is released. If the engine will not idle, adjust the high speed mixture (step 3).
3. **Adjust High Speed Mixture** – Rotate the adjustment screw one quarter (¼) turn at a time – rotate "IN" (right / clockwise) to lean the high speed mixture; rotate "OUT" (left / anti-clockwise) to richen high speed mixture. Rotate the screw OUT until the engine begins slowing and running roughly at full throttle. Then, rotate the adjustment screw IN – the engine should start running better. Keep rotating the screw IN until the engine reaches maximum speed. Then, rotate the screw OUT one eighth (1/8) to one quarter (¼) of a turn to richen the air/fuel mixture for engine cooling purposes.

## 4-Stroke Engine

Basic tuning for 4-stroke engines by owners is limited to idle speed only. If the engine requires more complex tuning, take it to an authorised service centre.




### Carburettor Adjustments

The carburettor has 1 adjustment available:

- **Idle Speed** – Controls how open the throttle is when released. If idle speed is too low, the engine may stop when the throttle is released due to a lack of air/fuel mixture. If idle speed is too high, the engine may idle at a speed that engages the clutch and cause the cutting attachment to rotate – this is a dangerous condition that should never be allowed.

The idle speed screw (**A**) is accessed from the rear of the engine.

## Factory Settings

Each adjustment screw has a general "factory setting", which is measured from the adjustment screw being rotated "IN" (right / clockwise) until fully seated (but not tight). From this point, the setting is made by counting the number of full rotations of the screw "OUT" (rotate left / anti-clockwise). Factory settings are:

- **Idle Speed** – Approximately 5 turns out.

Use the factory settings as the basis for tuning. Set all adjustment screws to factory settings, then test the engine before further tuning. Use a suitable screwdriver and ensure that it is properly engages with the adjustment screw before rotating.

## Tuning

1. Start and allow the engine to idle until it is warmed up – tuning a cold engine will result in rich running when the engine is warm. If the engine does not idle, use the throttle to keep the engine running ("blip" the throttle; do not run the engine continuously at high speed).
2. **Adjust Idle Speed** – Rotate the adjustment screw one quarter (¼) turn at a time – rotate "IN" (right / clockwise) to increase idle speed; rotate "OUT" (left / anti-clockwise) to reduce idle speed. Set the speed so the engine idles at 3100 ± 200 RPM. Never set the idle so the cutter attachment rotates when the throttle is released.

# Transportation and Storage

Always ensure that the machine is cool enough to touch before transporting or storing. • Petrol/fuel/gasoline is extremely flammable – keep clear of naked flames or other ignition sources. • Always transport the machine with the engine ON / OFF switch (if equipped) in the "OFF" position. • Drain the fuel tank before transportation or storage.

## Preparing for Transport and Storage

- Drain the fuel system by allowing the engine to run until it stops.
- Ensure the engine ON/OFF switch (if equipped) is in the "OFF" position.
- Disconnect the spark plug lead.
- Avoid exposing the equipment to direct sunlight, particularly during transportation.
- Ensure the equipment is secure and upright during transport.
- Store the unit in a dry, well-ventilated area and out of the reach of children.

## Long Term Storage

Follow the normal procedures for storage, then:

- Drain the fuel system. It is advised to have the fuel tank as empty as possible before draining.
  a. Unscrew (rotate left) the carburettor drain plug. Use a suitable container to catch the draining fuel, and allow the fuel to drain. Store the drained fuel in a properly sealed container.
  b. Re-install (rotate right) the carburettor drain plug and tighten.
- Remove the spark plug and put 5ml of clean engine oil into the cylinder. Pull the starter cord slowly to distribute the oil. Re-install the spark plug.
- Cover the equipment to protect it.

# Troubleshooting


Running combustion engines in confined areas **CAN KILL IN MINUTES**. Engine exhaust fumes contain carbon-monoxide – a deadly gas that you cannot smell or see. NEVER run a combustion engine in confined areas EVEN IF windows and doors are open. ONLY run combustion engines OUTDOORS and away from doors, windows and vents. • Petrol/fuel/gasoline is extremely flammable – keep clear of naked flames or other ignition sources. • Products with 4-stroke engines are NOT supplied with engine oil, although traces of oil from the manufacturing process may be present. It is essential to add adequate engine oil of the correct type to the engine before use – see Engine Oil. **Failure to add engine oil will void the product warranty**. • Do not have the engine running during inspection and maintenance unless specifically required. • The engine should be cool enough to touch before performing maintenance activities. • Some maintenance activities may be beyond the scope of some users. Do NOT attempt procedures that you are not comfortable with, or do not have the necessary tools, experience or knowledge for – take the unit to an authorised service centre or qualified technician for servicing.

The following information may assist in identifying a problem and rectifying it.

***Difficulty starting the engine.***

| Possible Fault | Action |
|---|---|
| *Lack of fuel or bad fuel mixture* | Ensure that there is sufficient fuel in the tank. Use new fuel, and for 2-stroke engines, ensure the 2-stroke engine oil mixture is correct. |
| *Engine "OFF"* | Ensure engine ON/OFF switch is in the "ON" position. |
| *Carbon build-up on spark plug* | Perform a spark plug service. |
| *Spark plug faulty* | Remove the spark plug, then reconnect the plug lead to it. Place the engine ON/OFF switch in "ON" position (if applicable). Touch the spark plug electrode to a part of the engine crankcase, away from the spark plug hole, and attempt to start the engine – a spark should be visible across the electrodes as the engine is rotated. If no spark is visible, replace the spark plug. |
| *Engine "flooded" with fuel* | Place the choke in "HOT" or "RUN" position. Leave the engine ON/OFF switch in the "OFF" position. Remove the spark plug. Pull the starter cord several times to assist clearing excess fuel from the engine before attempting to start engine. |

***Engine starts but does not idle.***

| Possible Fault | Action |
|---|---|
| *Blocked air filter* | Perform an air filter service. |
| *Idle speed requires adjustment* | Adjust idle speed until engine runs smoothly and at a reasonable speed when idling. |

***Cutting is poor.***

| Possible Fault | Action |
|---|---|
| *Blades dull or damaged* | Sharpen or replace the cutting attachment. Use a more suitable cutting attachment type. |
| *Engine in poor state of tune* | Tune engine. |

### *Engine stops suddenly during use.*

| Possible Fault | Action |
|---|---|
| *No fuel* | Check fuel level and ensure adequate fuel is available. |
| *Cutter jammed / fouled* | Remove cutter from jammed / fouled material. Change cutting method or cutting attachment, clear excess material etc to prevent jamming or fouling. |
| *Overheating causing engine seizure* | Allow engine to cool before restarting. Ensure all air vents and heat dissipation surfaces are clean and free of debris. Adjust high speed mixture (2-stroke engine) to richen air/fuel mixture. If possible, improve engine cooling, such as operating in lower temperatures or reducing intensity of workload. |
| *Carbon build-up on spark plug* | Perform a spark plug service. |
| *Carburettor blocked* | Clean the carburettor. |

### *Reduced engine speed/power during use or engine running poorly at cutting speed.*

| Possible Fault | Action |
|---|---|
| *Blocked air filter* | Perform an air filter service. |
| *Overheating* | Allow engine to cool before restarting. Ensure all air vents and heat dissipation surfaces are clean and free of debris. Adjust high speed mixture (2-stroke engine) to richen air/fuel mixture. If possible, improve engine cooling, such as operating in lower temperatures or reducing intensity of workload. |
| *Engine in poor state of tune* | Tune engine. |
| *Carbon build-up on spark plug* | Perform a spark plug service. |
| *Carbon build-up in engine and/or entry to exhaust silencer* | Remove the engine cylinder head and clean any carbon from the combustion chamber. For the exhaust silencer, remove it and clean any carbon deposits from the exhaust entry port. |
| *Carburettor blocked* | Clean the carburettor. |

### *Excessive vibration.*

| Possible Fault | Action |
|---|---|
| *Blades dull or damaged* | Sharpen or replace the cutting attachment. |
| *Fasteners loose* | Check all accessible fasteners (not carburettor adjustment screws) for tightness. |

# Specifications

## Cutting Accessories

| | |
|---|---|
| **Chainsaw** | 12", 3/8" pitch, 0.050" gauge, 44 links / 12" chain bar with sprocket nose |
| **Cutter (various)** | 254mm (10") outside diameter, 25.4mm (1") bore |
| **Drive Coupling** | 7mm square |
| **Cutting Line** | 1.6 to 3.1mm – "bump head" / 3.1mm only – "fixed line head" |

## 2-Stroke Engine

| | |
|---|---|
| **Type** | 2-stroke, single cylinder |
| **Fuel** | Non-ethanol unleaded petrol (higher RON values provide best performance) |
| **Spark Plug** | L7T |
| **Spark Plug Gap** | 0.6 to 0.7mm (0.024 to 0.028") |

## 4-Stroke Engine

| | |
|---|---|
| **Engine Type** | 4-stroke, single cylinder |
| **Fuel Type** | Non-ethanol unleaded petrol |
| **Spark Plug Type** | CM5H / CMR5H |
| **Spark Plug Gap** | 0.6 to 0.7mm (0.024 to 0.028") |
| **Valve Clearance** | Inlet: 0.08mm ± 0.02mm (0.003" ± 0.0008")<br>Exhaust: 0.11mm ± 0.02mm (0.004" ± 0.0008") |
| **Engine Oil Type** | SAE 10W-30 automotive engine oil recommended for general use |
| **Engine Oil Capacity** | Approximately 100ml (0.1l) (always check level) |

# Engine Service and Maintenance Record

Use the following tables as a record of machine servicing and maintenance. Keeping accurate records will help ensure longest machine service life and may simplify fault diagnosis and any possible warranty claims. Fill out date, number of hours of use and the activity performed, as required (see Maintenance Schedule).

| Date | Hours Use | Maintenance Task / Notes |
|---|---|---|
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**Some experts believe the incorrect or prolonged use of almost any product could cause serious injury or death. For information that may reduce your risk of serious injury or death, consult the points below and additionally, the information available at www.datastreamserver.com/safety**

- Consult all documentation, packaging and product labelling before use. Note that some products feature online documentation which should be printed and kept with the product.
- Check product for loose / broken / damaged / missing parts, wear or leaks (if applicable) before each use. Never use a product with loose / broken / damaged / missing parts, wear or leaks (if applicable).
- Products must be inspected and serviced (if applicable) by a qualified specialist every 6 months assuming average residential use by a person of average weight and strength, above average technical aptitude, on a property matching average metropolitan specification. Intended use outside these guidelines could indicate the product is not suitable for intended use or may require more regular inspection or servicing.
- Ensure all possible users of the product have completed an industry recognized training course before being given access to the product.
- The product has been supplied by a general merchandise retailer that may not be familiar with your specific application or your description of the application. Be sure to attain third-party approval for your application from a qualified specialist before use regardless of prior assurances by the retailer or its representatives.
- This product is not intended for use where fail-safe operation is required. As with any product (take an automobile, aircraft, computer or ball point pen for example), there is always a small chance of technical issues that needs to be repaired or may require replacement of the product or a part. If the possibility of such failure and the associated time it takes to rectify could in any situation inconvenience the user, business or employee then the product is not suitable for your requirements. This product is not for use where incorrect operation or a failure of any kind, including but not limited to a condition requiring product return, replacement, service by a technician or replacement of parts could cause a financial loss, loss of employee time or an inconvenience requiring compensation.
- If this item has been purchased in error after considering the points above, simply contact the retailer directly for details of their returns policy, if required.