

# Bäumr-AG



## Petrol Powered Lawn Mowers

### User Manual

[Revision 12.0 October 2019]

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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.



The product is 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.**

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# 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 handling and 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. When using the equipment, consider conditions and pay due care to persons and property.

## General Work Area Safety

- Work areas should be clean and well lit.
- 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.





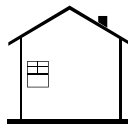

## General Carbon-Monoxide Safety

- 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	General Electrical Safety	General Service Information
<ul style="list-style-type: none"> <li>Inspect electrical equipment, extension cords, power bars, and electrical fittings for damage or wear before each use. Repair or replace damaged equipment immediately.</li> <li>Ensure all power sources conform to equipment voltage requirements and are disconnected before connecting or disconnecting equipment.</li> <li>When wiring electrically powered equipment, follow all electrical and safety codes.</li> <li>Wherever possible, use a residual current device (RCD).</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Electrically grounded equipment must have an approved cord and plug and be connected to a grounded electrical outlet.</li> <li>Do NOT bypass the ON/OFF switch and operate equipment by connecting and disconnecting the electrical cord.</li> <li>Do NOT use equipment that has exposed wiring, damaged switches, covers or guards.</li> <li>Do NOT use electrical equipment in wet conditions or in damp locations.</li> <li>Do NOT use electrical cords to lift, move or carry equipment.</li> <li>Do NOT coil or knot electrical cords, and ensure electrical cords are not trip hazards.</li> </ul>	<ul style="list-style-type: none"> <li>The equipment must be serviced or repaired at authorised service centres by qualified personnel only.</li> <li>Replacement parts must be original equipment manufacturer (OEM) to ensure equipment safety is maintained.</li> <li>Do NOT attempt any maintenance or repair work not described in this manual.</li> <li>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.</li> <li>Do NOT make adjustments while the equipment is running.</li> <li>Perform service related activities in suitable conditions, such as a workshop.</li> <li>Replace worn, damaged or missing warning/safety labels immediately.</li> </ul>

 <b>DANGER</b> 	
<p><b>Using an engine or wood/charcoal/gas fuelled appliance indoors CAN KILL YOU IN MINUTES.</b>  <b>Engine exhaust and wood/charcoal/gas fumes contain carbon monoxide. This is a poison you cannot see or smell.</b></p>	
 	 
<p><b>NEVER use inside a building, home, garage, boat, caravan or tent EVEN IF doors and windows are open.</b></p>	<p><b>Only use OUTSIDE and far away from windows, doors, and vents.</b></p>
<p><b>Avoid other hazards - READ MANUAL BEFORE USE.</b></p>	

**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.

 <p><b>Flammable Material Hazard</b> Flammable liquids, gases or substances etc may present. Avoid ignition sources and open flames. Danger of fire.</p>	 <p><b>Read User Manual</b> Read and fully understand product safety warnings, operation, procedures etc before using the product.</p>	 <p><b>Use Hand Protection</b> Wear appropriate hand protection and take due care as the product or use of the product may present hand hazards.</p>	 <p><b>Carbon-Monoxide Hazard</b> Do not use the product in confined areas or without adequate ventilation. Carbon-monoxide poisoning can be fatal.</p>
 <p><b>Electrocution / Electrical Shock Hazard</b> 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.</p>	 <p><b>Toxic Fumes hazard</b> 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.</p>	 <p><b>Explosive Material Hazard</b> Combustible liquids, gases or substances etc may be present. Avoid ignition sources and open flames. Danger of explosion.</p>	 <p><b>Cutting / Amputation Hazard</b> 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.</p>
 <p><b>Crush Hazard</b> 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.</p>	 <p><b>Single Operator Only</b> The product must be operated by a single person only. More than one person operating the product may introduce additional hazards.</p>	 <p><b>Use Face Protection</b> Wear appropriate full-face protection and take due care as the product or use of the product may present face and eye hazards.</p>	 <p><b>Use Foot Protection</b> Wear appropriate foot protection and take due care as the product or use of the product may present foot hazards.</p>
 <p><b>Use Eye / Ear / Head Protection</b> 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.</p>	 <p><b>Running Hazard</b> Do not run on or near the product as doing so may present a fall hazard.</p>	 <p><b>Diving Hazard</b> Do not dive into the product as doing so may present a neck / head injury hazard.</p>	 <p><b>Adult Supervision Required</b> Always supervise children and other users of a product to prevent drowning or injury.</p>
 <p><b>Skin Penetration / Puncture Hazard</b> 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.</p>	 <p><b>Hot Surface Hazard</b> Be aware that the product may produce high temperatures and hot surfaces that can cause burn injuries.</p>	 <p><b>Flying Debris Hazard</b> Be aware that the product or use of the product may present hazards produced by flying debris. Wear appropriate clothing and protective devices.</p>	 <p><b>Moving Parts Hazard</b> 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, maintenance etc.</p>

 <p><b>Carbon-Monoxide Hazard</b> Do not use the product in confined areas or without adequate ventilation. Carbon-monoxide poisoning can be fatal.</p>	 <p><b>Pull Hazard</b> 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.</p>	 <p><b>Slope / Fall Injury Hazard</b> 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.</p>	 <p><b>"Slam Dunk" Warning</b> Do NOT attempt "slam dunk" manoeuvres as this may result in severe injury due to falling, product breakage or collapse etc.</p>
 <p><b>Electrocution / Electrical Shock Hazard - Outdoor</b> 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.</p>	 <p><b>Electrocution / Electrical Shock Hazard - Disconnect</b> 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, maintenance etc.</p>	 <p><b>Power Line Electrocution Hazard</b> 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.</p>	 <p><b>"Kick-Back" Hazard</b> High level of "kick-back" hazard that can cause the machine to suddenly rotate towards operator. Kick-back injury can be fatal.</p>
 <p><b>Winch Operator Position Hazard</b> Do NOT stand between winch and load. Do NOT use winch to move people.</p>	 <p><b>Winch Lift Hazard</b> Do NOT LIFT load vertically. Use machine to PULL only.</p>	 <p><b>Cable Hazard</b> Ensure that load bearing cable is not kinked or knotted.</p>	 <p><b>Winch Cable Hazard</b> Ensure that there is a minimum number of cable coils on winching mechanism.</p>
 <p><b>Winch Hook Hazard</b> Carry hook to load – do NOT throw or run.</p>			

# Equipment Safety



Lawn mowers 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

- The equipment is designed for domestic use only.
- If you are untrained in the use of a petrol powered lawn mower, 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. See [Operation](#).
- You must be in good physical condition to use a lawn mower. 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.
- Do not start self-propelled models (where applicable) with the drive mechanism engaged.
- Use caution when reversing or pulling the equipment towards you, and changing direction.
- After stopping the engine, always allow all moving components (blades etc) to stop moving before moving, lifting etc.
- Stop the engine if the equipment requires tilting or moving over non-grass surfaces.
- 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 approved heavy-duty safety boots, with steel toe-caps and non-slip soles.

## Work Area Safety

- Check the work area before mowing and remove any objects (stones etc) that may be thrown by the mower or may otherwise damage it.
- Ensure that any person other than the operator and any assistants is kept a minimum 10m (30') away from where the equipment is being used or where there is any possibility of ejected debris etc. Be aware of any property that may be affected by ejected debris 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. See [Operation](#).



- Always hold the machine firmly with both hands during operation. Always use the machine handles.
- Avoid cutting wet or very tall grass. If grass is tall, mow in several passes, each time reducing the cut height.
- Do not use the equipment for purposes it is not designed for, such as shredding leaves or wood chipping.
- Avoid overly steep slopes when mowing and, when mowing on an incline, mow across the face of the incline, not up and down it.

### **Transportation Safety**

- Always STOP the engine and ensure all cutting devices have fully stopped before moving the machine, transporting or working on it (refuelling, adjusting etc).
- 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

<b>Safety .....</b>	<b>2</b>
Safety Symbols .....	4
<b>Equipment Safety.....</b>	<b>6</b>
<b>Applicable Models .....</b>	<b>10</b>
<b>Parts Identification.....</b>	<b>13</b>
<b>Before Use Checklist .....</b>	<b>15</b>
Assembly .....	15
Engine Oil.....	16
Air Filter .....	16
Fuel .....	16
Priming the Fuel System .....	17
Spark Plug.....	17
<b>Engine Starting and Stopping.....</b>	<b>18</b>
Starting the Engine .....	18
Stopping the Engine.....	19
Environmental Considerations .....	19
<b>Operation.....</b>	<b>20</b>
Using the Throttle .....	20
Engine Safety Bar .....	20
Adjusting Cutting Height.....	21
Using the Grass Catcher .....	21
Using the Mulching Attachment .....	21
Using the Side Discharge Attachment .....	22
Using the Self-Propel Function .....	22
Using the Deck Wash Function.....	22
Mowing Guidelines .....	23
Cleaning the Drive Belt .....	23
<b>Lead-Acid Battery Care and Maintenance.....</b>	<b>24</b>
Top 3 Battery Care Requirements .....	24
<b>Maintenance .....</b>	<b>25</b>
Maintenance Schedule – Petrol Engine / Machine .....	26
Engine Oil.....	27
Air Filter .....	28
Inspection and Cleaning .....	28
Removal/Installation .....	28
Spark Plug.....	29
Cleaning and Gap Checking.....	29
Removal/Installation .....	29



Cutting Blades .....	30
Sharpening .....	30
Removal/Installation .....	30
Cleaning Guidelines .....	31
<b>Transportation and Storage .....</b>	<b>32</b>
<b>Troubleshooting.....</b>	<b>33</b>
<b>Specifications .....</b>	<b>36</b>
<b>Engine Service and Maintenance Record .....</b>	<b>37</b>

## Applicable Models

This manual applies to the following Bäumr-AG lawn mowers:

**660EX 16"**



**670EX 16" Electric Start**



**680EX 16" Self-Propelled**



**690SX Series II 16" Self-Propelled**



**690SX Series III 16"**



**700SX Series II 16" Self-Propelled**



**750EX 18"**



**750SX 18" Self-Propelled**



**750SX Series II 18" Self-Propelled**



**760SX Series II 19" Self-Propelled**



**770SX Series II 19" Self-Propelled**



**880SX Series II 21" Self-Propelled**



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**890SX Series II Self-Propelled**



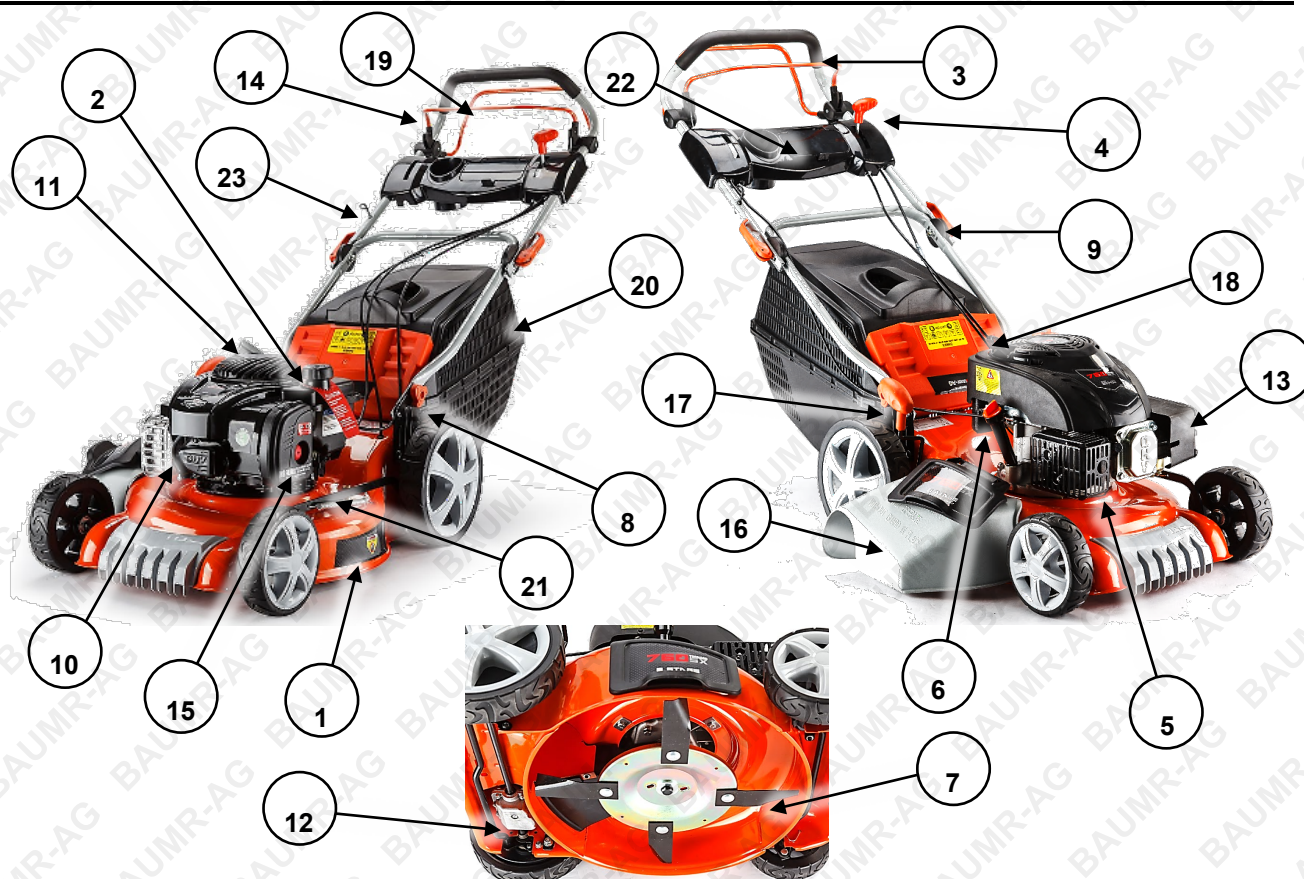


# Parts Identification

Lawn mowers come with all parts required for normal domestic use. 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. For example, the drive activation mechanism for self-propelled mowers is not applicable to non-self-propelled types, or a side discharge chute may apply to some models. This section shows typical major components common to most petrol-powered lawn mowers; the position of some components may also vary between models.



No.	Name	No.	Name
1	Deck	13	Air Filter Cover (filter inside)
2	Fuel Filler and Tank	14	Engine Safety Bar (where applicable)
3	Handle	15	Fuel Primer (where applicable)
4	Choke or Throttle or Engine On/Off Control	16	Side Discharge Chute (where applicable)
5	Exhaust	17	Cut Height Adjuster
6	Oil Filler/Dipstick	18	Rear Guard
7	Cutting Blade	19	Drive Activation Bar/Bail (self-propelled models)
8	Handle Attachment Nut	20	Grass Catcher
9	Handle Adjustment Lever	21	Deck Wash Hose Connector (where applicable)
10	Spark Plug	22	Console (where applicable)

<b>11</b>	Starting Cord	<b>23</b>	Starting Cord Hook
<b>12</b>	Drive Mechanism (self-propelled models)		

# 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.** The product is 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.**

**Please note:** Before using the mower, you must apply air filter oil to the foam air filter element. This prevents dust ingress into the motor, thus preventing potential engine damage or failure. This should also be done after cleaning the air filter.

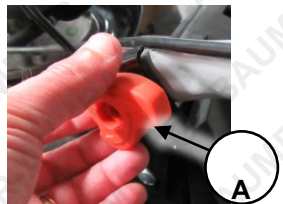
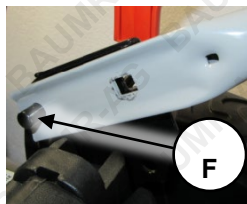
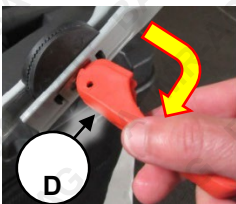
## Assembly

Typically, the lawn mower requires minimal assembly. Prior to assembly, unpack all components and check that all items have been received.

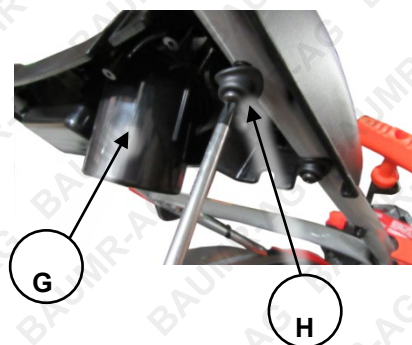
### Handle

The handle comes assembled, however, must be attached to the lawn mower handle mounting brackets. Note that the following procedure is typical and that there may be slight differences between models; for example, on some machine the handle is attached using 2 screws and nuts per side.

1. Remove the handle attachment nuts and screws from the handle mounting brackets (C).
2. Pull the handle adjustment levers (D) out to unlock them and unfold the handle, then push the levers back into the locked position. On some models that do not have adjustment, the top handle sections are attached directly to the lower sections using screws and nuts, similarly to the procedure below.
3. Ensure that any cables/wires are running along the top of the handle, then place the ends of the handle in position with the mounting brackets (E) – for some models, the bottom hole in each leg of the handle goes over a spigot (F); for other models the handle is secured using 2 screws on each leg, with the handle mounted to the outer face of the brackets. Note that some models may have additional holes that can be used for changing the angle of the handle.
4. Insert the handle attachment screws (B) through the second hole in each handle leg from the inside, then secure the handle with the handle attachment nuts (A). Firmly tighten (rotate right) the nuts.



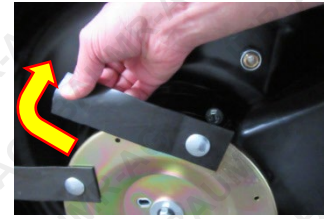
5. Once the handle is secure, check that all cable/wires are properly routed, without kinks etc, and are secured to the handle with any supplied clips.
6. If the machine is equipped with a "console" (G) that houses the throttle control, drink holder etc, place it in position over the handle rails, and attach it using the supplied screws and curved washers (H).





## Blades

Some machines feature "cross-cut" blades (four-blade design). If this is the case, pull them outward so they are straight – use caution as the cutting edge of the blade is sharp.



## Engine Oil



The product is 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.**

Four-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. Check the engine oil level and ensure that the oil level is at or just under the maximum level indicator.

Always check the engine oil level before starting the engine. See [Engine Oil](#).

### To Add Engine Oil



**Step 1:** Locate the oil fill cap on the crankcase to start. Fill cap locations vary, depending on the make and model of your engine.



**Step 2:** Start by adding approximately 400ml of engine oil

- Replace the dipstick, to ensure an accurate reading, reinsert the dipstick completely. If the dipstick cap is a screw-in type, ensure an accurate reading by screwing in all the way before removing it to check the level.
- Then, remove it again and **check the oil level**.

The oil mark on the dipstick should be between the lines shown on the dipstick. It should never be above the FULL line or below the ADD line. Add additional as required.

## 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.

Adequately fill the fuel tank with the correct fuel type.

- Use non-ethanol unleaded petrol (higher RON values will provide best engine performance). Do not use old or contaminated fuel.

To fill or top up fuel:

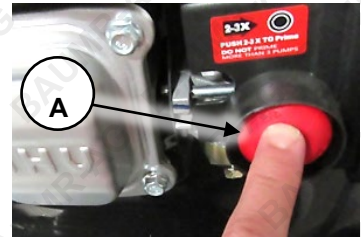
1. Place the machine in an upright position on a flat and level surface.

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, re-install (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

For engines equipped with a fuel primer, it may be necessary to "prime" the fuel system before attempting to start the engine. This means removing any air from the fuel line and filling the carburettor with fuel. To prime:

1. Fill the fuel tank with fuel.
2. Locate the fuel primer (A).
3. Press the primer bulb 3 – 4 times. **DO NOT EXCEED FOUR PRESSES.**
4. Start the engine.



### 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](#). The product is 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.**

Different models may feature variations in design; for example, some have different engine types etc. There are currently two major variations in how the engine speed is controlled:

- **Manual** – This is the more traditional style, using a throttle lever, where the position of the lever determines the engine speed [just like the accelerator on a car]. Manual throttle engines generally have a choke setting on the throttle that is used for starting the engine when it is cold.
- **Automatic** – These engines have a system that adjusts the throttle automatically based on the current engine load. For example, when the grass being cut is thick etc, the throttle opens up to maintain engine speed. Engines with an automatic throttle generally do not have a choke setting on the throttle, but rather just a "RUN" or "ON" position.



Typical Automatic Throttle



Typical Manual Throttle



Typical Engine ON/OFF Switch

Major engine controls are identified on the markings. The following procedures and position or appearance of controls etc may vary.

machine by stickers or other images are typical – the

## Starting the Engine

1. **PRIME** – If necessary, "[prime](#)" the fuel system.
2. **CHOKE** – If the machine is equipped with a "CHOKE" or "COLD" or "COLD START" throttle setting, and the engine is cold, place the throttle in that position. If the engine is warm or the ambient temperature is high, place the throttle somewhere in the "RUN" region [generally, just off the "STOP" position is good].  
If the machine has no choke, place the throttle in the "START" or "RUN" position.
3. **IGNITION** – If the machine has an engine ON/OFF switch or key switch, place it in the "ON" ("I") position. Note that some models may be wired so that "O" is the "ON" position. For key switches, the "OFF" position allows the key to be removed from the switch. The "ON" position is reached when the key is rotated from the "OFF" position.
4. **START** – Slowly pull out the starter cord (A) until you feel it engage with the engine, then pull it out rapidly. The engine should start. Allow the starter cord to rewind slowly – do not let it "snap" back.

If the machine is equipped with electric start, press the "START" or "POWER" button or turn the key switch to the "start" position to use the electric start. Typically, electric start engines can also be pull started.

**Video Tutorial:** [Starting 4-Stroke Engines](#)



**Note:** If the machine features an "[engine safety bar](#)", it must be engaged in order to start the engine and for it to remain running. • Many models feature an extended length starter cord that hooks to the mower handle and allows the engine to be started from a normal standing position behind the mower.

5. **WARM-UP and THROTTLE** – It is good practice to allow the engine to warm-up and run smoothly before using the machine. For manual throttles, set the desired engine speed once the engine is warm.

If the engine does not start, repeat step 4. If the engine fails to start after several attempts, refer to [Troubleshooting](#).



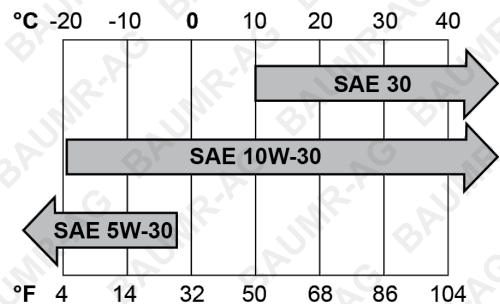
## Stopping the Engine

- Place the throttle control in the "STOP" or "OFF" position, or, if equipped, release the engine safety bar.
- If equipped, place the engine ON/OFF switch or key 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** – 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



Lawn mowers 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 authorized service centre before using it again. • If you experience excessive vibration from the mower during operation, this is an indication of wear or damage. It is recommended to have it inspected and repaired at an authorized service centre 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. • Ensure that the area to be mowed is free of objects that may get caught in the mower or be thrown by it (stones, branches etc).

When the engine is idling (slowest continuous running speed), the cutting action is minimal. As engine speed increases, the cutting action becomes more efficient. Note the following recommendations:

- Operate the engine at a sufficient speed to provide the desired cutting action. This may vary on the type of grass, grass height and density etc.
- After use, it is recommended to clean the mower of excessive grass cuttings, dirt etc. Some models feature a "deck wash", which can be used to simplify cleaning the underside of the mower deck.

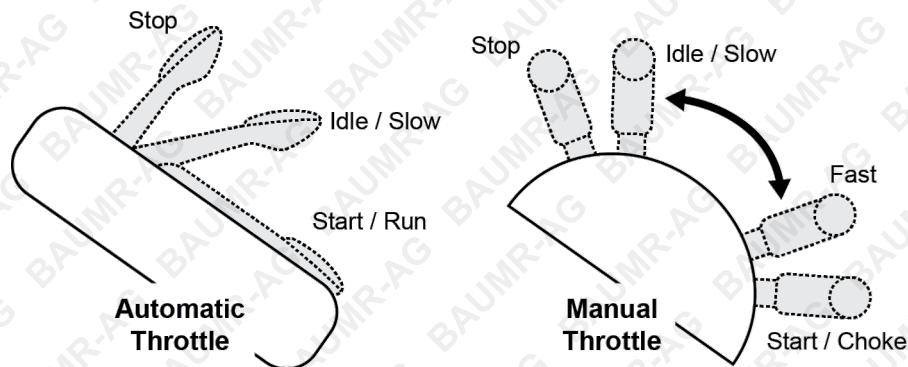
The lawn mower may have additional features to "just" cutting grass. For example, mulching, side discharge chute etc.

## Using the Throttle

Once the engine is started, the machine can be used. For manual throttle machines, you adjust engine speed manually; for example, when cutting thicker or longer grass, increase engine speed. Push or pull the throttle within the range between the "START" and "STOP" positions to reach the required engine speed.

For machines that have automatic throttle control, just leave the throttle in the "START" position.

When you are pushing the mower from one area to another, but not cutting, you can "idle" the engine [run it slow, but not stop]. For manual throttle machines, place the throttle close to the "STOP" position. For automatic throttle machines, pull the throttle toward you approximately mid-way.



## Engine Safety Bar

Some models may have an "engine safety bar" (A) [also known as a "brake bar" or "bail"] that must be engaged in order for the engine to start and run. When the bar is released, the engine automatically stops. This is a safety feature to help ensure that the mower operator is behind the mower while the engine is running.

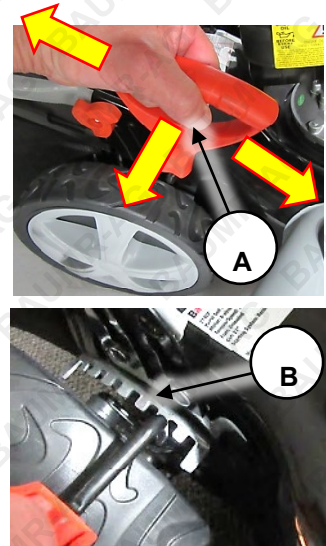
To start and run the engine, hold the engine safety bar against the handle (B). Note the safety bar may be on either side of the handle.



## Adjusting Cutting Height

Most lawn mowers feature adjustable cutting heights. The mechanism raises/lowers the lawn mower deck and has several steps. When setting cutting height, note that weeds can spread more easily in very short grass. If the grass is long it may be necessary to cut it in several passes, each time lowering the cutting height. To set the cutting height:

1. Pull the height adjustment lever (A) outward so that it disengages with the teeth (B).
2. Rotate the lever forward to raise, or backward to lower, then release it at the desired height.

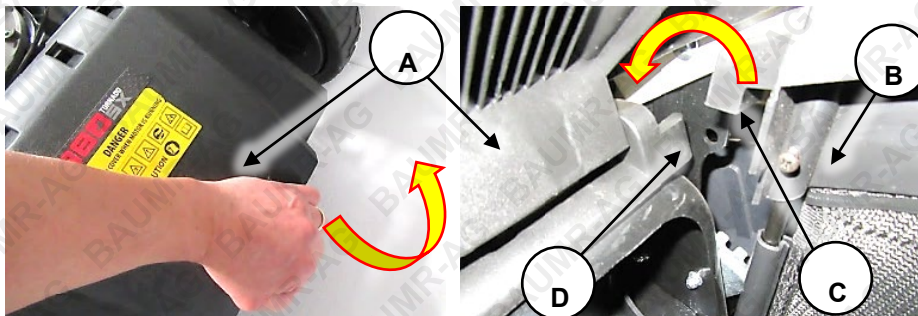


## Using the Grass Catcher

**Note:** Ensure that the mulching attachment (if equipped) is not installed when using the catcher.

When you want to catch the grass cuttings for disposal, use the grass catcher. The grass catcher hooks to the rear of the mower, under the rear guard. To attach and detach it:

1. Lift the bottom edge of the rear guard (A) sufficiently to allow the catcher to pass underneath it and hold it in this position.
2. Insert the catcher (B), with open end toward the mower, and hook the catcher fingers (C) onto the mounting points (D), then lower the rear guard so it rests on the top of the grass catcher.

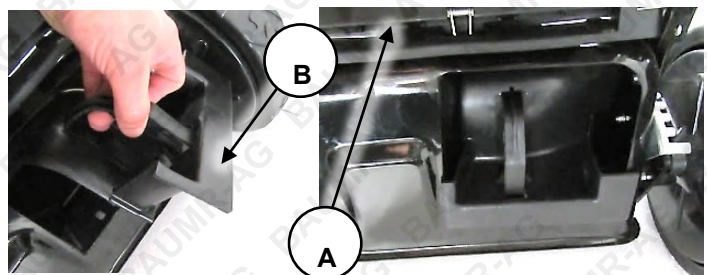


To remove the grass catcher, lift the bottom edge of the rear guard, then lift the grass catcher to unhook it from the mower. Once unhooked, pull the grass catcher out and lower the rear guard.

## Using the Mulching Attachment

Some models may feature a "mulching" attachment. Mulching is to re-circulate the cut the grass through the blades so that is very finely "chopped" and can be left on the cut grass as a "grass feed". When mulching, the grass catcher is not required. To install the mulching attachment:

1. Remove the grass catcher, if installed. Lift up and hold the rear guard (A).
2. Insert the mulching attachment (B), with the top angled forward slightly so that the protrusions on the bottom of the attachment enter the slots in the mower deck. Pull the top of the attachment back slightly so it is correctly fitted, then lower the rear guard.



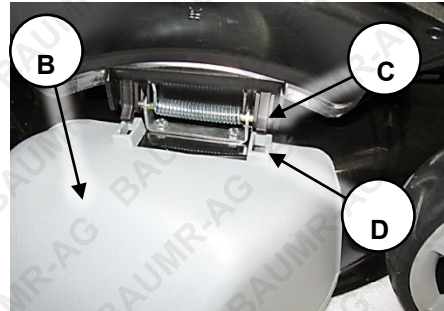
To remove the mulching attachment, lift the rear guard, unhook the mulching attachment from the deck and pull it out, then lower the rear guard.



## Using the Side Discharge Attachment

Some models may feature a "side discharge chute" attachment. The side discharge chute ejects the grass cutting to the side of the mower. When using the side discharge chute, the grass catcher is not required. To install the side discharge chute attachment:

1. Remove the grass catcher, if installed. Lift up and hold the flap (A) on the side of the mower deck.
2. Insert the side discharge chute attachment (B) under the flap. Ensure that the protrusions (C) on the underside of the flap enter the slots (D) on the top of the side discharge chute, then lower the flap.



To remove the side discharge chute attachment, lift the flap until the chute unhooks from it, then remove the chute and lower the flap.

## Using the Self-Propel Function

Some models may have a self-propelling function (forward direction only) to make mowing easier. The function is switched on and off using "drive activation bar" (A). When the bar is released, the drive stops. The speed of the drive is not directly controllable, however, may vary somewhat with engine speed.

**Note:** When the engine is not running, if the drive activation bar is pulled in, the drive gears will engage which can make it difficult to move the machine. It is recommended to release the drive activation bar when changing direction, reversing etc.

To activate the self-propel function, hold the drive activation bar against the handle (B). To deactivate the function, release the bar.



## Using the Deck Wash Function

Some models may have a "deck wash" function to help make cleaning the blades and cutting area (under the deck) easier. Note that the function is not intended to completely clean the mower – it will remove some built-up cuttings and dirt from the deck, but more importantly, will soften it up to make removal by hand easier. Keeping the underside of the deck clean will prolong the life of the machine and blades. To use the deck wash function:

1. Install the mulching and side discharge chute attachments and lower the deck to the lowest cutting height.
2. Attach a garden hose to the deck wash port (A) and turn the water on.
3. Start the engine and allow it to run at high speed for approximately 30 to 60 seconds – be aware that water and grass cuttings/dirt will be ejected through the side discharge chute.
4. Stop the engine and turn off the water, then scrape away cuttings/dirt from the deck by hand (wear gloves) or using a suitable tool. This procedure may have to be repeated several times.





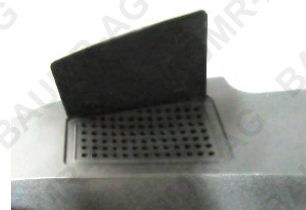
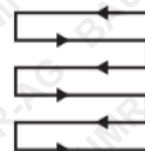
## Mowing Guidelines



If the machine strikes against an object during mowing or an object gets caught in the mower, stop the machine immediately. Allow the machine to stop running completely and to cool down before inspecting the machine and/or removing any objects that may be caught in it. If the machine is damaged, have it inspected and repaired at an authorized service centre before using it again. • If you experience excessive vibration from the mower during operation, this is an indication of wear or damage. It is recommended to have it inspected and repaired at an authorized service centre before using it again.

The following information are general guidelines to mowing:

- Avoid cutting wet grass. Wet grass clippings do not collect well and have a tendency to stick to the underside of the mower deck.
- Avoid cutting very tall grass. If the grass is tall, mow in several passes, each time reducing the cut height.
- Avoid overly steep slopes when mowing and, when mowing on an incline, mow across the face of the incline, not up and down it.
- Be aware that cutting more than one third of the total height of the grass may affect the health of the grass, and that weeds are able to spread more easily in extremely short grass. A healthier lawn is achieved by regular mowing and not cutting the grass back excessively.
- When mowing, move the mower through the grass at a sensible rate so as to not strain the machine or otherwise reduce its effectiveness, and to achieve the best cutting results.
- Mow in slightly overlapping rows. An effective pattern is to mow in straight lines, starting along the longest edge of the work area, then turning at the end and mowing the next row and so on. Using a regular pattern helps keep the end result neat and reduces the chance of uncut areas.
- For lawns with trees or flowerbeds, for best results it is recommended to cut 1 or 2 rows around the circumference of trees/flowerbeds.
- Regularly empty the grass catcher. Some models may feature an indicator to show when the grass catcher requires emptying. This is usually a small flap on the top of the catcher that lifts when the catcher becomes full.



## Cleaning the Drive Belt

From time-to-time, the drive belt needs to be accessed and cleaned to remove any accumulated debris that can cause the self-propelling function to stop working.




Please see video link to the right for a general overview on how to access and diagnose the drive belt.

**Video Tutorial:**  
[Drive Belt Diagnosis](#)



# Lead-Acid Battery Care and Maintenance

## Top 3 Battery Care Requirements

1. **Charge battery before first use**. The battery may arrive with some charge, regardless of this the battery must be charged for 2.5 hours on the initial charge and for each subsequent charge. 
2. **Charge battery immediately when it is depleted**. Do not store a depleted battery. This will permanently impact the life of the battery. If the battery is going to be stored for a period of time, fully charge the battery before storing. 
3. **Disconnect battery when not in use**. To prolong the life of a battery, disconnect it from the unit when not in use. Disconnect chargers from the battery once charged. 

To ensure the battery maintains optimum performance, follow the guidelines outlined below.

- For best results, charge batteries in temperatures between 10°C and 30°C
- When battery is charged, disconnect the charger from the power supply and remove the battery from the charger.
- Inspect the terminals, screws, clamps and cables for breakage, damage or loose connections. These should be clean, tight and free of corrosion.
- Use only with the battery charger specified by the manufacturer.
- Ensure that the battery charger electrical cord is not subjected to damage or stress. Do not operate the battery charger if it has a damaged electrical cord or plug.
- Do not use the charger in wet areas or expose it to rain or water.
- Keep the battery clean, dry, free of dirt and grime. A dirty battery can discharge across the grime on top of the battery casing.
- Apply a thin coating of high temperature grease to posts and cable connections for added protection.
- Inspect the battery case for obvious signs of physical damage or warpage. This usually indicates the battery has been overheated or has been overcharged.
- Batteries can explode in the presence of an ignition source, such as a pilot light. To reduce the risk of serious personal injury, never use any cordless product in the presence of open flame. Exploding batteries can propel debris and chemicals.
- Do not open the battery – danger of short-circuiting and/or explosion.
- Do not attempt to destroy or disassemble the battery pack or remove any of its components.
- Do not touch the battery terminals with metal objects and/or body parts as short-circuit and/or personal injury may result.
- Explosion hazard – protect the battery against heat; for example, direct sunlight and fire. Do not store batteries in vehicles or locations subject to heat.
- Explosion hazard – do not open and/or short-circuit the battery.
- Poison hazard – battery leakage (liquid ejection). Under extreme conditions, liquid may be ejected from the battery – avoid contact. If contact accidentally occurs, immediately seek medical attention, and flush with water. If liquid contacts eyes, immediately seek medical attention, flush with clean water for at least 10 minutes. Liquid ejected from the battery may cause irritation or burns.
- Dispose of non-serviceable batteries in an environmentally responsible manner and according to local regulations.

Failure to adhere to the requirements above may result in the battery becoming inoperative or battery life being reduced. In extreme cases or abuse, battery overheating or fire may result.

# 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 – Petrol 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		
Loose Engine / Machine Fasteners					Check. Tighten as necessary		
Air Filter	Check		Clean. Replace as necessary			Replace	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 Maintenance *	Check tension. Clean & adjust as necessary. <a href="#">How to remove the cover.</a>					Check. Replace as necessary	

\* 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.

## Engine Oil



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 20 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 it is at or near the "MAX" indicator before using the machine.** • Some models may have 2 oil drain plugs and fillers on either side of the engine – it does not matter which one is used.

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



**Step 1:** Locate the oil fill cap on the crankcase to start. Fill cap locations vary, depending on the make and model of your engine.



**Step 2: Clean the Crankcase:** To prevent dirt and debris from falling into the crankcase, use a clean cloth to wipe the area clean before removing the cap.



**Step 3: Inspect the Oil Dipstick and wipe it with a clean cloth.**

- To ensure an accurate reading, reinsert the dipstick completely. If the dipstick cap is a screw-in type, ensure an accurate reading by screwing in all the way before removing it to check the level.
- Then, remove it again and **check the oil level.**

The oil mark on the dipstick should be between the lines shown on the dipstick. It should never be above the FULL line or below the ADD line.

## 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.

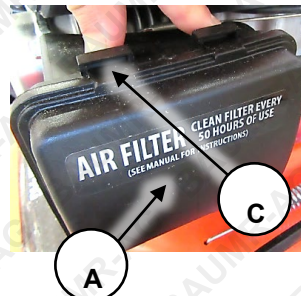
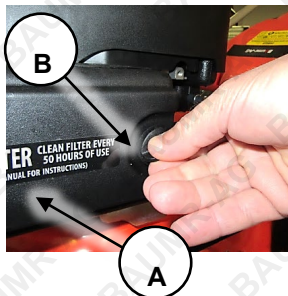
### Inspection and Cleaning

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. 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.
- Clean all other air filter assembly components using water and mild detergent, then dry them.
- 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.

### Removal/Installation

1. Depending on model, the air filter cover (A) may be secured using a screw (B), or clips (C) into position. If the cover has a screw, loosen it (rotate left) and remove the cover from the air intake assembly. If the air filter cover is secured with clips, carefully release them – usually, you will need to press the tab of the clip to release it. Carefully remove the air filter cover – some covers may hinge or have protrusions that help locate it against the engine.
2. 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 and seal properly in one position only.
2. Re-install the filter cover, ensuring it is fitted properly against the engine and secure it with the screw (rotate right and tighten by hand. Do not over-tighten), or clips.



## 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](#).

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.

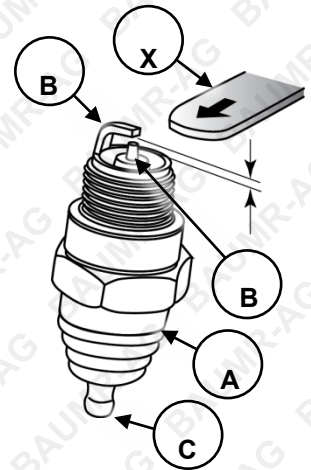
### Cleaning and Gap Checking

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":

- 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.
- 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.
- Measure the gap again and ensure it is within the specified range before re-installing the spark plug.



### Removal/Installation

1. Pull the electrical lead (A) from the terminal on top of the spark plug (B).
2. If accessible, 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 with the terminal.



## Cutting Blades

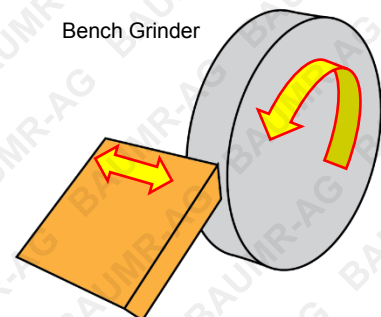
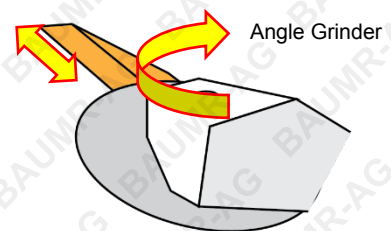
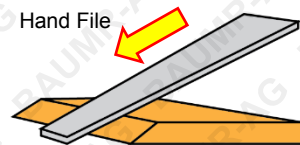


If any cutting blade is structurally damaged (cracked or broken etc), replace it. • Always use manufacturer supplied replacement blades. • Before removing the blades, disconnect the spark plug lead and ensure the fuel cap is secure. • Always wear suitable protective gloves when handling cutting blades.

The cutting blade(s) are spun at very high speed for efficient grass cutting. Sharp blades provide the most efficiency, and neatest finish. Depending on frequency of use and contact with stones, roots etc, the blades will require regular maintenance:

### Sharpening

1. [Remove the blade\(s\) from the machine.](#)
2. Remove any loose material from the blades with a wire brush. Inspect the blades for damage or wear that cannot be sharpened out – replace the blade if damaged or overly worn.
3. When sharpening, carefully follow the existing cutting edge angle (generally 40 to 45°). Remove enough material so the blade face is bright and that the cutting edge is complete over its length (no nicks or gouges). The blades do not need to be razor sharp – butter knife sharpness is fine. Sharpen using a:
  - Hand file. Mount the blade in a vice, or clamp it securely to a suitable surface. Move the cutting edges of the file from the blunt side of the blade toward the cutting edge.
  - Angle grinder. Mount the blade in a vice, or clamp it securely to a suitable surface. Move the disc along the cutting edge, with it rotating toward the cutting edge.
  - Bench grinder – Hold the blade securely, then bring the cutting edge up to the grinding wheel so the wheel is rotating toward the cutting edge, then run the blade back and forward across the grinding wheel.

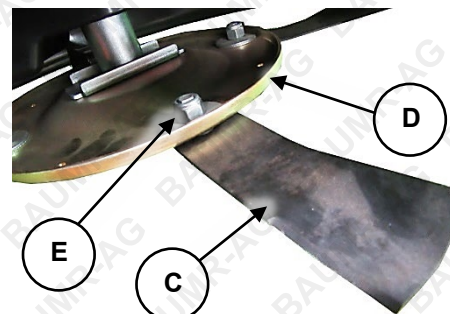
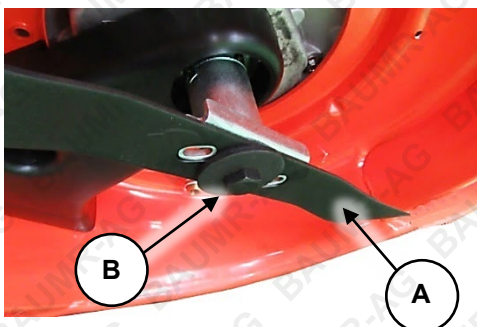


### Removal/Installation

1. Rotate the lawn mower so it is on its side. Rotate it so the carburettor is facing up.
2. Clearly mark the bottom and cutting side of the blade(s), so you know which way to re-install it, or which way to install the replacement blade. If the blades are installed incorrectly, they will not cut.
3. For one-piece blades, hold the blade (A) (or wedge it with a wood etc) to prevent it rotating, then remove the central bolt (B) or nut using a suitable spanner. Keep note of any washers, spacers etc and their positions, then remove the blade.

For multi-piece blades, remove the bolt (E) or nut securing each blade (C) to the main rotor (D). Keep note of any washers, spacers etc and their positions, then remove the blades.

4. Using a wire brush, clean all blade mounting pieces, and the areas where the blades mount to the machine.



To re-install the blade(s):

1. Place the blade(s) in position – ensure that any washers, spacers etc are positioned correctly, and the blade is oriented correctly, with the cutting edge in the direction of rotation and the raised edge of the blade (if applicable) facing up toward the deck.
2. Using a suitable spanner, secure the blade(s) firmly by hand. Firmly hold the blade or wedge it to prevent it rotating.
3. Rotate the machine so it is resting on its wheels, then re-attach the spark plug lead etc.

## 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. • It is recommended to jack the machine up when inspecting or working on the underside of the deck. Avoid tilting the machine to avoid potential fuel or oil spills or leaks.

- Use a slightly damp cloth, water 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.
- Remove clippings, dirt etc from the underside of the deck and cutting blades (the [deck wash](#) function on some models assists this procedure).
- It is recommended to lightly oil the cutting blades after each use to help prevent corrosion.
- Ensure all chutes and flaps are clean and not obstructed.
- Ensure that spring-loaded parts, such as the rear guard, return to the normal position when released.
- Clean and check the grass catcher for any damage – replace damaged parts. Allow the grass catcher to dry thoroughly before storing to prevent mildew or deterioration of the catcher netting (where applicable).
- Ensure that all control cables, levers, switches etc are clean and operate normally and smoothly.

# 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 fuel tap and engine ON / OFF switch (where applicable) 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. It is advised to have the fuel tank as empty as possible before draining.
- Ensure that the fuel tap (if applicable), engine ON/OFF or key switch (where applicable) 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:

- 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.
- Re-install (rotate right) the carburettor drain plug and tighten.
- Remove the spark plug and put 10ml 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. • The product is 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.

## Cannot attach grass catcher.

Possible Fault	Action
Handle installed incorrectly	For models that do not have spigots on the handle mounting brackets, ensure the handle is installed against the outer face of the mounting brackets.

## Key Start function not working.

Possible Fault	Action
Battery drained	<ul style="list-style-type: none"> <li>Manually start the mower and run it for a period of time.</li> <li>Do not turn the mower OFF and ON to empty the catcher.</li> <li>Recharge the battery with a battery charger.</li> </ul>

## Difficulty starting the engine.

Possible Fault	Action
Technique incorrect	Ensure <a href="#">engine safety bar</a> (if equipped) is against the handle when starting and whenever the engine is running.



Lack of fuel	Check that there sufficient <a href="#">fuel</a> in the tank and the fuel tap (if equipped) is in the "ON" position. • To further check if fuel is reaching the carburettor, remove the carburettor drain plug and check if fuel drains.
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Engine "OFF"	Ensure the engine ON / OFF switch (if equipped) is in the "ON" position.
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Carbon build-up on spark plug	Perform a <a href="#">spark plug service</a> .
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Spark plug faulty	Remove the spark plug, then reconnect the plug lead to it. Place the fuel tap (if equipped) in the "OFF" position and the engine ON/OFF switch (if equipped) in the "ON" position. 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. Not applicable to diesel engines.
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<i>Engine "flooded" with fuel</i>	Place the choke in the "HOT" or "RUN" position. Leave the engine ON / OFF switch (if equipped) in the "OFF" position. Pull the starter cord several times to assist clearing excess fuel from engine before attempting to start engine.
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<i>Not enough or too much engine oil</i>	Check oil level and ensure that the level is at or just below the recommended maximum level. For some engines, an engine oil sensor will automatically switch off the engine or prevent starting if a low engine oil level is detected.
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### **Engine starts but does not idle.**

Possible Fault	Action
<i>Technique incorrect</i>	Ensure <a href="#">engine safety bar</a> (if equipped) is against the handle when starting and whenever the engine is running.



<i>Blocked air filter</i>	Perform an <a href="#">air filter service</a> .
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<i>Idle speed requires adjustment</i>	Adjust idle speed until engine runs smoothly and at a reasonable speed when idling.
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### **Engine starts but runs erratically.**

Possible Fault	Action
<i>Spark plug lead loose</i>	Ensure the spark plug lead is undamaged and is securely connected to the spark plug terminal.



<i>Choke ON</i>	Set the choke to the "HOT" or "RUN" position.
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<i>Blocked fuel line or stale fuel.</i>	Clean the fuel line. Fill the tank with clean, fresh fuel.
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<i>Water or dirt in fuel system</i>	Drain fuel tank and carburettor. Refill with fresh fuel.
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<i>Dirty air filter</i>	Perform an <a href="#">air filter service</a> .
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### **Difficulty restarting the engine after use or engine stops suddenly during use.**

Possible Fault	Action
<i>No fuel or engine oil</i>	Check that there sufficient <a href="#">fuel</a> in the tank and the fuel tap (if equipped) is in the "ON" position. For some engines, an engine oil sensor will automatically switch off the engine or prevent starting if a low engine oil level is detected.



<i>Cutting blades jammed</i>	Remove jammed material from the machine. In the case of obstacles in the work area (rocks, roots etc), avoid them or raise cutting height.
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<i>Overheating</i>	Allow engine to cool before restarting. Ensure all air vents and heat dissipation surface are clean and free of debris. If possible, improve engine cooling, such as operating in lower temperatures.
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<i>Carbon build-up on spark plug</i>	Perform a <a href="#">spark plug service</a> .
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<i>Carburettor blocked</i>	Clean the carburettor.
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### **Reduced engine speed/power during use.**

Possible Fault	Action
<i>Blocked air filter</i>	Perform an <a href="#">air filter service</a> .



<i>Carbon build-up in engine and/or entry to exhaust silencer</i>	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.
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<i>Carbon build-up on spark plug</i>	Perform a <a href="#">spark plug service</a> .
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<i>Fuel system blockage</i>	Clean fuel lines / fuel filter / carburettor / fuel injector.
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### **Grass cutting is poor.**

Possible Fault	Action
<i>Blades dull or damaged</i>	Sharpen or replace cutting blades.



<i>Cutting too much in one pass</i>	Adjust the cutting height and rate of mowing to reduce load on the engine. For tall or very thick grass, cut in several passes. Do not attempt to cut beyond the capacity of the machine.
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<i>Cutting height not suitable</i>	Adjust cutting height as required.
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### **Engine overheats.**

Possible Fault	Action
<i>Engine oil level low</i>	Fill the crankcase with the correct engine oil type to the "MAX" indicator or just under.



<i>Dirty air cleaner</i>	Perform an <a href="#">air filter service</a> .
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### **Excessive vibration.**

Possible Fault	Action
<i>Blades dull or damaged</i>	Sharpen or replace cutting blades.



<i>Fasteners loose</i>	Check all accessible fasteners for tightness.
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<i>Engine output shaft worn or bent</i>	Replace worn or damaged parts as required.
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# Specifications

## 139cc Engines

<b>Type</b>	4-stroke, single cylinder
<b>Fuel</b>	Non-ethanol unleaded petrol (higher RON values provide best performance)
<b>Spark Plug</b>	F7TC, F7RTC
<b>Spark Plug Gap</b>	0.7 to 0.8mm (0.028 to 0.032")
<b>Valve Clearance</b>	Inlet: 0.15mm $\pm$ 0.02mm (0.006" $\pm$ 0.001") Exhaust: 0.2mm $\pm$ 0.02mm (0.008" $\pm$ 0.001")
<b>Oil Type</b>	SAE 10W-30 automotive engine oil recommended for general use
<b>Oil Capacity</b>	Approximately 0.4l (always check level)

## 140cc Briggs & Stratton Engines

<b>Type</b>	4-stroke, single cylinder
<b>Fuel</b>	Non-ethanol unleaded petrol (higher RON values provide best performance)
<b>Oil Type</b>	SAE 10W-30 automotive engine oil recommended for general use
<b>Oil Capacity</b>	Approximately 0.47l (always check level)

## 163cc Briggs & Stratton Engines

<b>Type</b>	4-stroke, single cylinder
<b>Fuel</b>	Non-ethanol unleaded petrol (higher RON values provide best performance)
<b>Oil Type</b>	SAE 10W-30 automotive engine oil recommended for general use
<b>Oil Capacity</b>	Approximately 0.47l (always check level)

## 165cc Engines

<b>Type</b>	4-stroke, single cylinder
<b>Fuel</b>	Non-ethanol unleaded petrol (higher RON values provide best performance)
<b>Spark Plug</b>	F7TC, F7RTC
<b>Spark Plug Gap</b>	0.7 to 0.8mm (0.028 to 0.032")
<b>Valve Clearance</b>	Inlet: 0.15mm $\pm$ 0.02mm (0.006" $\pm$ 0.001") Exhaust: 0.2mm $\pm$ 0.02mm (0.008" $\pm$ 0.001")
<b>Oil Type</b>	SAE 10W-30 automotive engine oil recommended for general use
<b>Oil Capacity</b>	Approximately 0.6l (always check level)

## 218cc Engines

<b>Type</b>	4-stroke, single cylinder
<b>Fuel</b>	Non-ethanol unleaded petrol (higher RON values provide best performance)
<b>Spark Plug</b>	F7TC, F7RTC
<b>Spark Plug Gap</b>	0.7 to 0.8mm (0.028 to 0.032")
<b>Valve Clearance</b>	Inlet: 0.15mm $\pm$ 0.02mm (0.006" $\pm$ 0.001") Exhaust: 0.2mm $\pm$ 0.02mm (0.008" $\pm$ 0.001")
<b>Oil Type</b>	SAE 10W-30 automotive engine oil recommended for general use
<b>Oil Capacity</b>	Approximately 0.6l (always check level)



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](#)).

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](#)).



**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](http://www.datastreamserver.com/safety)**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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).</li> <li>• 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.</li> <li>• Ensure all possible users of the product have completed an industry recognized training course before being given access to the product.</li> </ul> | <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul> |
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