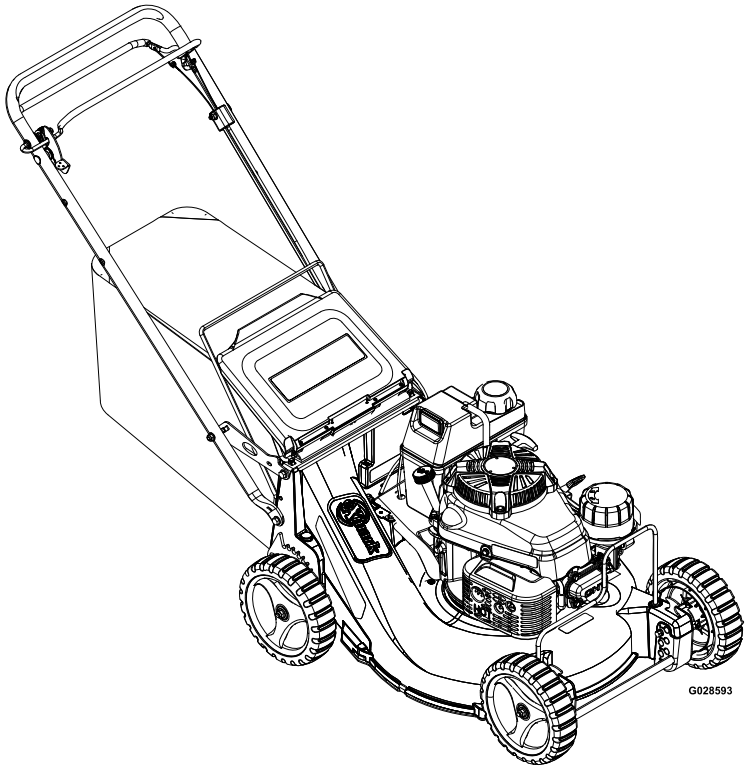
Operator's Manual



COMMERCIAL 21

For Serial Nos.
411,294,212 & Higher

Part No. 4505-615 Rev. A

⚠ WARNING

CALIFORNIA
Proposition 65 Warning

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Use of this product may cause exposure to chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Important: **It is a violation of California Public Resource Code Section 4442 or 4443 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land unless the engine is equipped with a spark arrester, as defined in Section 4442, maintained in effective working order or the engine is constructed, equipped, and maintained for the prevention of fire.**

To acquire a spark arrester for your unit, see your Engine Service Dealer.

For all models that do not have Exmark engines, please refer to the engine manufacturer's information included with the machine.

For models with Exmark engines, refer to this manual for information.

The gross or net horsepower (or torque) of this engine was laboratory rated by the engine manufacturer in accordance with the Society of Automotive Engineers (SAE) J1940 or J2723. As configured to meet safety, emission, and operating requirements, the actual engine horsepower (or torque) on this class of mower will be significantly lower.

415 Industrial Row
Beatrice, NE 68310

Contact us at www.Exmark.com.
Printed in Mexico

Introduction

CONGRATULATIONS on the purchase of your Exmark Mower. This product has been carefully designed and manufactured to give you a maximum amount of dependability and years of trouble-free operation.

This manual contains operating, maintenance, adjustment, and safety instructions for your Exmark mower.

BEFORE OPERATING YOUR MOWER, CAREFULLY READ THIS MANUAL IN ITS ENTIRETY.

By following the operating, maintenance, and safety instructions, you will prolong the life of your mower, maintain its maximum efficiency, and promote safe operation.

To maximize safety, performance, and proper operation of this machine, it is essential that all operators carefully read and fully understand the contents of the Operator's manual provided with the product. Failure to comply with the operating instructions or receive proper training may result in injury. Go to https://www.Exmark.com for additional safe operation information, such as safety tips, training materials, and Operator's manuals.

If additional information is needed, or should you require trained mechanic service, contact your authorized Exmark equipment dealer or distributor.

All Exmark equipment dealers and distributors are kept informed of the latest methods of servicing and are equipped to provide prompt and efficient service in the field or at their service stations. They carry ample stock of service parts or can secure them promptly for you from the factory.

All Exmark parts are thoroughly tested and inspected before leaving the factory, however, attention is required on your part if you are to obtain the fullest measure of satisfaction and performance.

Whenever you need service, genuine Exmark parts, or additional information, contact an Authorized Service Dealer or Exmark Customer Service and have the model and serial numbers of your product ready.

Figure 1 identifies the location of the model and serial numbers on the product. Write the numbers in the space provided.

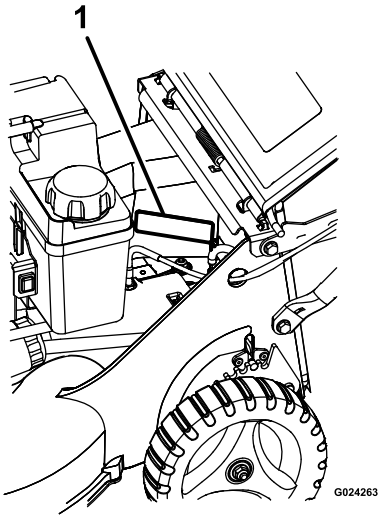


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Figure 1

1. Model and serial number location

Model No. _____

Serial No. _____

For complete warranty details, see https://www.Exmark.com. You may also call us 402-223-6375 to request a written copy of the product's warranty.

Contents

Safety

This lawn mower has been designed in conformance with the Consumer Product Safety Commission (CPSC) blade safety requirements for walk-behind rotary mowers and the American National Standards Institute B71.4 for Commercial Turf Care Equipment–Safety Specifications.

Safety Alert Symbol

This Safety Alert Symbol (Figure 2) is used both in this manual and on the machine to identify important safety messages which must be followed to avoid accidents.

This symbol means: **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

g000502

Figure 2
Safety Alert Symbol

The safety alert symbol appears above information which alerts you to unsafe actions or situations and will be followed by the word **DANGER**, **WARNING**, or **CAUTION**.

DANGER: Indicates an imminently hazardous situation which, if not avoided, **Will** result in death or serious injury.

WARNING: Indicates a potentially hazardous situation which, if not avoided, **Could** result in death or serious injury.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, **May** result in minor or moderate injury.

This manual uses two other words to highlight information. **Important** calls attention to special mechanical information and **Note** emphasizes general information worthy of special attention.

General Safety

This machine is capable of amputating hands and feet and of throwing objects. Always follow all safety instructions to avoid serious personal injury or death.

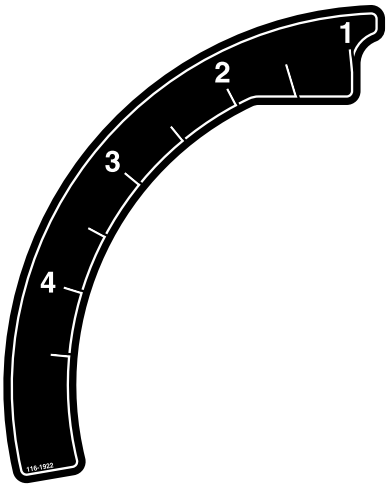
- Read, understand, and follow all instructions and warnings in the Operator's Manual and on the machine, engine, and attachments. All operators and mechanics should be trained. If the operator(s) or mechanic(s) can not read this manual, it is the owner's responsibility to explain this material to them; other languages may be available on our website.
- Only allow trained, responsible, and physically capable operators that are familiar with the safe operation, operator controls, and safety signs and instructions to operate the machine. Never let children or untrained people operate or service the equipment. Local regulations may restrict the age of the operator.
- Do Not operate the machine near drop-offs, ditches, embankments, water, or other hazards.
- Keep bystanders and children out of the operating area.
- Do Not put your hands or feet near moving parts.
- Do not operate the machine without all safety shields, guards, switches, and other devices in place and in proper working condition.
- Park machine on level ground, stop engine, and disconnect spark plug wire. Wait for all moving parts to stop before leaving the operator's position. Allow the machine to cool before servicing, adjusting, fueling, cleaning, or storing.

Safety and Instructional Decals

- Keep all safety signs legible. Remove all grease, dirt and debris from safety signs and instructional labels.
- Replace all worn, damaged, or missing safety signs.
- When replacement components are installed, be sure that current safety signs are affixed to the replaced components.
- If an attachment or accessory has been installed, make sure current safety signs are visible.
- New safety signs may be obtained from your authorized Exmark equipment dealer or distributor or from Exmark Mfg. Co. Inc.
- Safety signs may be affixed by peeling off the backing to expose the adhesive surface. Apply only to a clean, dry surface. Smooth to remove any air bubbles.
- Familiarize yourself with the following safety signs and instruction labels. They are critical to the safe operation of your Exmark commercial mower.

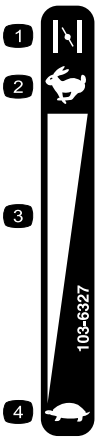
decal94-8072

94-8072



decal116-1922

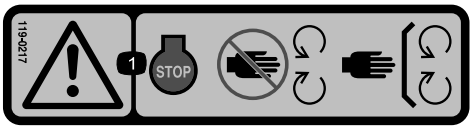
116-1922



decal103-6327

103-6327
ECX160CHN21000

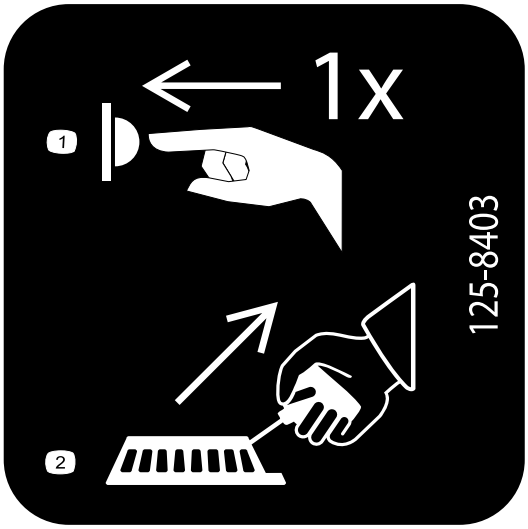
1. Choke–on
2. Throttle–fast
3. Continuous variable setting
4. Throttle–slow



decal119-0217

119-0217

1. Warning—stop the engine; stay away from moving parts; keep all guards and shields in place.

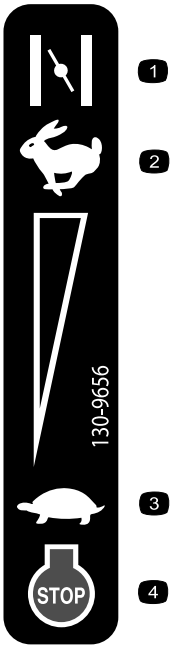


decal125-8403

125-8403

Kawasaki Non-BBC Units

1. Push the primer once.
2. Pull the recoil-start handle.

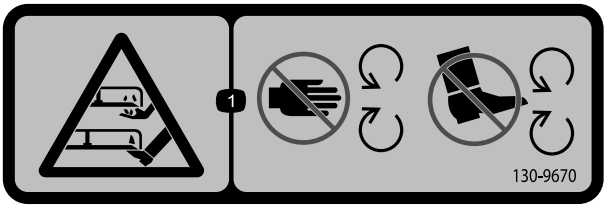


decal130-9656

130-9656

BBC Units

1. Choke
2. Fast
3. Slow
4. Engine—stop



decal130-9670

130-9670

1. Severing hazard of hand or foot; mower blade—keep away from moving parts.

decal133-8062

133-8062

decal116-7583

116-7583

1. Warning—read the *Operator's Manual*; do not operate this machine unless you are trained.
2. Thrown object hazard—keep bystanders away.
3. Thrown object hazard—do not operate the mower without the rear discharge plug or bag in place.
4. Cutting/dismemberment hazard of hand or foot, mower blade—stay away from moving parts; keep all guards in place.
5. Warning—wear hearing protection.
6. Cutting/dismemberment hazard of hand or foot, mower blade—do not operate up and down slopes; operate side to side on slopes; shut off the engine before leaving the machine; pick up any debris before mowing; look behind you when moving in reverse.

Specifications

Systems

Engine

- Engine Specifications: See your Engine Owner's Manual
- Engine Oil Type: Exmark 4–Cycle Premium Engine Oil
- RPM: 3300 RPM (No Load)

Fuel System

- Capacity:

  S-Series Unit: 2.0 qt (1.9 L)

  X-Series Units: 4.0 qt (3.8 L)
- Fuel Recommendations:
  - For best results, use only clean, fresh, unleaded gasoline with an octane rating of 87 or higher ((R+M)/2 rating method).
  - Oxygenated fuel with up to 10% ethanol or 15% MTBE by volume is acceptable.
  - **Do Not** use ethanol blends of gasoline (such as E15 or E85) with more than 10% ethanol by volume. Performance problems and/or engine damage may result which may not be covered under warranty.
  - **Do Not** use gasoline containing methanol.
  - **Do Not** store fuel either in the fuel tank or fuel containers over the winter unless a fuel stabilizer is used.
  - **Do Not** add oil to gasoline.
- Fuel Filter: Non-replaceable, in tank
- Fuel Shut-Off Valve:

  S-Series Unit: Does Not have a shut-off valve.

  All other units have a shut-off valve.

Safety Interlock System

For units without a Blade Brake Clutch: Operator must have the blade control bail depressed to start the engine. Releasing the blade control bail will cause the engine to stop.

Transmission (Self Propelled Units)

Variable

Speed Range: 0–4.0 mph (6.4 km/hr)

Cutting Deck

- Cutting Width: 21 inches (53.3 cm)
- Blade Brake: When the blade engagement control is moved to the disengaged position a friction brake pad stops the rotation of the blades.
- Blade Size: (1 ea.): 20.88 inches (53.0 cm)
- Deck: 21 inches rigid. Deck design allows for bagging, mulching or rear discharge.
- Cutting Height Adjustment:

  Adjusts from 1 inch (2.5 cm) to 4 1/2 inches (11.4 cm) in 1/2 inch (1.3 cm) increments.
- Mulching Kit: Standard on X-Series Units

Dimensions

Curb Weight:

98-122 lb (44-55 kg) Weights may vary slightly depending on engine option.

Overall Width:

22 inches (55.9 cm)

Overall Length and Height at 2 1/2 inch Cutting Height:

Handle Setting	Length	Height
High	61.00 inches (154.9 cm)	39.00 inches (99.1 cm)
Medium	63.00 inches (160.0 cm)	37.50 inches (95.3 cm)
Low	64.50 inches (163.8 cm)	35.00 inches (88.9 cm)

Product Overview

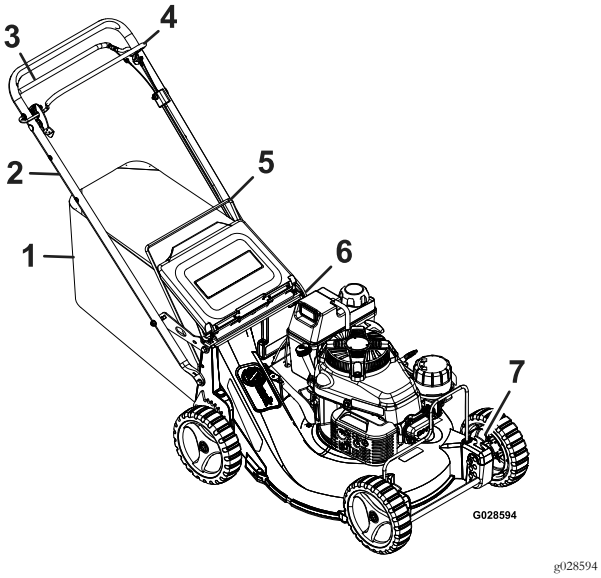


Figure 3

1. Grass bag
2. Handle
3. Drive Bail (Self-Propelled Units Only)
4. Blade Control Bail
5. Discharge door
6. Rear wheel height adjustment
7. Front wheel height adjuster

Operation

Note: Determine the left and right sides of the machine from the normal operating position.

Controls

Note: Become familiar with all the controls before starting the engine and operating the machine.

Blade Control Bail

Located on the upper handle as shown in Figure 4.

When the blade control bail is depressed, the system senses that the operator is in the normal operator's position.

- **For Units with a Blade Brake Clutch:** When the blade control bail is released, the system senses that the operator has moved from the normal operating position and will stop the blade.
- **For Units without a Blade Brake Clutch:** When the blade control bail is released, the system senses that the operator has moved from the normal operating position and will kill the engine.

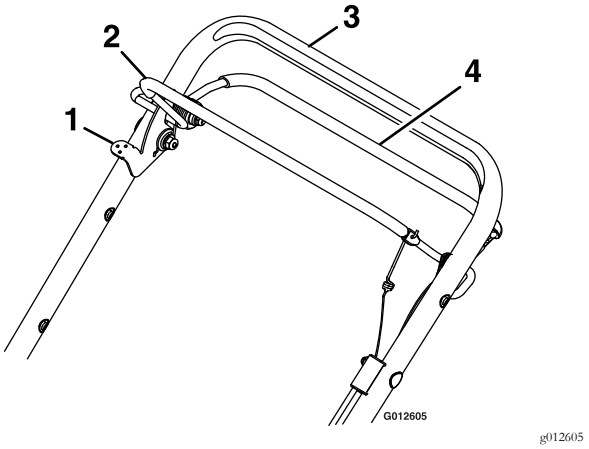


Figure 4
Blade Brake Unit Shown

1. Blade control lock lever (Blade Brake Units Only)
2. Blade control bail
3. Handle
4. Drive bail (Self-Propelled Units Only)

Self-Propel Drive Bail (Self-Propelled Units Only)

Located on the upper handle as shown in Figure 4.

When the self-propel drive bail is squeezed against the handle, the unit ground speed will change based on the distance between the bail and the handle. When this bail is released the unit will stop moving.

Throttle-Choke Lever (Honda Unit)

Located on the left side of the handle bar.

The lever is used to control engine speed. Moving the throttle to the full forward (Choke) position will place the lever in the choke position. The choke aids in starting a cold engine. Moving the throttle control forward will increase engine speed and moving it to the rear will decrease engine speed.

Throttle-Choke-Engine Stop Control (Blade Brake Clutch Units)

The throttle-choke-engine stop control is located on the left side of the engine as shown in Figure 5.

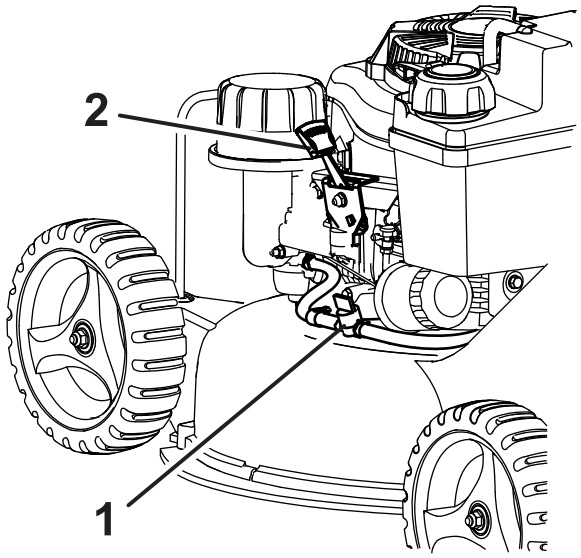


Figure 5

1. Fuel valve
2. Throttle-Choke-Engine Stop control

The lever is used to control engine speed. Moving the lever to the full forward (Choke) position will place the lever in the choke position. The choke aids in starting a cold engine. Moving the throttle control forward will increase engine speed and moving it to the rear will decrease engine speed.

The throttle-choke-engine stop control also includes an engine kill position. Moving the lever into the full rearward (Off) position will kill the engine.

Blade Control Lock Lever (Blade Brake Clutch Units Only)

The blade control lock lever is located on the right side of the handle next to the Blade Control Bail as shown in Figure 4.

Moving the blade control lock lever into the full forward position releases the blade control bail. Squeezing the blade control bail against the handle engages the blade. Releasing the blade control bail automatically disengages the blade. The blade control lock lever will reset to lock the blade control bail.

Fuel Shut-Off Valve

The fuel shut off valve is located between the carburetor and the fuel tank (see Figure 5). The fuel shut off valve shuts off the flow of fuel when the machine will not be used for a few days, when parking inside a building, and during transport to and from the job.

On X-Series Kawasaki models, rotate the valve 1/4 turn clockwise to shut off fuel. Rotate the valve 1/4 turn counterclockwise to turn on fuel.

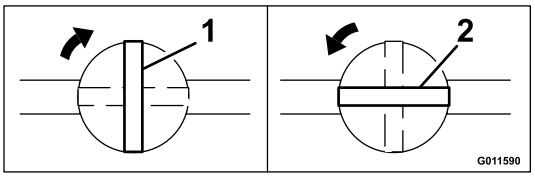


Figure 6

1. Rotate clockwise to close
2. Rotate counterclockwise to open

On the Honda unit, the fuel shut off valve is located on the engine as shown in Figure 7. Rotate 1/4 turn clockwise to shut off fuel. Rotate the valve 1/4 turn counterclockwise to turn on fuel.

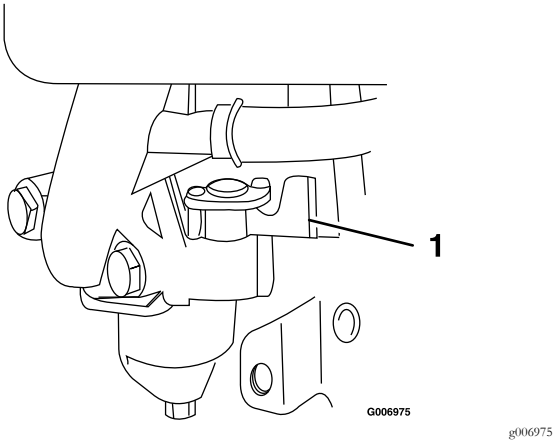


Figure 7

1. Fuel valve

Before Operation

Before Operation Safety

- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by Exmark.
- Inspect the area where the machine is to be used and remove all rocks, toys, sticks, wires, bones, and other foreign objects. These can be thrown or interfere with the operation of the machine and may cause personal injury to the operator or bystanders.
- This mower was designed for one operator only. Do Not carry passengers.
- Wear appropriate personal protective equipment such as safety glasses, long pants, substantial slip-resistant footwear, and hearing protection. Tie back long hair and avoid loose clothing and loose jewelry which may get tangled in moving parts.
- This machine produces sound levels in excess of 85 dBA at the operator's ear and can cause hearing loss through extended periods of exposure. Wear hearing protection when operating this machine.
- Check that the following items are in place and in proper working condition: the operator presence controls, safety switches, guards, shields, discharge deflector and/or the entire grass catcher system. Do not operate the machine unless they are in proper working condition. Replace worn or deteriorated parts with genuine Exmark parts when necessary.

⚠ DANGER

It is essential that operator safety mechanisms be connected and in proper operating condition prior to use. Contacting the blade can result in serious personal injury.

Shut off the engine and wait for all moving parts to stop before leaving the operating position. When the blade control bail is released, the blade should stop within three seconds. If not, stop using the machine immediately and contact an Authorized Service Dealer.

- Do Not operate the mower when people, especially children, or pets are in the area. Shut off the machine and attachment(s) if anyone enters the area.
- Do Not operate the machine without the entire grass collection system, discharge deflector, or other safety devices in place and in proper working condition. Grass catcher components are subject to wear, damage and deterioration, which could expose moving parts or allow objects to be thrown. Frequently check for worn or deteriorating components and replace them with the manufacturer's recommended parts when necessary.

Fuel Safety

⚠ DANGER

Gasoline is extremely flammable and vapors are explosive.

A fire or explosion from gasoline can burn you, others, and cause property damage.

- **Fill the fuel tank outdoors on level ground, in an open area, when the engine is cold. If fuel is spilled, Do Not attempt to start the engine. Move away from the area of the spill and avoid creating any source of ignition until fuel vapors have dissipated.**
- **Do Not refill the fuel tank or drain the machine indoors or inside an enclosed trailer.**
- **Never smoke when handling gasoline, and stay away from an open flame or where gasoline fumes may be ignited by spark.**
- **Add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel when engine is running or when the engine is hot.**
- **Store gasoline in an approved container and keep it out of the reach of children.**
- **Do Not operate without entire exhaust system in place and in proper working condition.**

- In certain conditions during fueling, static electricity can be released causing a spark which can ignite gasoline vapors.
  - Do Not fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground and away from your vehicle before filling.
  - When practical, remove gas-powered equipment from the truck or trailer and refuel the equipment with its wheels on the ground. If this is not possible, then refuel such equipment on a truck or trailer from a portable container, rather than from a gasoline dispenser nozzle.
  - If a gasoline dispenser nozzle is used, keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do Not use a nozzle lock open device.
- Do Not overfill the fuel tank. Fill the fuel tank to the bottom of the filler neck. The empty space in the tank allows gasoline to expand. Overfilling may result in fuel leakage or damage to the engine or emission system.
- Gasoline is harmful or fatal if swallowed. Long-term exposure to vapors may cause serious injury and illness.
  - Avoid prolonged breathing of vapors.
  - Keep face away from nozzle and gas tank/container opening.
  - Keep away from eyes and skin.
- To help prevent fires:
  - Keep engine and engine area free from accumulation of grass, leaves, excessive grease or oil, and other debris which can accumulate in these areas.
  - Clean up oil and fuel spills and remove fuel soaked debris.
  - Allow the machine to cool before storing the machine in any enclosure. Do Not store the machine or fuel container, or refuel, where there is an open flame, spark, or pilot light such as on a water heater or other appliance.

Operating Instructions

During Operation Safety

General Safety

The operator must use their full attention when operating the machine. **Do Not** engage in any activity that causes distractions; otherwise, injury or property damage may occur.

⚠ WARNING

Operating engine parts, especially the muffler, become extremely hot. Severe burns can occur on contact and debris, such as leaves, grass, brush, etc. can catch fire.

Clean the machine as stated in the Maintenance section. Keep engine and engine area free from accumulation of grass, leaves, excessive grease or oil, and other debris which can accumulate in these areas.

- Operate the engine only in well-ventilated areas. Exhaust gases contain carbon monoxide, which is an odorless deadly poison.

- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Operate the machine only in good visibility and appropriate weather conditions. Do not operate the machine when there is the risk of lightning.
- Keep away from holes, ruts, bumps, rocks, and other hidden hazards. Use care when approaching blind corners, shrubs, trees, tall grass or other objects that may hide obstacles or obscure vision. Uneven terrain could overturn the machine or cause the operator to lose their balance or footing.
- Start the engine with your feet well away from the blades.
- Do not operate the machine without all safety shields, guards, switches, and other devices in place and in proper working condition.
- Keep your hands and feet away from the moving parts. Keep clear of the discharge opening.
- Do not mow with the discharge deflector raised, removed, or altered unless there is a grass-collection system or mulch kit in place and working properly.
- Never raise the deck with blades running.
- Be aware of the mower discharge path and direct discharge away from others. Avoid discharging material against a wall or obstruction as the material may ricochet back toward the operator. Stop the blades, slow down, and use caution when crossing surfaces other than grass and when transporting the mower to and from the area to be mowed.
- Be alert, slow down and use caution when making turns. Do not mow in reverse unless it is absolutely necessary. Always look down and behind you before moving the machine in reverse.
- Park the machine on level ground. Stop engine, wait for all moving parts to stop, and remove the spark plug wire(s).
  - Before checking, cleaning or working on the mower.
  - After striking a foreign object or abnormal vibration occurs (inspect the mower for damage and make repairs before restarting and operating the mower).
  - Before clearing blockages.
  - Whenever you leave the mower. Do Not leave a running machine unattended.
- Stop engine, wait for all moving parts to stop:
  - Before refueling.
  - Before dumping the grass catcher.
  - Before making height adjustments.
- Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the machine and the mowing activity. Never assume that children will remain where you last saw them.
  - Keep children out of the mowing area and under the watchful care of another responsible adult, not the operator.
  - Be alert and turn the machine off if children enter the area.
  - Before and while backing or changing direction, look behind, down, and side-to-side for small children.
  - Never allow children to operate the machine.
  - Do Not carry children, even with the blades shut off. Children could fall off and be seriously injured or interfere with the safe operation of the machine. Children that have been given rides in the past could suddenly appear in the working area for another ride and be run over or backed over by the machine.

Slope Safety

- Slopes are a major factor related to loss of control and rollover accidents, which can result in severe injury or death. The operator is responsible for safe slope operation. Operating the machine on any slope requires extra caution. Before using the machine on a slope, the operator must:
  - Review and understand the slope instructions in the manual and on the machine.
  - Evaluate the site conditions of the day to determine if the slope is safe for machine operation. Use common sense and good judgment when performing this evaluation. Changes in the terrain, such as moisture, can quickly affect the operation of the machine on a slope.
- Operate across slopes, never up and down. Avoid operation on excessively steep or wet slopes. Poor footing could cause a slip and fall accident.
- Identify hazards at the base of the slope. Do Not operate the machine near drop offs, ditches, embankments, water or other hazards. The

machine could suddenly roll over if a wheel goes over the edge or the edge collapses. Keep a safe distance between the machine and any hazard. Use a hand held tool to operate in these areas.

- Avoid starting, stopping or turning the machine on slopes. Avoid making sudden changes in speed or direction; turn slowly and gradually.
- Do Not operate a machine under any conditions where traction, steering or stability is in question. Be aware that operating the machine on wet grass, across slopes or downhill may cause the machine to lose traction. Loss of traction to the drive wheels may result in sliding and a loss of braking and steering. The machine can slide even if the drive wheels are stopped.
- Remove or mark obstacles such as ditches, holes, ruts, bumps, rocks or other hidden hazards. Tall grass can hide obstacles. Uneven terrain could overturn the machine.
- If you lose control of the machine, step away from the direction of travel of the machine.
- Always keep the machine in gear when going down slopes. Do Not coast downhill.

Handle Adjustment

The height of the handle can be adjusted for comfortable operation. Stand behind the handle to determine the height. To adjust the handle height, position the hardware into one of the three holes in the handle bracket.

Open the Fuel Shut-Off Valve

Rotate the valve 1/4 turn counterclockwise to turn the fuel on (if equipped).

Starting the Engine

1. Connect the wire to the spark plug.

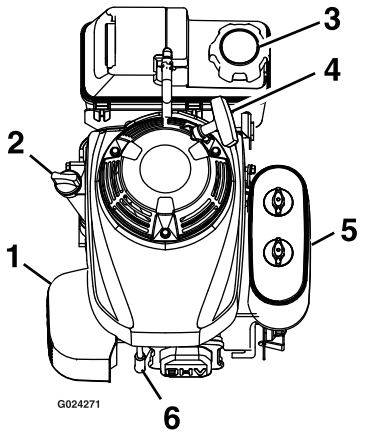


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Figure 8

Honda model

1. Muffler
2. Oil fill/dipstick
3. Fuel tank cap
4. Recoil starter handle (located on handle bar)
5. Air filter
6. Spark plug

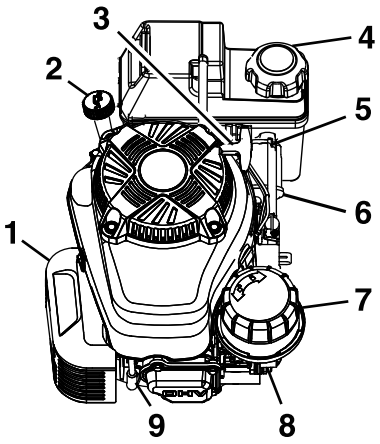

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Figure 9

Kawasaki X-Series models with large fuel tank shown

1. Muffler
2. Oil fill/dipstick
3. Recoil starter handle
4. Fuel tank cap
5. Throttle-choke-engine stop control (BBC only)
6. Oil filter
7. Air cleaner
8. Primer bulb (if equipped)
9. Spark plug

2. Open the fuel valve.

3. **For Kawasaki Units without a Blade Brake Clutch:** Push the primer bulb firmly and hold for one second then release.

   For Honda and BBC Units: Move the choke/throttle control forward to the choke position.

   Note: Do Not use the choke when the engine is warmed up.

4. **For units without a Blade Brake Clutch:** Hold the blade control bail to the handle.
5. Pull the starter handle lightly until you feel resistance, then pull it sharply. Allow the rope to return slowly.
6. **For Kawasaki Units without a Blade Brake Clutch:**If the engine does not start, repeat steps 3 through 5.
7. **For Honda and BBC Units:** When the engine starts, move the choke/throttle control back to the fast position.

Stopping the Engine

1. Bring the unit to a full stop.
   - **For units without a Blade Brake Clutch:** Release the blade control bail. Both the engine and the blade should stop within three seconds.
   - **For units with a Blade Brake Clutch:** Release the blade control bail and the blade control lock lever resets. The blade should stop within three seconds; the engine will continue to run. Move the throttle-choke-engine stop control to the Stop position to kill the engine.

   Note: If the blade does not stop within 3 seconds after releasing the blade control bail, contact an Authorized Service Dealer.
2. Close the fuel shut-off valve, if equipped, when the machine will not be in use for a few days, when transporting, or when the unit is parked inside a building.

Operating the Self-Propel Drive (Self-Propelled Units Only)

The lawn mower is variable speed, the more you squeeze the drive bail against the handle the faster the machine travels.

1. Start the engine.
2. Squeeze the drive bail against the handle (see Figure 4).

   Note: You can vary the ground speed by increasing or decreasing the distance between the ground speed control bail and the handle. Lower the control bail to decrease the ground speed when you are making a turn or if the lawn mower is moving too fast for you. If you lower the control bail too far the lawn mower stops self-propelling. Squeeze the ground speed control bail closer to the handle to increase the ground speed. When you hold the ground speed control bail tight against the handle, the lawn mower self-propels at the maximum ground speed. Release the drive bail to stop moving when you use the lawn mower for trimming or whenever you leave the lawn mower.
3. To disengage the self-propel drive, release the drive bail.

   Note: The mower comes with freewheeling clutches which make it easier to pull the mower rearward. To disengage the clutches, you may need to push the mower forward one inch (2.5 cm) or more after you release the self-propel drive bail.

Operating the Blade Control Bail (Units Without Blade Brake Clutch)

1. Squeeze the blade control bail against the handle.
2. Start the engine.
3. When the blade control bail is squeezed against the handle, the blade should engage.
4. Release the blade control bail. Both the engine and the blade should stop.

Operating the Blade Control Lever (Blade Brake Clutch Units Only)

1. Start the engine.
2. Push and hold the blade control lock lever forward to release the blade control bail (Figure 10).

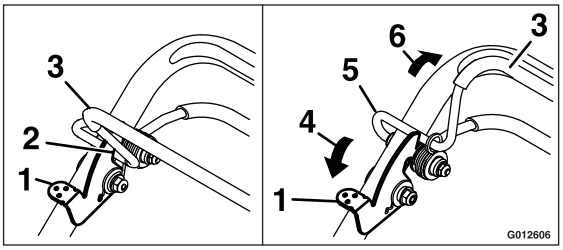

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Figure 10

1. Blade control lock lever
2. Locked position
3. Blade control bail
4. Push forward
5. Unlocked position
6. Squeeze against handle

3. Squeeze the blade control bail against the handle and release the blade control lock lever; the blade should engage.
4. Release the blade control bail to disengage the blade. The blade control lock lever will reset to lock the blade control bail.

Using the Mulch Plug

Occasionally you may wish to use the mulch plug to mulch the grass and leaf clippings back into the lawn.

- Installing the Mulch Plug:
  1. Stop the engine and wait for all moving parts to stop.
  2. Remove the grass bag if it is on the mower.
  3. Raise the discharge door and insert the mulch plug into the discharge opening. The lip on the plug will snap into the mower housing.

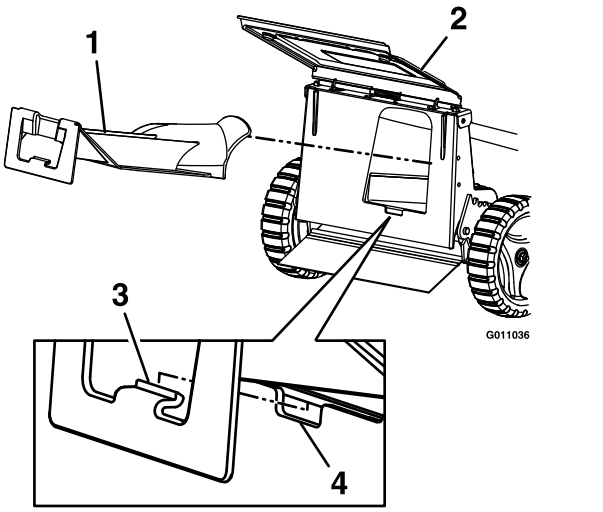

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Figure 11

1. Mulch plug
2. Discharge door
3. Lip
4. Mower housing

  4. Lower the discharge door.

- Removing the Mulch Plug:

  Note: When grass is thick and lush, clippings may collect on and around the discharge tunnel plug. This may make it difficult to remove the plug. Clean the plug thoroughly after each use.

  1. To remove the mulch plug, raise the discharge door and pull the mulch plug out of the discharge tunnel.
  2. Lower the discharge door.

Checking the Blade Brake Clutch (Blade Brake Clutch Units Only)

Check the Blade Brake Clutch (BBC) system before each use to ensure that it is operating properly.

Normal Test:

1. Stop the engine and wait for all moving parts to stop.
2. Move the lawn mower onto a paved surface in a non-windy area.
3. Set all four wheels to the 2 1/2 inches (6.4 cm) cutting height (see Figure 13 and Figure 14)
4. Take a half sheet of newspaper and crumple it into ball small enough to go under the deck (about 3 inches or 7.6 cm in diameter) as shown in Figure 12.

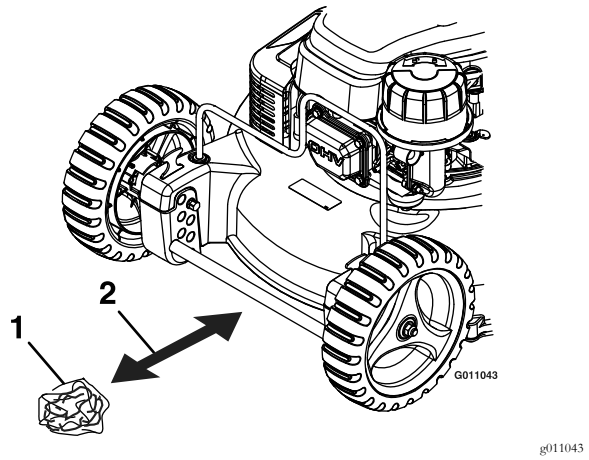

Figure 12

1. Crumpled newspaper 2. 5 inches (12.7 cm)

5. Place the ball of newspaper 5 inches (12.7 cm) in front of the lawn mower.
6. Start the engine.
7. Push the blade control lock lever forward to release the blade control bail (Figure 4).
8. Squeeze the blade control bail against the handle. blade should engage.
9. Release the blade control bail. You should hear a "bang." The blade should stop in three seconds. The blade control lock lever should reset to lock the blade control bail.
10. Immediately push the lawn mower over the newspaper ball.
11. Stop the engine and wait for all moving parts to stop.
12. Walk around the lawn mower to check for the newspaper ball. If the ball did not go under the deck, repeat steps 6 through 11.
13. Pull the lawn mower away from the newspaper. If the newspaper ball unravels or is shredded, the blade has not properly stopped, resulting in an unsafe operating condition. **Contact an Authorized Service Dealer.**

⚠ DANGER

If the blade brake clutch system is inoperative, the blade will continue to rotate when you release the blade control bail. Contact with the blade could occur, causing serious injury.

- **Check the BBC operation before each use.**
- **Never use the BBC-equipped lawn mower with an inoperative safety system.**
- **Take your lawn mower to an Authorized Service Dealer for repair if the safety system fails to operate properly.**

Test Using the Grass Bag

1. Install the empty grass bag on the discharge tunnel.
2. Start the engine.
3. **For units with a Blade Brake Clutch:** Push the blade control lock lever forward to release the blade control bail (Figure 4).
4. Squeeze the blade control bail against the handle.
5. The bag should begin to inflate, indicating that the blade is engaged and rotating.
6. Release the blade control bail. If the bag does not immediately deflate, it indicates that the blade is still rotating. The blade brake clutch mechanism may be deteriorating, and, if ignored could result in an unsafe operating condition. Have the lawn mower inspected and serviced by an Authorized Service Dealer.

Adjusting the Cutting Height

The rear wheels are adjusted together with a height adjustment rod located on the mower housing by the left rear wheel. The front wheels are adjusted separately by removing the front wheel shaft assemblies, adjusting the height, and then replacing the shaft assemblies. The cutting height can be adjusted from 1 inch (25 mm) to 4 1/2 inches (114 mm) in 1/2 inch (12.7 mm) increments.

⚠ WARNING

Adjusting the cutting height levers could bring your hands into contact with a moving blade. A moving blade can cause serious injury.

- **Stop the engine and wait for all movement to stop before adjusting the cutting height.**
- **Do Not put your fingers under the housing when adjusting the cutting height.**

- **Rear Wheel Adjustment:**

1. Pull the wheel height adjustment rod upward to release the pin from the notch in the adjustment bracket (Figure 13).

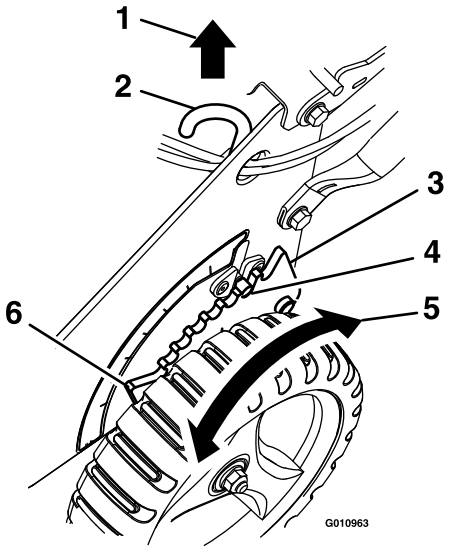

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Figure 13

1. Pull upward
2. Wheel height adjustment rod
3. Adjustment bracket
4. Pin
5. Rotate to desired setting
6. Indicator

2. Apply downward pressure or lift the housing to rotate the height adjustment bracket. Use the indicator to determine the desired setting.
3. Release the wheel height adjustment rod to set the pin securely in the desired notch.

- **Front Wheel Adjustment**

1. Pull up on the height adjuster and pull the front wheel shaft assembly outward as shown in Figure 14.

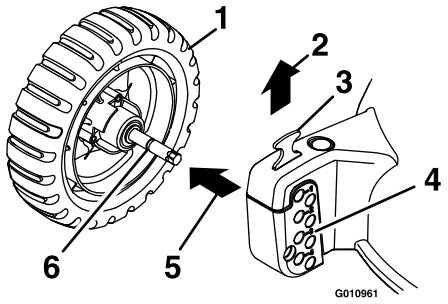

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Figure 14

1. Front wheel shaft assembly
2. Pull up
3. Height adjuster
4. Front quadrant block cut heights
5. Pull outward
6. Shaft groove

2. Insert the front wheel shaft assembly into the desired cut height setting in the front quadrant block. Lower the height adjuster into the groove on the front wheel shaft. Pull and push the wheel shaft assembly to make sure it has locked into place.

Using the Grass Bag

- Installing the Grass Bag

1. Stop the engine and wait for all moving parts to stop.
2. Open the rear door.
3. Grasp the handle on the bag and set the rear of the bag frame onto the door hinge bracket (Figure 15).

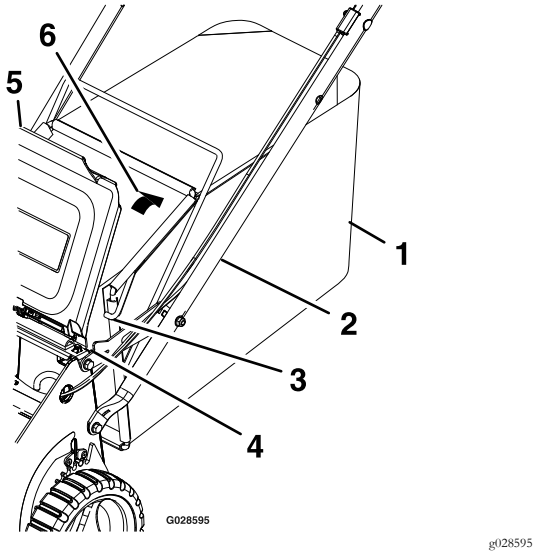

Figure 15

1. Bag
2. Handle
3. Bag frame
4. Door hinge bracket
5. Rear door
6. Lower

4. Once the bag is seated, lower the rear door onto the bag.

- Mowing with the Grass Bag

⚠ WARNING

A worn grass bag could allow small stones and other similar debris to be thrown in the operator's or bystander's direction. Thrown objects can result in serious personal injury or death to the operator or bystanders.

Check the grass bag frequently. If it is damaged, install a new Exmark replacement bag.

Cut the grass until the bag is full.

Note: Do Not overfill the bag.

- Removing the Grass Bag

1. Stop the engine and wait for all moving parts to stop.
2. Raise the rear discharge door and grasp the handle on the bag.
3. Lift the bag off of the lawn mower and lower the rear discharge door.
4. Gradually tip the bag forward to empty the clippings.
5. To install the bag, refer to the section on Installing the Grass Bag.

⚠ DANGER

If the rear discharge door does not close completely, the lawn mower could throw objects. Thrown objects can result in serious personal injury or death to the operator or bystanders.

- **Never open the door to the rear discharge opening when the blade is still running.**
- **If you cannot close the door because the grass clippings clog the discharge area, stop the engine and gently move the discharge door handle back and forth until you can close the door completely. If you still cannot close the door, remove the obstruction with a stick, not your hand.**

Operating Tips

- Review the Safety section and read this manual carefully before operating the lawn mower.
- Set the engine speed to the fastest position for the best cutting results.
- Maintain a sharp blade throughout the cutting season. Periodically file down nicks on the blade. Replace the blade when necessary with an original Exmark replacement blade.
- Clean the air filter frequently. Mulching stirs up more clippings and dust which clogs the air filter and reduces engine performance.

Cutting Grass

- Grass grows at different rates at different times of the year. In the summer heat, it is best to cut grass at the 2 1/2 inch (64 mm), 3 inch (76 mm), or 3 1/2 inch (90 mm) cutting height settings. Cut only about a third of the grass blade at a time. Do Not cut below the 2 1/2 inch (64 mm) setting unless the grass is sparse or it is late fall when grass growth begins to slow down.
- When cutting grass over 6 inches (15 cm) tall, first mow at the highest cutting height setting and walk slower; then mow again at a lower setting for the best lawn appearance. If the grass is too long and the grass clump on top of the lawn, the lawn mower may plug and cause the engine to stall.

- Alternate the mowing direction. This helps disperse the clippings over the lawn for even fertilization.
- If the finished lawn appearance is unsatisfactory, try one or more of the following:
  - Sharpen the blade.
  - Walk at a slower pace while mowing.
  - Cut the grass more frequently.
  - Overlap cutting swaths instead of cutting a full swath with each pass.
  - Set the desired cutting height on the front wheels. Set the rear wheels one to two notches higher. For example, set the front wheels at 2 1/2 inches (64 mm) and the rear wheels at 3 inches (76 mm).

Cutting Leaves

- After cutting the lawn, ensure that half of the lawn shows through the cut leaf cover. You may need to make more than one pass over the leaves.
- For light leaf coverage, set all the wheels at the same cutting height setting.
- If there are more than 5 inches (12.7 cm) of leaves on the lawn, set the front cutting height one or two notches higher than the rear cutting height. This makes it easier to feed the leaves under the lawn mower deck.
- Slow down your mowing speed if the lawn mower does not cut the leaves finely enough.
- If you mow over oak leaves, you can add lime to the grass in the spring to reduce the acidity of the oak leaves.

After Operation

General Safety

- Park machine on level ground, stop engine, and disconnect spark plug wire. Wait for all moving parts to stop before leaving the operator's position. Allow the machine to cool before servicing, adjusting, fueling, cleaning, or storing.
- Clean grass, leaves, excessive grease or oil, and other debris from the mower deck, muffler, drives, grass catcher, and engine area to help prevent fires.
- Close the fuel shut-off valve before storing or transporting the machine.

Transporting the Machine

- Use extreme care when loading and unloading the machine into a trailer or truck.
- Use full width ramps for loading the machine into a trailer or truck.
- Tie the machine down securely using straps, chains, cable or ropes. If possible both front and rear straps should be directed down and outward from the machine.
- Be sure the fuel shut-off valve is closed during transport.

Maintenance

Note: Determine the left and right sides of the machine from the normal operating position.

Maintenance Safety

- Park machine on level ground, stop engine, and disconnect spark plug wire. Wait for all moving parts to stop before leaving the operator's position. Allow the machine to cool before servicing, adjusting, fueling, cleaning, or storing.

⚠ WARNING

Tipping the lawn mower may cause the fuel to leak from the carburetor or the fuel tank. Gasoline is extremely flammable, highly explosive, and under certain conditions, can cause personal injury or property damage.

Avoid fuel spills by running the engine dry or by removing the gasoline with a hand pump; never siphon.

- If you leave the wire on the spark plug, someone could accidently start the engine and seriously injure you or other bystanders. Disconnect the wire from the spark plug before you perform any maintenance or repairs.
- Never allow untrained personnel to service machine.
- Keep all guards, shields, switches, and all safety devices in place and in proper working condition. Frequently check for worn or deteriorating components and replace them with genuine Exmark parts when necessary.

⚠ WARNING

Removal or modification of original equipment, parts and/or accessories may alter the warranty, controllability, and safety of the machine. Unauthorized modifications to the original equipment or failure to use original Exmark parts could lead to serious injury or death. Unauthorized changes to the machine, engine, fuel or venting system, may violate applicable safety standards such as: ANSI, OSHA and NFPA and/or government regulations such as EPA and CARB.

- Keep hands and feet away from moving parts. If possible, Do Not make adjustments with the engine running.
- Check all bolts frequently to maintain proper tightness.

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 5 hours	• Change the engine oil.
Before each use or daily	• Check the engine oil level. • Check the stopping time of the blade brake. The blade must stop within 3 seconds of releasing the bail; if it does not, contact an Authorized Service Dealer for repair. • Check the mower blade and the engine mounting fasteners. • Check for loose hardware. • Check the Blade Brake Clutch Bail operation (Blade Brake Clutch Units Only) • Clean the grass build-up from under the deck. • Clean the discharge tunnel and plug.
Every 25 hours	• Clean the foam pre-cleaner (Kawasaki Units). • Clean the cover, base, foam and paper elements (Honda Unit).
Every 40 hours	• Check the condition of the belt(s).

Maintenance Service Interval	Maintenance Procedure
Every 50 hours	• Change the engine oil. (May need more often under severe conditions.) • Check for leaks in the fuel systems and /or deteriorating fuel hose. • Clean under the belt cover (self-propelled units only). • Clean the blade brake clutch shield. • Clean under the cover plate (Non-BBC Units).
Every 100 hours	• Change the oil filter (Kawasaki X-Series Units). • Check the spark plugs. • Clean the fuel filter element.
Every 250 hours	• Replace the air filter elements (Honda Unit). (May need more often if they are damaged or excessively dirty.)
Every 300 hours	• Replace the paper air filter (Kawasaki Units). (May need more often in dusty conditions. See the Engine manual for additional information.)
Yearly or before storage	• Empty the fuel tank before repairs as directed or before storage.

Periodic Maintenance

Engine Maintenance

Important: Refer to the Engine Owner's Manual for additional maintenance procedures.

Engine Safety

⚠ WARNING

The engine can become very hot, especially the muffler and exhaust components. Touching a hot engine can cause severe burns.

Allow the engine to cool completely before service or making repairs around the engine area.

Do Not change the engine governor setting or overspeed the engine.

Check Engine Oil Level

Service Interval: Before each use or daily

1. Stop engine and wait for all moving parts to stop. Make sure unit is on a level surface.
2. Check with engine cold.
3. Clean area around dipstick. Remove dipstick and wipe oil off. Reinsert the dipstick and push it all the way down into the tube. **Do Not** screw into place. Remove the dipstick and read the oil level.

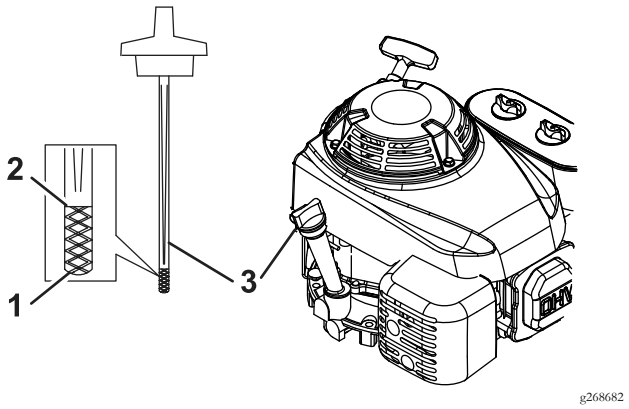

Figure 16
Honda Engine

1. Lower limit mark
2. Upper limit mark
3. Dipstick

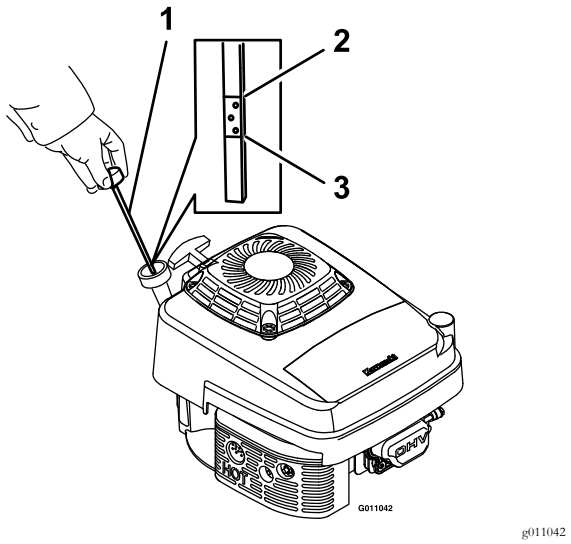

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Figure 17
Kawasaki Engine

1. Dipstick
2. Full
3. Add

4. If the oil level is low, wipe off the area around the oil fill cap, remove cap and fill to the "FULL" mark on the dipstick. Exmark 4-Cycle Premium Engine Oil is recommended; refer to the Engine Owner's manual for appropriate API rating and viscosity. **Do Not** overfill.

Important: Do Not operate the engine with the oil level below the "LOW" (or "ADD") mark on the dipstick, or over the "FULL" mark.

Checking the Blade Brake Clutch (Blade Brake Clutch Only)

Service Interval: Before each use or daily

Refer to **Checking the Blade Brake Clutch** in the Operating Instructions section.

Checking the Mower Blade

Service Interval: Before each use or daily

Always mow with a sharp blade. A sharp blade cuts cleanly and without tearing or shredding the grass blade.

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug.
3. Drain the gasoline from the fuel tank. Refer to **Emptying the Fuel Tank and Cleaning the Fuel Filter** section.
4. Tip the lawn mower onto its right side.
5. Inspect the blade for sharpness and wear, especially where the flat and the curved parts meet. Because sand and abrasive material can wear away the metal that connects the flat and curved parts of the blade, check the blade before using the lawn mower. If you notice a slot or wear, replace the blade.

Note: For the best performance, install a new blade before the cutting season begins. During the year, file down any small nicks to maintain the cutting edge.

⚠ DANGER

A worn or damaged blade can break. A piece of the blade could be thrown into the operator's or bystander's area, resulting in serious personal injury or death.

- **Inspect the blade periodically for wear or damage.**
- **Replace a worn or damaged blade.**

If it is necessary to remove the blade for replacement or sharpening, complete the following steps:

A. To remove the blade, use a block of wood to hold the blade steady (see Figure 18). Make sure to grasp the end of the blade using a rag or a thickly padded glove.

- **For Blade Brake Clutch Units:** Remove the blade nuts, blade support, and blade.
- **For Units without a Blade Brake Clutch:** Remove the blade bolt, blade support, and blade.

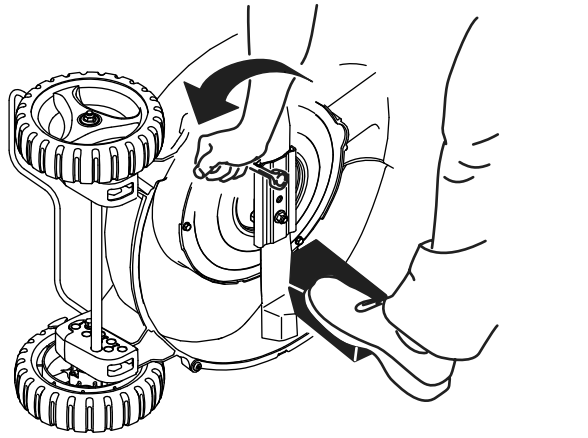

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Figure 18

B. For Sharpening: File the top side of the blade to maintain its original cutting angle (Figure 19A and B) and inner cutting edge radius (Figure 19A). The blade will remain balanced if you remove the same amount of material from both cutting edges.

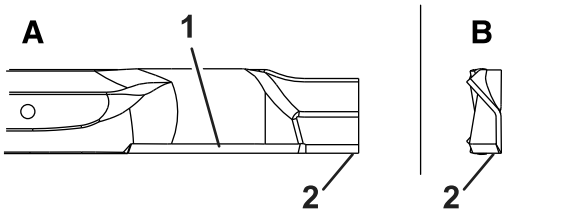

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Figure 19

1. Inner cutting edge radius 2. Cutting angle

C. Check the balance of the blade by placing the center hole of the blade over a nail or screwdriver shank clamped horizontally in a vise (Figure 20). If either end of the blade rotates downward, file that end (not the cutting edge). The blade is properly balanced when neither end drops.

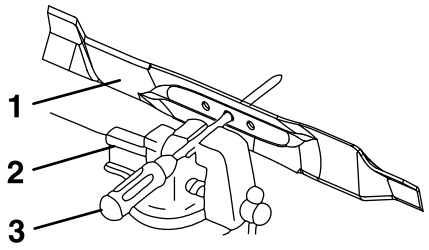

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Figure 20

1. Blade
2. Vise
3. Screwdriver

D. For Installation: Make sure to grasp the end of the blade using a rag or a thickly padded glove.

For Blade Brake Clutch Units: Install a sharp, balanced Exmark blade, blade support, and the blade nuts. The sail of the blade must point toward the top of the lawn mower housing for proper installation. Torque the blade nuts to 44-56 ft-lb (60-76 N m).

For Units without a Blade Brake Clutch: Install a sharp, balanced Exmark blade, blade support, and blade bolt. The sail of the blade must point toward the top of the lawn mower housing for proper installation. Torque the blade bolt to 35-45 ft-lb (47-61 N m).

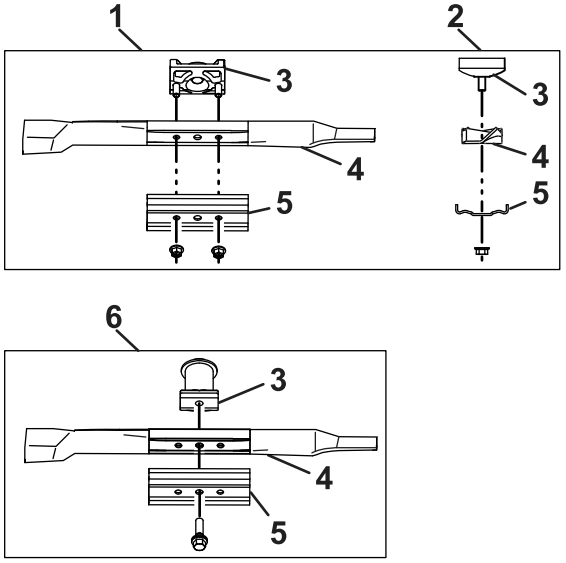

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Figure 21

1. Blade Brake Clutch Units–front view
2. Blade Brake Clutch Units–side view
3. Blade driver
4. Blade
5. Blade support
6. Units without a Blade Brake Clutch

6. Return the lawn mower to its upright position.
7. Connect the wire to the spark plug.

Check for Loose Hardware

Service Interval: Before each use or daily

1. Stop engine, wait for all moving parts to stop.
2. Visually inspect machine for any loose hardware or any other possible problem. Tighten hardware or correct the problem before operating.

Check the Blade Brake Clutch Bail Operation (Blade Brake Clutch Units Only)

Service Interval: Before each use or daily

Check the Blade Brake Clutch (BBC) bail operation for any operation problems or deteriorating components, such as the spring. Replace components or correct any problems before operating. Refer to **Operating the Blade Control Lever** in Operation.

Service Air Filter (Kawasaki Units)

Service Interval: Every 25 hours—Clean the foam pre-cleaner (Kawasaki Units).

Every 300 hours—Replace the paper air filter (Kawasaki Units). (May need more often in dusty conditions. See the Engine manual for additional information.)

Note: Do Not operate the engine without the air filter assembly; extreme engine damage will occur.

1. Stop engine, wait for all moving parts to stop.
2. Disconnect the wire from the spark plug.
3. Remove the cover and clean it thoroughly.

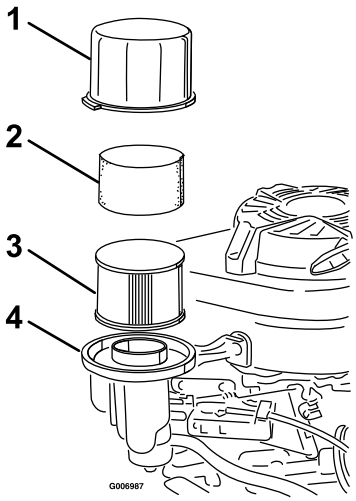

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Figure 22
X-Series Units

1. Cover
2. Foam element
3. Paper air filter
4. Air filter base

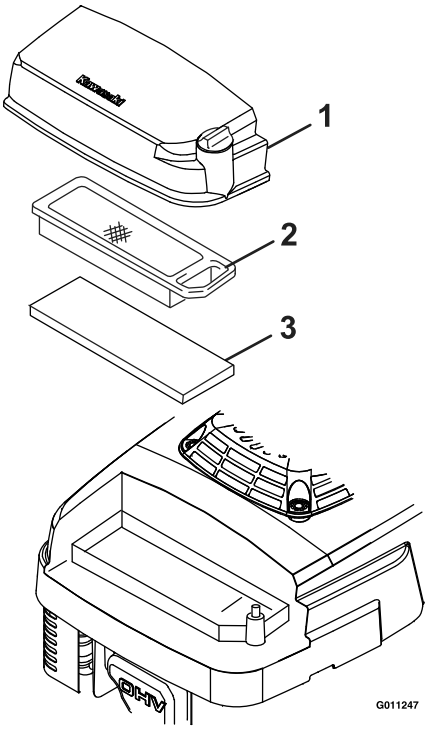

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Figure 23
S-Series Units

1. Cover
2. Paper air filter
3. Foam element

4. Remove the paper air filter and discard it as required.

   Note: Do Not try to clean a paper air filter.

5. Remove the foam element and wash it with a mild detergent and water, then blot it dry.
6. Saturate the element with clean engine oil, then squeeze it (Do Not twist) to remove the excess oil.
7. Install the foam element.
8. Install the new paper air filter.
9. Install the cover.

Service Air Filter (Honda Unit)

Service Interval: Every 25 hours—Clean the cover, base, foam and paper elements (Honda Unit).

Every 250 hours— Replace the air filter elements (Honda Unit). (May need more often if they are damaged or excessively dirty.)

Note: **Do Not** operate the engine without the air cleaner assembly; extreme engine damage will occur.

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug.
3. Remove the two wing nuts that secure the cover (Figure 24).

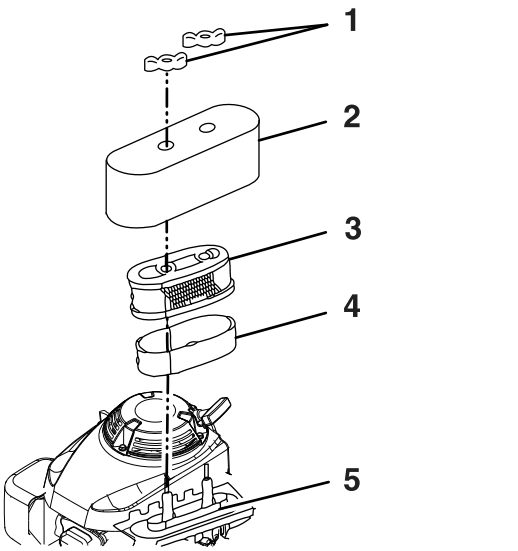


Figure 24

1. Wing nuts
2. Cover
3. Paper element
4. Foam element
5. Base

4. Remove the cover.

Note: Be careful to prevent dirt and debris from falling into the base.

5. Remove the foam and paper elements from the base.
6. Remove the foam element from the paper element.
7. Inspect the foam and paper elements, and replace them if they are damaged or excessively dirty.
8. Tap the paper element on a hard surface several times or use compressed air not exceeding 30 psi (207 kPa) through the filter from the wire screen side to remove any excess dirt. If the paper element is excessively dirty, replace it.

Note: Never try to brush dirt off the paper element; brushing forces the dirt into the fibers.

9. Clean the foam element in warm, soapy water or in a **nonflammable** solvent.
10. Rinse and dry the foam element thoroughly.
11. Dip the foam element in clean engine oil, then squeeze out the excess oil.

Note: Excess oil in the foam element restricts the air flow through the element and may reach the paper filter and clog it.

12. Wipe dirt from the base and the cover with a moist rag.

Note: Be careful to prevent dirt and debris from entering the air duct leading to the carburetor.

13. Install the air cleaner elements and ensure that they are properly positioned.
14. Securely install the cover with the two wing nuts.

Change Engine Oil

Service Interval: After the first 5 hours
Every 50 hours (May need more often under severe conditions.)

1. Run the engine to warm the engine oil.

Note: Warm oil flows better and carries more contaminates.

⚠ WARNING

Oil may be hot after engine has been run. Contact with hot oil can cause severe personal injury.

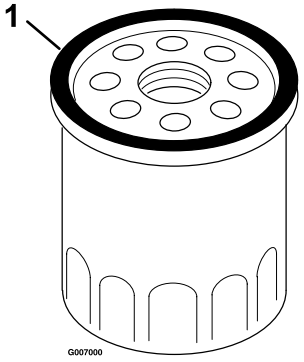
Avoid contacting the hot engine oil when you drain it.

2. Stop engine, wait for all moving parts to stop.
3. Disconnect the wire from the spark plug.
4. Drain the gasoline from the fuel tank. Refer to **Emptying the Fuel Tank and Cleaning the Fuel Filter** section.
5. Place a suitable drain pan under the dipstick/oil drain.
6. Clean around the dipstick.
7. Remove the dipstick by rotating the cap counterclockwise and pulling it out.
8. Raise the left side of the lawn mower to drain the oil from the dipstick fill tube into the drain pan.
9. After draining the oil, return the lawn mower to the operating position.
10. Fill the crankcase with fresh oil to the upper limit mark on the dipstick. Use oil recommended in the **Check Engine Oil Level** section. **Do Not** overfill
11. Insert the dipstick into the filler neck and rotate the cap clockwise until it is tight.
12. Wipe up any spilled oil.
13. Connect the wire to the spark plug.
14. Recycle the used oil according to local codes.

Change Oil Filter (Kawasaki X-Series Units)

Service Interval: Every 100 hours

1. Run the engine to warm the oil.
2. Stop the engine and wait for all moving parts to stop.
3. Disconnect the wire from the spark plug.
4. Drain the engine oil.
5. Place a rag under the oil filter to catch any oil that may leak out as you remove the filter.
6. Remove the oil filter.
7. Use your finger to coat the gasket on the new filter with clean Exmark 4–Cycle Premium Engine oil (see Figure 25).



g007000

Figure 25

1. Gasket

8. Install the new filter and hand tighten it 2/3 turn only.
9. Fill the crankcase as stated in Check **Engine Oil Level** section. Exmark 4–Cycle Premium Engine oil is recommended. Refer to the Engine Owner's Manual for an acceptable alternative.
10. Connect the wire to the spark plug.
11. Run the engine for about 3 minutes.
12. Stop the engine, wait for all moving parts to stop, and check for oil leakage around the filter.
13. Add oil to compensate for the oil in the oil filter.
14. Recycle the used oil filter according to local codes.

Check Condition Of Belt (Self-Propelled Units Only)

Service Interval: Every 40 hours

1. Stop engine, wait for all moving parts to stop.
2. Remove the belt cover to the lawn mower housing.
3. Check the belt for cracks, frayed edges, burn marks or any other damage.
4. Replace the damaged belt.

Check Spark Plugs

Service Interval: Every 100 hours

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug (see Figure 8 and Figure 26).
3. Clean around the spark plug.
4. Remove the spark plug from the cylinder head.

   Note: Replace a cracked, fouled, or dirty spark plug. Do Not clean the electrodes because grit entering the cylinder can damage the engine.
5. Set the gap on the plug to 0.030 inch (0.76 mm) (Figure 26).

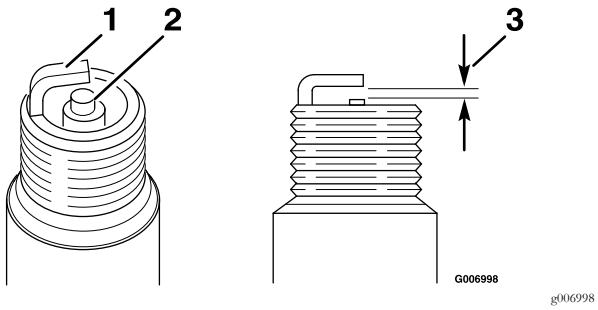


Figure 26

1. Side electrode
2. Center electrode insulator
3. Air gap—0.030 inch (0.76 mm)

6. Install the spark plug and the gasket seal.
7. Torque the plug to 17 ft-lb (23 N-m).
8. Connect the wire to the spark plug.

Emptying the Fuel Tank and Cleaning the Fuel Filter

Service Interval: Every 100 hours

The fuel filter (screen) element is located inside the fuel tank (if applicable).

1. Stop the engine and wait for it to cool down.

   Note: Drain gasoline for a cold engine only.
2. Disconnect the wire from the spark plug.
3. Close the fuel valve.
4. Disconnect the fuel line by loosening the tube clamp at the carburetor.
5. Open the fuel valve by turning the lever to the open position.
6. Drain the gasoline completely from the tank and fuel line into an approved fuel container.
7. Remove the fuel tank from the mower.
8. Close the fuel valve.
9. Pour a small amount of fuel in the fuel tank, move the fuel around in the tank, and pour it out into an approved fuel container.
10. Install the fuel tank and fuel line.

Adjustments

Note: Wait for all moving parts to stop and remove spark plug wire before servicing, cleaning, or making any adjustments to the unit.

Adjusting the Self-Propel Drive (Self-Propelled Units Only)

If the lawn mower does not self-propel or has a tendency to creep forward when the control bail is released, adjust the drive cable nuts as shown in Figure 28.

⚠ DANGER

Checking the operation of the mower with the belt cover removed will allow debris to be thrown in the operator's or bystander's direction and can result in serious personal injury or death.

Do Not operate the unit when cover is not in place.

1. Stop the engine and wait for all moving parts to stop.
2. Remove the belt cover by pulling upward on the back of the cover to unsnap the front and back cover tabs. Remove any debris under the cover.

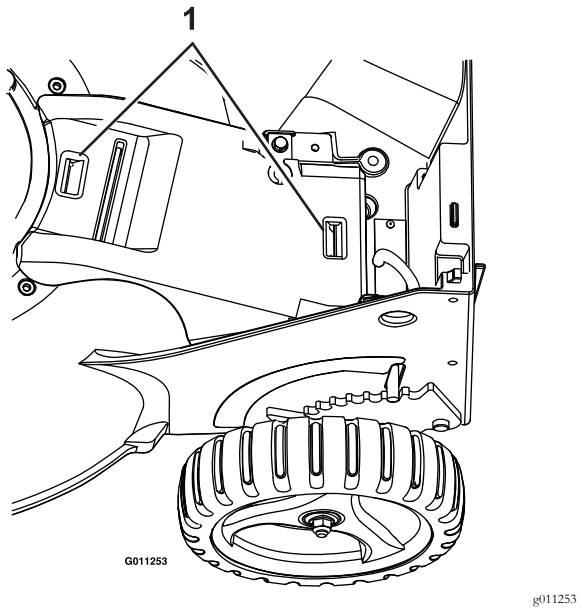


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Figure 27

1. Belt cover tabs

3. If the lawn mower does not self propel with bail engaged, tighten the belt by turning the drive cable nuts clockwise. To maximize belt life, Do Not overtighten the belt.

   If the lawn mower creeps forward without the bail engaged, loosen the belt by turning the drive cable nuts counterclockwise.

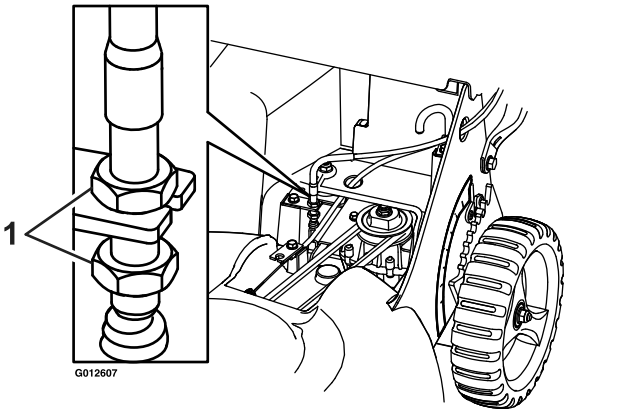

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Figure 28

1. Adjustment of drive cable nuts

4. Reinstall the belt cover by pushing down on the rear first and then snapping the front onto the mower housing.
5. Check the operation for desired drive control.
6. Repeat steps 2 through 5 as necessary for further adjustment.

   Note: Adjustment to obtain desired ground speed at full bail travel may be made in order to accommodate slower speeds.

Adjusting the Blade Brake Cable (Blade Brake Clutch Units Only)

Adjust whenever a new blade brake cable assembly is installed or if the blade control lock lever does not operate properly.

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug.
3. Remove the belt cover by pulling upward on the back of the cover to unsnap the front and back

cover tabs (see Figure 27). Remove any debris under the cover.

4. Loosen the cable clamp screw until the cable conduit slides (see Figure 29).

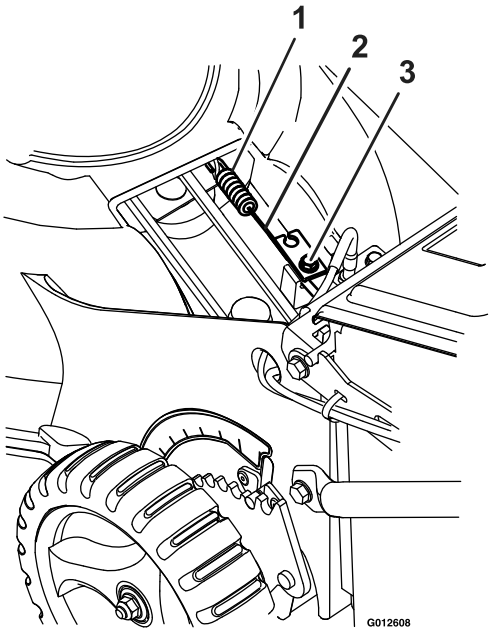

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Figure 29

1. Spring
2. Cable conduit
3. Cable clamp screw

5. Pull the cable until there is approximately 1/8 inch in slack. Do Not put tension on the spring.
6. Tighten the screw to lock the adjustment in place.
7. Reinstall the belt cover by pushing down on the rear first and then snapping the front onto the mower housing.
8. Connect the wire to the spark plug.
9. Check the operation of the blade control lock lever (see Figure 10). The lever must reset itself to lock out the blade control bail. If it does not, repeat steps 4 through 8.
10. Perform the "Checking the Blade Brake Clutch (Blade Brake Clutch Units Only)" procedure in Operation.

Cleaning

Cleaning and Storing Safety

- Park machine on level ground, stop engine, and disconnect spark plug wire. Wait for all moving parts to stop before leaving the operator's position. Allow the machine to cool before servicing, adjusting, fueling, cleaning, or storing.
- Clean grass and debris from the cutting unit, muffler, drives, grass catcher, and engine compartment to prevent fires.
- Allow the machine to cool before storing the machine in any enclosure. Do not store the machine or fuel container, or refuel, where there is an open flame, spark, or pilot light such as on a water heater or other appliance.

Clean Grass Build-Up Under Deck

Service Interval: Before each use or daily

1. Stop engine, wait for all moving parts to stop, and remove spark plug wire.
2. To ensure the best performance, keep the underside of the lawn mower housing clean.

⚠ CAUTION

The mower may dislodge material from under the mower housing.

- **Wear eye protection.**
- **Stay in the operating position (behind the handle).**
- **Do Not allow bystanders in the area.**

Washing Method

1. Position the lawn mower on a flat concrete or asphalt surface near a garden hose.
2. Start the engine.
3. Hold the running garden hose at handle level and direct the water to flow on the ground just in front of the right rear tire (Figure 30).

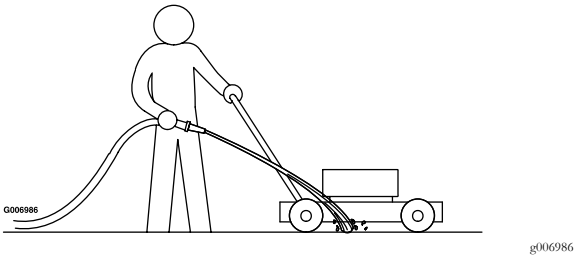

Figure 30

4. Engage the blade.

   Note: The blade will draw in water and wash out clippings. Let the water run until you no longer see clippings being washed out from under the housing.

5. Disengage the blade, stop the engine and wait for all moving parts to stop.
6. Turn off the water.
7. Start the lawn mower, engage the blade, and let the lawn mower run for a few minutes to dry out its components.

Scraping Method

If washing does not remove all debris from under the lawn mower, scrape it clean.

1. Disconnect the wire from the spark plug.
2. Drain the fuel from the fuel tank. Refer to **Emptying the Fuel Tank and Cleaning the Fuel Filter** section.
3. Tip the lawn mower onto its right side.
4. Remove the dirt and grass clippings with a hardwood scraper. Avoid burrs and sharp edges.
5. Turn the lawn mower upright.
6. Fill the fuel tank.
7. Connect the wire to the spark plug.

Cleaning the Discharge Tunnel and Plug

Service Interval: Before each use or daily

Always be sure that the discharge tunnel door closes securely when you release the handle. If the debris prevents the discharge door from closing securely, clean the inside of the discharge tunnel and the door thoroughly.

⚠ WARNING

Grass clippings and other objects can be thrown from an open discharge tunnel. Thrown objects can cause serious injury or kill the operator or bystanders.

Never start or operate the lawn mower unless one of the following is true:

- **Mulch Mode:**
  - **The discharge tunnel plug is locked securely in the discharge tunnel.**
  - **The discharge tunnel door is closed against frame.**
- **Bag Mode:**
  - **The discharge tunnel plug is removed.**
  - **The grass bag is locked in place.**
  - **The discharge tunnel door is closed against bag.**
- **Optional Rear Discharge Mode:**
  - **The optional rear discharge deflector is locked in place.**
  - **The discharge tunnel door is closed against deflector.**

Cleaning Under the Belt Cover (Self-Propelled Units Only)

Service Interval: Every 50 hours

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug.
3. Pull upward on the back of the cover to unsnap the front and back cover tabs (see Figure 27).
4. Lift off the cover and brush out all the debris around the belt area.
5. Install the belt cover by pushing down on the rear first and then snapping the front onto the mower housing.
6. Connect the wire to the spark plug.

Cleaning the Blade Brake Clutch Shield (Blade Brake Clutch Units Only)

Service Interval: Every 50 hours

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug.
3. Drain the gasoline from the fuel tank. Refer to **Emptying the Fuel Tank and Cleaning the Fuel Filter** section.
4. Tip the lawn mower onto its right side (air filter up).
5. Remove the blade nuts and the blade.
6. Remove the three screws holding the BBC shield onto the machine (see Figure 31).

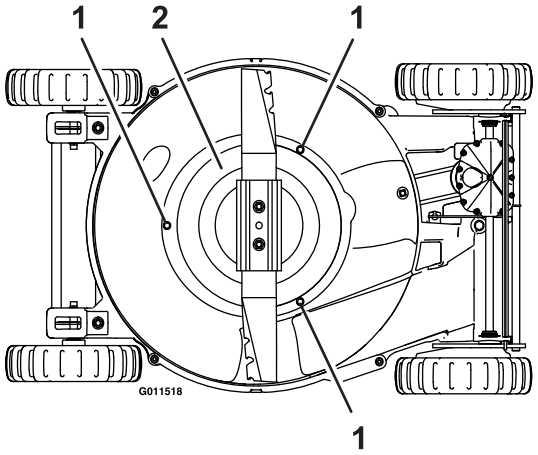

Figure 31

1. Screws
2. BBC Shield

7. Remove the BBC shield and brush or blow all the debris from under the shield and around the BBC system.
8. Install the BBC shield. Tighten the screws to secure the BBC shield to the deck.
9. Install the blade and the two blade nuts. Torque the blade nuts to 44-56 ft-lb (60-76 N m).
10. Turn the lawn mower upright.
11. Connect the wire to the spark plug.

Cleaning Under the Cover Plate (Non-Blade Brake Clutch Units Only)

Service Interval: Every 50 hours

1. Stop the engine and wait for all moving parts to stop.
2. Disconnect the wire from the spark plug.
3. Drain the gasoline from the fuel tank. Refer to **Emptying the Fuel Tank and Cleaning the Fuel Filter** section.
4. Tip the lawn mower onto its right side (air filter up).
5. Remove the blade bolt, blade support, and the blade (see Figure 32).

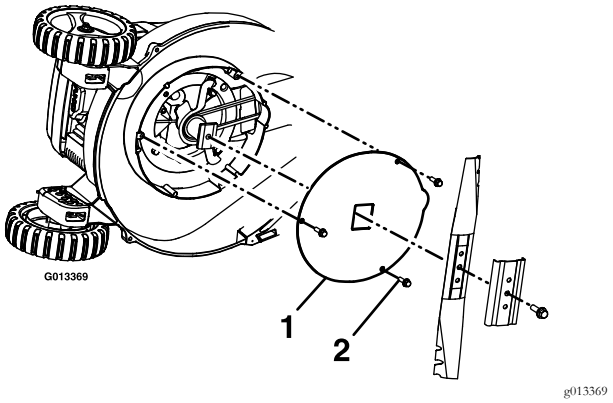

Figure 32

1. Blade bolt
2. Blade support
3. Blade
4. Cover plate
5. Screw

6. Remove the three screws holding the cover plate onto the unit (see Figure 32).
7. Remove the cover plate and brush or blow all the debris from under the plate. Reinstall the cover plate.
8. Install the blade, blade support, and the blade bolt. Torque the blade bolt to 35-45 ft-lb (47-61 N m).
9. Turn the lawn mower upright.
10. Connect the wire to the spark plug.

Waste Disposal

Motor Oil Disposal

Engine oil is a pollutant to the environment. Dispose of used oil at a certified recycling center or according to your state and local regulations.

Storage

Preparing the Fuel System

To prepare the lawn mower for off season storage, perform the recommended maintenance procedures.

Store the lawn mower in a cool, clean, dry place. Cover the lawn mower to keep it clean and protected.

⚠ WARNING

Gasoline can vaporize if you store it over long periods of time. Gasoline vapors can explode if they come into contact with an open flame.

- **Do Not store gasoline over long periods of time.**
- **Do Not store the lawn mower with gasoline in the fuel tank or the carburetor in an enclosure with an open flame. (For example, a furnace or a water heater pilot light.)**
- **Allow the engine to cool before storing it in any enclosure.**

Empty the fuel tank when mowing the last time before storing the lawn mower.

1. Run the lawn mower until the engine stops from running out of fuel.
2. Prime the engine and start it again.
3. Allow the engine to run until it stops. When you can no longer start the engine it is sufficiently dry.

Preparing the Engine

1. While the engine is still warm, change the oil from the crankcase. Refer to **Change Engine Oil** section in Maintenance.
2. Remove the spark plug.
3. Using an oil can, add about one tablespoon of oil to the crankcase through the spark plug hole.
4. Slowly rotate the engine several times, using the starter rope, to distribute the oil.
5. Install the spark plug but **Do Not** connect the wire to the spark plug.

General Storage Information

1. Clean the lawn mower housing. Refer to **Cleaning the Underside of the Lawn Mower Housing** section in Cleaning.
2. Clean any dirt and chaff from the cylinder, cylinder head fins, and blower housing.
3. Remove grass clippings, dirt, and grime from the external parts of the engine, the shrouding, and the top of the lawn mower housing.
4. Clean the BBC shield. Refer to **Cleaning the Blade Brake Clutch Shield** section in Cleaning.
5. Check the condition of the blade. Refer to **Maintaining the Blade** section in the Maintenance.
6. Service the air filter. Refer to **Servicing the Air Filter** in Maintenance.
7. Tighten all nuts, bolts, and screws.
8. Touch up all rusted or chipped paint surfaces with paint available from an Authorized Service Dealer.

Removing the Lawn Mower from Storage

1. Check and tighten all fasteners.
2. Remove the spark plug and spin the engine rapidly by pulling the starter rope to blow excess oil from the cylinder.
3. Clean the spark plug or replace it if it is cracked, broken, or if the electrodes are worn.
4. Install the spark plug and torque it to 17 ft-lb (23 N-m).
5. Perform any needed maintenance procedures.
6. Fill the fuel in the fuel tank with fresh gasoline.
7. Check the engine oil level.
8. Connect the wire to the spark plug.

Troubleshooting

Important: It is essential that all operator safety mechanisms be connected and in proper operating condition prior to mower use.

When a problem occurs, Do Not overlook the simple causes. For example: starting problems could be caused by an empty fuel tank.

The following table lists some of the common causes of trouble. If a problem continues, contact an Authorized Service Dealer.

Problem	Possible Cause	Corrective Action
Engine will not start, starts hard, or fails to keep running.	1. Fuel tank is empty. 2. Fuel shutoff valve is closed. 3. The throttle lever is not in the correct position. 4. Dirt, water, or stale fuel is in the fuel system. 5. Faulty spark plug. 6. Spark plug wire is not connected.	1. Fill the fuel tank. 2. Open the fuel shutoff valve. 3. Move the throttle lever to the Choke position. 4. Contact an Authorized Service Dealer. 5. Clean, adjust or replace spark plug. 6. Check the spark plug wire connection.
Engine loses power.	1. Air cleaner is dirty. 2. Oil level in the crankcase is low. 3. Vent hole in the fuel cap is plugged. 4. Dirt in fuel filter. 5. Dirt, water, or stale fuel is in the fuel system. 6. The underside of the lawn mower deck contains clippings and debris.	1. Clean or replace the air cleaner element. 2. Add oil to the crankcase. 3. Clean or replace the fuel cap. 4. Replace the fuel filter. 5. Contact an Authorized Service Dealer. 6. Clean the underside of the lawn mower deck.
Engine runs rough.	1. The wire is not connected to the spark plug. 2. Faulty spark plug. 3. The throttle lever is not in the Fast position. 4. The air filter element is dirty and is restricting the air flow.	1. Connect the wire to the spark plug. 2. Clean, adjust or replace spark plug. 3. Move the throttle lever to the Fast position. 4. Clean the air filter pre-cleaner and/or replace the paper air filter.
Lawn mower or engine vibrates excessively.	1. The blade is bent or is out of balance. 2. The blade mounting bolt is loose. 3. The underside of the lawn mower deck contains clippings and debris. 4. The engine mounting bolts are loose.	1. Balance the blade. If the blade is bent, replace it. 2. Tighten the blade mounting bolt. 3. Clean the underside of the lawn mower deck. 4. Tighten the engine mounting bolts.
Uneven cutting pattern.	1. All four wheels are not at the same height. 2. The blade is dull. 3. Mowing in the same pattern repeatedly. 4. The underside of the lawn mower deck contains clippings and debris.	1. Place all four wheels at the same height. 2. Sharpen and balance the blade. 3. Change the mowing pattern. 4. Clean the underside of the lawn mower deck.
Discharge chute plugs.	1. The throttle lever is not in the Fast position. 2. Cutting too much grass in one pass 3. Mowing too fast. 4. The grass is wet. 5. The underside of the lawn mower deck contains clippings and debris.	1. Move the throttle lever to the Fast position. 2. Raise the cutting height. If necessary, cut a second time at lower cutting height. 3. Slow down. 4. Allow the grass to dry before mowing. 5. Clean the underside of the lawn mower deck.

Problem	Possible Cause	Corrective Action
Lawn mower does not self-propel. (Self-Propel Units Only)	1. The self-propel drive cable is out of adjustment or is damaged. 2. There is debris under the belt cover.	1. Adjust the self-propel drive cable. Replace the cable if necessary. 2. Clean the debris from under the belt cover.
Difficult to pull lawnmower rearward (Self-Propelled Units Only).	1. Transmission is locked.	1. Push mower forward to disengage the transmission and then pull rearward.

California Proposition 65 Warning Information

What is this warning?

You may see a product for sale that has a warning label like the following:

WARNING: Cancer and Reproductive Harm—www.p65Warnings.ca.gov.

What is Prop 65?

Prop 65 applies to any company operating in California, selling products in California, or manufacturing products that may be sold in or brought into California. It mandates that the Governor of California maintain and publish a list of chemicals known to cause cancer, birth defects, and/or other reproductive harm. The list, which is updated annually, includes hundreds of chemicals found in many everyday items. The purpose of Prop 65 is to inform the public about exposure to these chemicals.

Prop 65 does not ban the sale of products containing these chemicals but instead requires warnings on any product, product packaging, or literature with the product. Moreover, a Prop 65 warning does not mean that a product is in violation of any product safety standards or requirements. In fact, the California government has clarified that a Prop 65 warning "is not the same as a regulatory decision that a product is 'safe' or 'unsafe.'" Many of these chemicals have been used in everyday products for years without documented harm. For more information, go to https://oag.ca.gov/prop65/faqs-view-all.

A Prop 65 warning means that a company has either (1) evaluated the exposure and has concluded that it exceeds the "no significant risk level"; or (2) has chosen to provide a warning based on its understanding about the presence of a listed chemical without attempting to evaluate the exposure.

Does this law apply everywhere?

Prop 65 warnings are required under California law only. These warnings are seen throughout California in a wide range of settings, including but not limited to restaurants, grocery stores, hotels, schools, and hospitals, and on a wide variety of products. Additionally, some online and mail order retailers provide Prop 65 warnings on their websites or in catalogs.

How do the California warnings compare to federal limits?

Prop 65 standards are often more stringent than federal and international standards. There are various substances that require a Prop 65 warning at levels that are far lower than federal action limits. For example, the Prop 65 standard for warnings for lead is 0.5 µg/day, which is well below the federal and international standards.

Why don't all similar products carry the warning?

- Products sold in California require Prop 65 labelling while similar products sold elsewhere do not.
- A company involved in a Prop 65 lawsuit reaching a settlement may be required to use Prop 65 warnings for its products, but other companies making similar products may have no such requirement.
- The enforcement of Prop 65 is inconsistent.
- Companies may elect not to provide warnings because they conclude that they are not required to do so under Prop 65; a lack of warnings for a product does not mean that the product is free of listed chemicals at similar levels.

Why does Exmark include this warning?

Exmark has chosen to provide consumers with as much information as possible so that they can make informed decisions about the products they buy and use. Exmark provides warnings in certain cases based on its knowledge of the presence of one or more listed chemicals without evaluating the level of exposure, as not all the listed chemicals provide exposure limit requirements. While the exposure from Exmark products may be negligible or well within the "no significant risk" range, out of an abundance of caution, Exmark has elected to provide the Prop 65 warnings. Moreover, if Exmark does not provide these warnings, it could be sued by the State of California or by private parties seeking to enforce Prop 65 and subject to substantial penalties.

MAXIMIZE THE PERFORMANCE OF YOUR EXMARK MACHINE.

EXMARK® PREMIUM ENGINE OIL

Exmark now offers a family of engine oil viscosities to perform well in any environment. Each viscosity has the same synthetic formulation to give you what you need in punishing conditions. We designed each grade to the highest quality, making it ideal even for diesel applications. Coupled with Exmark Premium Fuel Treatment, we have the performance products to make your machine hum.

EXMARK PREMIUM ENGINE OIL SAE 30/10W-30

- Meets zero shear requirements of a straight grade SAE 30 as well as the cold temp properties of a 10W-30.
- Most versatile oil in the industry.
- Superior corrosion protection over conventional oil - even in corrosive, humid environments.

EXMARK PREMIUM ENGINE OIL SAE 10W-50

- Full synthetic formulation gives you peak performance. Don't settle for less.
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- Reduce friction & wear over standard mineral formulations.

EXMARK PREMIUM ENGINE OIL UTV FORMULATION

- 4-cycle high-temp formulation.
- Heavier viscosity, full synthetic, perfect for your UTV.

EXMARK PREMIUM ENGINE OIL SAE 20W-50

- Perfect for your big block engine, or any application in severe service.
- Same full synthetic formulation as all other Exmark Premium viscosities.
- Also effective for use in severe service small block engines.

EXMARK PREMIUM ENGINE OIL SAE 0W-40

- The perfect choice for when the weather turns cold or unpredictable, and your Exmark UTV has to perform.
- Commercial quality for severe service.
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- SAE 80W-90, designed to keep your UTV performing at its peak.
- Shear stable, hypoid gear lube.
- Includes a premium additive system to combat wear, oxidation, rust & corrosion.

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OPERATOR CONTROLLED DISCHARGE
SUN SHADE
TRASH CONTAINER
TURF STRIPER
ULTRA VAC COLLECTION SYSTEM
ULTRA VAC QUICK DISPOSAL SYSTEM

OUT-FRONT RIDING ACCESSORIES AND OPTIONS

CUSTOM RIDE SEAT SUSPENSION SYSTEM
DUAL-TAIL WHEEL
FLOOR PAN EXTENDER
HITCH KIT
LIGHT KIT
MICRO-MULCH SYSTEM
ROLL OVER PROTECTION SYSTEM (ROPS)
SNOW BLADE
SNOWBLOWER
SUN SHADE
TRASH CONTAINER
ULTRA VAC COLLECTION SYSTEM
ULTRA VAC QUICK DISPOSAL SYSTEM
WEATHER CAB

WALK-BEHIND ACCESSORIES AND OPTIONS

GRASS CATCHER
MICRO-MULCH SYSTEM
TURF STRIPER
STANDON

*Some accessories and options not available for some models.

Place Model No. and Serial No. Label Here (Included in the Literature Pack) or Fill in Below

Model No. _____

Serial No. _____

Date Purchased _____

Engine Model No. and Spec. No. _____

Engine Serial No. (E/No) _____

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Part No. 4505-615 Rev. A
Printed in Mexico

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