

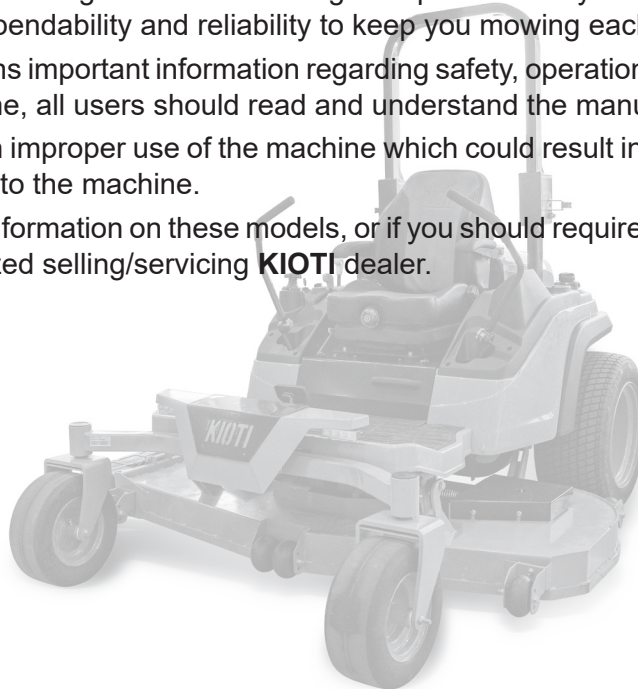
INTRODUCTION

Thank you for choosing the **KIOTI ZXD** series brand of zero turn mowers. Our products are designed to provide maximum performance, while being comfortable enough to operate all day. Additionally, they are durable and easy to service meaning dependability and reliability to keep you mowing each and every day.

The following manual contains important information regarding safety, operation, maintenance and adjustment. Before operating the machine, all users should read and understand the manual in its entirety.

Failure to do so may result in improper use of the machine which could result in personal injury to the operator, bystanders, and/or damage to the machine.

For questions or additional information on these models, or if you should require service for your **KIOTI** product, please contact your authorized selling/servicing **KIOTI** dealer.



DISCLAIMER

The specifications within this manual are subject to change without notice.

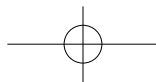
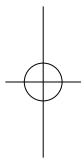
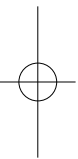
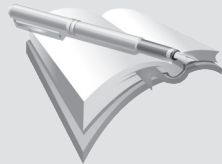




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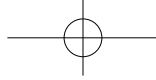


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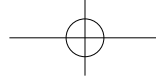


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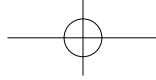


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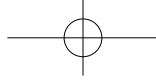
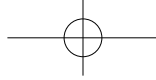







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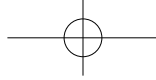
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SAFETY AND VEHICLE DAMAGE WARNING













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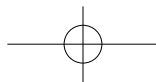
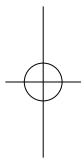
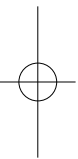
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|  DANGER | This indicates a hazardous situation which, if not avoided, will result in death or serious injury. |
|  WARNING | This indicates that a condition may result in harm, serious injury or death to you or other persons if the warning is not heeded. Follow the advice provided with the warning. |
|  CAUTION | This indicates that a condition may result in damage to your vehicle or its equipment if the caution is not heeded. Follow the advice provided with the caution. |
|  IMPORTANT | This mark indicates emphasis on notable characteristics of working procedures, and information about technology for easier operation. |
|  NOTE | This indicates that interesting or helpful information is being provided. |



SYMBOLS MARK

Various universal symbols have been used on the cluster and controls of your **KIOTI** mower. Below is a list of the symbols mark and their meanings.

| | | | |
|---|----------------------|---|-----------------------------|
|  | PTO ON (Engaged) |  | Operator Indicator |
|  | PTO OFF (Disengaged) |  | Preheat Indicator |
| F | Forward |  | Parking Brake Indicator |
| N | Neutral Position |  | Work Lamp Indicator |
| R | Reverse |  | Fuel Level Warning |
|  | High Speed |  | Engine Oil Pressure Warning |
|  | Low Speed |  | Coolant Temperature Warning |
| | |  | Charge Warning |





SAFETY PRECAUTIONS

1

1

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PRECAUTIONS BEFORE OPERATION

To ensure safe mower operation, be sure to read this manual completely and carefully, understanding all aspects of operation and safety precautions. Only use the machine in accordance with the safety guidelines within this manual.

The safety symbols such as danger, warning, and caution are displayed throughout the mower. Please follow the decal advisement when operating the mower.

NOTE

- Please read this manual carefully.

For best cutting performance, always mow with the throttle lever at the high speed or wide open position.



1. Please wear the appropriate work clothes. Avoid loose clothing and jewelry. Tie back long hair. Failure to adhere can cause safety issues during operation or maintenance of this machine.
2. Survey the area you plan to cut before operating the mower. Identify any safety hazards as well as areas unsuitable for safe mower operation.
3. Remove all hazards such as stones, wires, wood, large sticks and other

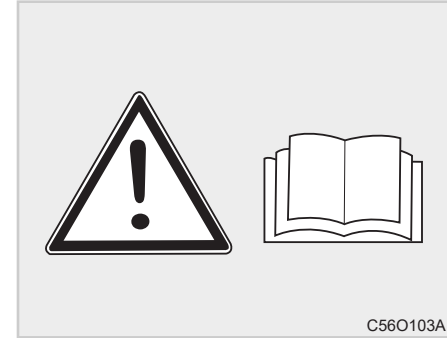
foreign objects from the mowing area before cutting. Make sure there are no people or pets in the mowing area that could be injured from debris ejected from the mower deck.

4. Always fill the fuel tank outdoors, never in-doors or inside enclosed trailers. Use a funnel or spout to prevent fuel spillage. Clean up any spillage before starting the machine. When refueling make sure you are in an open and well ventilated space as sparks may occur while refueling due to static electricity. Avoid refueling in enclosed areas or poorly ventilated areas as that can lead to personal and property damage from fire or explosion caused by fuel.
5. Use only approved fuel containers when storing fuel.
6. Equipment used for fueling must comply with the SAE J137 and/or ANSI/SAE S279 when driven on public roadways.



SAFE OPERATING PRACTICES OWNERS RESPONSIBILITY

7. Diesel fuel is harmful or fatal to the human body. Long term exposure to vapor may cause cancer or other diseases, so please wear protective equipment or avoid inhaling vapor.
8. Inspect the machine and attachments before each use to ensure they are in good working condition. If issues are found, do not operate until they are fixed or resolved.
9. Always keep the machine clean. Built up dust, oil and debris can cause a fire, leading to injury.
10. Always check tire pressure, engine oil level, and fuel level before operating.
11. Before refueling: Make sure the engine is off and has cooled off. Hot engine parts can potentially ignite spilled fuel.
12. Do not operate without the side discharge chute installed and in the down position, unless a grass catcher or mulch plate is installed.
13. Check the blade mounting bolts before each use to ensure proper tightness.



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If owner intends to loan or rent the machine to another party, it is the owner's responsibility to provide a copy of the manual and explain the safe operation guidelines as outlined in this manual. The following points should be covered:

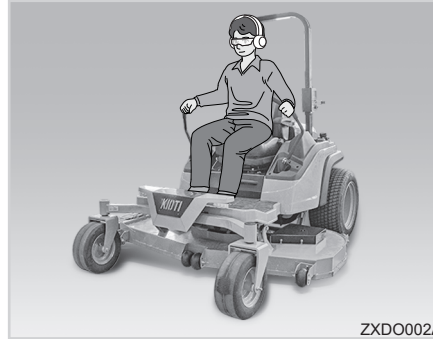
1. The Operators should be familiar with the safe operation of the machine, driver controls, and safety symbols.
2. All operators and mechanics need



OPERATING

to be trained, before operating the mower.

3. Do not allow unqualified or untrained people to operate or repair the equipment.
4. The following should never be allowed to operate this machine:
 - Those under the influence of alcohol or drugs.
 - Women that are pregnant.
 - Those under 18.
 - Those without driver's license.
 - Those who are fatigued, sick, or have a medical condition that may prevent normal operation.
5. Do not wear headphones to listen to music or audio while operating this machine.
6. Disclaimer: If damage or injury occurs to persons or property as a direct result of operator error, the operator and/or the owner is liable.



ZXDO002A

The safety of this machine depends on the Operator! Failure to adhere to the safety information contained within this manual may result in bodily injury or death. The ability to assess potential hazards and accident prevention are dependent on the training and awareness of the persons involved in the transport, operation and storage of this equipment. It is the owner's responsibility to make sure every operator is properly trained on the

safety information and the operation of this machine. The owner is liable for any damage to property, or injuries occurring to themselves or other people.

WARNING

- ***DO NOT operate this mower on steep slopes. To check if the slope is too steep, attempt to back the mower up the edge of the slope with the mower deck in the down position. If the wheels do not slip or loose traction, proceed as slow as possible with extreme caution.***

1. Only allow people that are proficient in operating and are familiar with safe driving to operate this mower.
2. Before starting the engine, make sure the PTO lever is in the OFF position and engage the parking brake.



3. If starting engine indoors, make sure the area is well ventilated so exhaust fumes can escape.
4. Only operate the mower in clear weather during the daytime or early evening with proper artificial lighting. Do not operate during rainy weather or during thunderstorms. Mowing in wet conditions will reduce the quality of the grass cut and can cause loss of traction.

NOTE

- If caught in a storm, stop the machine immediately and seek shelter.

5. Be careful not to touch hot parts with your body or foreign objects.

CAUTION

- **Engine parts during operation become very hot. Do not touch engine, muffler or moving parts. Make sure that these areas are kept free from foreign matter such as leaves or grass.**

6. Never carry passengers and do not operate the mower when children or pets are in the work area.
7. Be careful when approaching corners, shrubs, trees, or other objects that may obscure your vision.
8. Avoid excessive, sudden stops, as well as rapid accelerations, especially at high speeds. Failure to do so may cause loss of control, leading to damage or injury.
9. Avoid driving on steep banks with loose, eroded soil conditions or wet grass.

10. When working in groups, always communicate the work plan with the group to avoid safety issues.
11. When backing up, always turn your head and look backwards.
12. During operation: scan the ground ahead of you for obstructions, especially at row ends, near trees and other obstructions.
13. Never attempt to exit a mower in motion, unless your life is in danger and it is the only option. Stop the mower, turn the PTO off, and engage the park brake before exiting the machine.
14. To minimize risk of overturning, be sure to slow down when turning or operating on slopes or rough terrain.
15. Always hold the steering levers with both hands and place both feet on the machine's floor when driving.

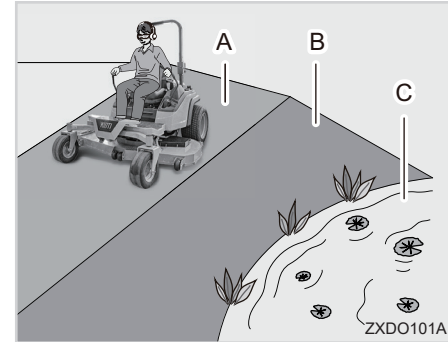


16. Do not operate the machine without the mower deck installed.
17. Do not mow grass in reverse.
18. If the mower chute becomes clogged, ensure the engine is off, the PTO is off, the steering levers are in neutral, the parking brake is set and the blades have come to a complete stop, before attempting to clear the discharge.
19. When using attachments, ensure the discharge of material does not affect bystanders while in operation.
20. In the event steering control is lost due to terrain or a mechanical issue, immediately bring the unit to a stop by returning the steering levers to neutral. Apply the parking brake, turn the PTO off and TURN OFF THE ENGINE. Be sure the machine is not moving and the blades have completely stopped rotating before dismounting and inspecting the machine or field conditions.

⚠ WARNING

- ***DO NOT use hands to dislodge a clogged discharge chute. Use a stick or similar item to remove clogged material only after the engine is turned off, PTO off, the steering levers are in neutral, the parking brake is set and the blades have stopped completely.***

DRIVING ON SLOPE



- (A) Safe Range (Slope less than 15 degrees)
 (B) Dangerous Range (Slope more than 15 degrees)
 (C) Water

⚠ WARNING

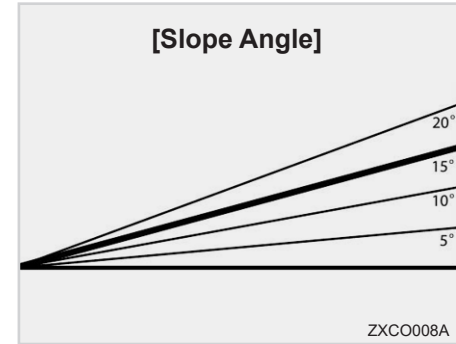
- ***DO NOT operate this mower on steep slopes. To check if the slope is too steep, attempt to back the mower up the edge of the slope with the mower deck in the down position. If the wheels do not slip or loose traction, proceed as slow as possible with extreme caution.***



1. Be careful when stopping or turning mowers on a slope, as it may cause loss of traction or overturning. It is the responsibility of the operator to use caution. Drive safely on a slope.
2. When working on a slope, pay additional attention to traction. Should the machine begin to lose traction, slide or show any signs of erratic control, carefully maneuver the mower off the slope. Should the machine lose traction and stop on a slope, return the steering levers to neutral, apply the park brake, turn the PTO off and **TURN OFF THE ENGINE**. Carefully dismount the mower after the blades have stopped rotating and inspect the conditions before determining if the mower can be operated further. In extreme instances, assistance may be required to safely maneuver the mower off the slope.
3. Driving on wet grass over steep slopes may cause loss of traction and control. Slipping on or around

ridges, ditches, steep banks, and wheels falling into water can cause loss of control or overturning, which can result in severe injury or death. Determine if the area can be safely navigated with the mower before attempting to cut.

4. Do not operate mower on a slope when wet, especially slopes greater than 15 degrees. Failure to adhere may cause loss of control.
5. Remove obstacles such as stones and fallen branches in the work area or mark them. Always be on the look out for obstacles, tall grass and/or weeds can hide obstacles.
6. Use extra caution when operating the mower around drop offs, ditches, steep banks or water. Do not try to work too closely to edges as this could lead to a loss of control or rollover.



1

7. Always slow down when changing directions, especially on slopes, rough, tough, or uneven terrain.
8. Avoid sudden accelerations when traveling uphill as this may cause the mower to tilt backwards and lose control.
9. Keep in mind that wet grass or steep slopes can cause the mower to lose traction.



10. Operating on sloped, rough terrain at high speeds can cause the mower to overturn. Be familiar with the area and its characteristics before operating the mower.
11. Always avoid suddenly starting or stopping on slopes. If the tire loses its grip, disengage the PTO and slowly pull out of the slope.
12. Use caution when operating machine on inclines when a grass catcher is installed.
13. Survey the cutting area to identify holes, rocks, roots and other hidden hazards on the terrain. Keep away from any steep slopes or drop-offs. Be aware of any overhead obstructions, such as low hanging tree limbs or building overhangs.
14. Disengage the PTO switch to stop the blades from spinning before backing the mower up in reverse. Do not mow in reverse unless it is absolutely necessary, move slowly and maintain a constant lookout for hazards. Be sure to survey the area before operating in reverse.
15. Disengage the PTO switch to stop the blades from spinning before crossing side walks, roadways or gravel drives.
16. In the event of hitting an obstacle during cutting, stop the machine immediately disengage the PTO, apply the parking brake and TURN OFF THE ENGINE. After the blades have stopped rotating, inspect for damage to the cutting blades and mower. If damage has occurred, repair the damage before restarting and operating the machine.



WARNING

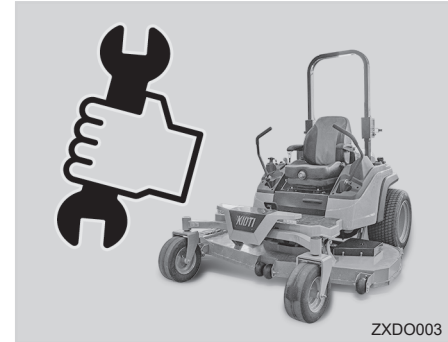
- ***Stay off slopes too steep for safe operation. To check if the slope is too steep, attempt to back the mower up the edge of the slope with the mower deck in the down position. If the wheels do not slip or lose traction, proceed as slow as possible with extreme caution. Operate the machine smoothly with no sudden starts or turns.***
- ***Under no circumstances should this machine be driven on slopes greater than 15 degrees.***

**⚠ WARNING**

- **Always reduce speed when operating on slopes, turning and when traveling over wet or slick surfaces.**
- **Do not operate near embankments, ditches or drop-offs. Failure to adhere may cause a roll over.**
- **Use caution when loading and unloading the machine onto trucks or trailers. Back up the ramp to load and drive down the ramp forward to unload.**
- **Use only an approved full width loading ramp with an angle no greater than 15 degrees.**
- **No untrained personnel should be permitted to operate, load or unload the machine.**
- **Do not tow or haul anything with this mower.**

PARKING

1. Before dismounting: Disengage the PTO, place all control levers in the neutral lock position, set the parking brake, stop the engine.
2. Never leave the vehicle without setting the parking brake, disengage the PTO and shutting off the mower.
3. The mower should be parked on a flat level surface, however, if parking on a slope is unavoidable, chock the wheels appropriately after setting the parking brake.
4. If a malfunction occurs while on a public roadway, pull off the roadway to a safe area away from traffic to make repairs.

MAINTENANCE

1. Before servicing, make sure the PTO is in the off position, the control lever levers are in "N", the parking brake is set, and the engine is turned off.
2. Do not smoke while working around the battery or when refueling your machine. Keep all sparks and flames away from the battery and fuel tank. The battery presents an explosive hazard because it gives off hydrogen and oxygen especially when recharging.



3. Before servicing any engine or mechanical mower parts, allow the mower to adequately cool down after operation.
4. Before working on the mower electrical system, first disconnect the negative (-) battery cable from the battery terminal post.
5. For jump starting a dead battery, read and follow all of the instructions in chapter 5. (Ref to page 5-8)
6. Tire mounting should only be done by qualified professionals, with the proper equipment.
7. Maintaining correct tire pressure is important for the life of your tires. Do not inflate the tires above the recommended pressure specified in the owner 's manual. (Ref to page 4-12)
8. Securely support the vehicle when changing wheels.
9. No alterations or modifications should be made to the machine. Alterations or modifications may adversely affect function and/or performance of the unit, cause safety issues, and void the manufacturer warranty.
10. Help **KIOTI** protect the environment. When changing fluids, make sure that they are contained and disposed of properly. Be sure to observe all relevant regulations for the handling and disposal of engine oil, trans-axle fluid, fuel, filters, and batteries.
11. Do not dispose of waste fluids on the ground, into storm drains or natural bodies of water. Find an appropriate way to dispose of fluids in an environmentally friendly manner or recycle it through the recycling center.
12. When disposing of engine oil, transmission oil dispose of it in a place equipped with disposal facilities. Failure to observe this may cause environmental pollution.
13. Reinstall the covers that have been removed during inspection, maintenance, etc. after work has been completed.
14. To avoid injuries when inspecting the condition of the mower blades, wear gloves or cover the blade before touching. If damage is found, replace the blade. Do not attempt to straighten bent blades, this will affect the performance and strength of the blade.
15. Please keep first aid kits and fire extinguishers nearby to in case of emergency.
16. Do not attempt to adjust or repair the engine during operation.
17. Never perform maintenance to this machine while the engine is running. Keep hands, feet, and loose clothing away from all moving parts.



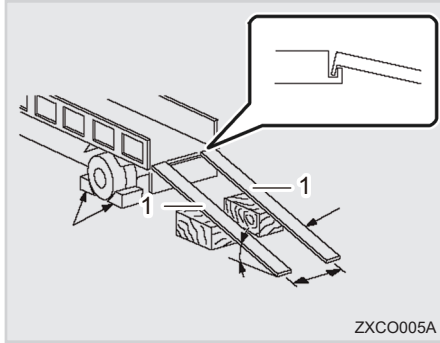
18. Before performing maintenance or cleaning, make sure the machine is on a level, safe surface, the PTO switch is in the off position, the steering levers are in the neutral position, the parking brake is set and the engine is turned off.
19. Disconnect the negative (-) battery terminal before proceeding with any repairs.
20. Do not change any engine settings, especially the governor settings.
21. Keep the mower deck, spindles, engine and muffler free of lawn debris, excessive oil and dirt to reduce the chance of a fire hazard.
22. Use care when checking the cutting blades. Do not touch the blades directly, wear safety gloves or use a blade buddy to hold the blades during removal.
23. Only Replace a worn or bent blade. NEVER straighten or weld a worn blade.
24. Use jack stands to support the machine or components when required. NEVER use a jack alone to support the machine while performing work.
25. NEVER use your hands to inspect fluid lines (gas lines, hydraulic lines, oil lines) for leaks. Fluid under pressure can puncture the skin and lead to serious health issues.
26. Always wear eye and hand protection when servicing or making repairs to the mower.

STORING

1. After daily operation, clean unit and store indoors as much as possible.
2. For other detailed storing methods and precautions, see Storage and Disposal in chapter 7.
3. Let the engine cool completely before storing.
4. DO NOT store machine near open flames.
5. DO NOT store fuel near flames or drain the fuel indoors.
6. Charge batteries in open, well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting battery. Wear protective clothing and eye protection when handling a battery.



TRANSPORTING



(1) Loading Ramps

1. Check the width of the cargo bed of a transporting vehicle or trailer.
2. Set ramps to the transporting vehicle firmly.
3. The length of the loading ramps should be at least four times the height of the loading bed.
4. It is recommended to back the mower onto the transporting vehicle and drive the mower OFF in the forward direction.

5. Be sure to keep the speed down when loading/unloading.
6. After loading the mower onto the transport vehicle, secure the mower first by setting the parking brake, then tying down to the transport with chains or straps. Utilize the tie down points built into the mower to not damage the mower during transit.
7. During vehicle transporting, pay attention to motor vehicle laws, mark the transport with the applicable decals or markings.
8. Be sure to Confirm the overall height of the vehicle with the mower loaded, make sure that does not exceed the maximum height for travel under bridges or through tunnels.

USING THE ROPS



(1) ROPS

1. ROPS (Roll Over Protective Structure) is equipped to protect driver when the mower is rolled over. When the ROPS is folded in the down position, there is nothing to protect the operator during a vehicle roll-over.

Lower the ROPS bar only when absolutely necessary. Do not wear the seat belt when the ROPS is in the DOWN position. Always wear the seat belt when the ROPS is in the UP position.



2. AROPS should never be modified by welding, grinding or cutting, as this can weaken the ROPS structure. If any components of the ROPS unit is damaged, it must be replaced. If the ROPS unit is removed or loosened for any reason, the parts should be fitted back to their original positions and all bolts should be properly torqued.
3. In case of an emergency, make sure that the seat belt can be released quickly.
4. Make sure that the ROPS does not come into contact with branches or wires when passing under them.
5. Never repair a damaged ROPS, replace it with OEM **KIOTI** parts. Contact your local **KIOTI** dealer before replacing.
6. Any accessories, modifications or attachments added to the ROPS must be approved by **KIOTI**.

7. It is recommended to inspect the condition of the seat belt before each use for signs of damage. Belts showing signs of cuts, fraying, extreme wear, stiffness, abrasion to the belt webbing or damage to the latch, buckle or hardware should be replaced before the machine is used.

**WARNING**

- ***Failure to properly inspect and maintain the seat belt system can lead to serious injury or death.***

**WARNING**

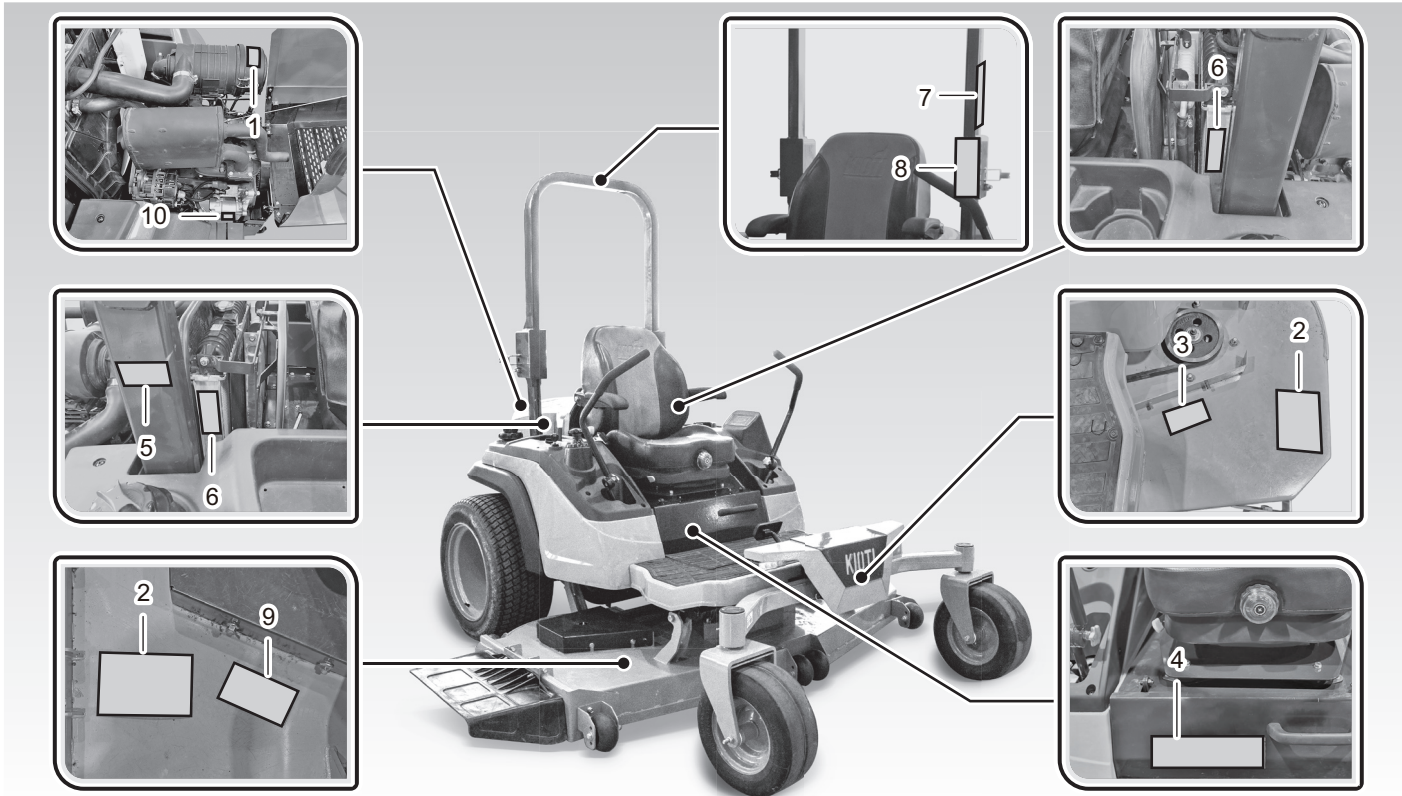
When the ROPS is folded in the down position, there is nothing to protect the operator during a vehicle roll-over.

- ***Lower the ROPS bar only when absolutely necessary.***
- ***DO NOT wear the seat belt when the ROPS is in the DOWN position.***
- ***ALWAYS wear the seat belt when the ROPS is in the UP position.***
- ***Check the area before operating for proper overhead clearance.***
- ***DO NOT come in contact with any overhead object with the ROPS bar.***

1



SAFETY DECAL MAINTENANCE DECAL MOUNTING LOCATION







ZXD0004A

DECALS


1. Part No.: Z2131-95241



2. Part No.: MM605-12434



| ⚠ DANGER | |
|---|--|
|  | STAND CLEAR/THROWN OBJECTS <ul style="list-style-type: none"> • DO NOT stand near mower when in operation. • Clear area of bystanders and objects that may be thrown. |
|  | NO RIDERS <ul style="list-style-type: none"> • DO NOT ALLOW ANYONE To ride on the mower. |
|  | ROTATING BLADES <ul style="list-style-type: none"> • DO NOT put hands or feet under or into mower when engine is running. |
|  | DO NOT OPERATE MOWER <ul style="list-style-type: none"> • Without grass discharge deflector in place or entire grass catcher installed. |
| Failure to comply could result in death or serious injury. | |

3. Part No.: MM605-12413



| ⚠ WARNING | |
|---|--|
|  | <ul style="list-style-type: none"> • Moving parts under this cover. • Never open cover while operating. Failure to comply could result in death or serious injury. |

1

4. Part No.: Z2131-95201

| ⚠ WARNING | ⚠ WARNING | ⚠ WARNING |
|--|---|--|
|   |  |  |
| BEFORE OPERATING <ul style="list-style-type: none"> • Read and understand the Operator's Manual & labels. • Be sure machine is in safe operating condition. • Move control levers to neutral lock, parking brake to ON. • Set PTO switch to OFF. • Fasten SEAT BELT. BEFORE LEAVING SEAT <ul style="list-style-type: none"> • Be sure machine is in safe operating condition. • Move control levers to neutral lock, parking brake to ON. • Set PTO switch to OFF. | TO AVOID SERIOUS INJURY OR DEATH: <ul style="list-style-type: none"> • Mow across slopes (Not up and down.) • Use extreme caution when operating on slopes. • Loss of traction may occur when operating on slopes. • Drive slowly on slopes. • Do not operate on wet slopes. • Avoid sudden starts and stops. • Execute turns slowly. | TO AVOID SERIOUS INJURY OR DEATH: <ul style="list-style-type: none"> • Read and understand the operator's manual before operation. • Do not operate this machine unless you are trained. • Before allowing other people to use the machine, have them read the operator's manual. • Check the tightness of all nuts and bolts regularly. • Remove objects that could be thrown by the blade. • Do not operate the machine when children and/or others are around. • Never carry passengers under any circumstances. • Keep safety devices (guard, shields, and switches) in place and working. • This machine is not for street or highway use. • Securely support the machine and implement before working underneath. • Replace labels and Operation and Safety Manual if lost or damaged. |

5. Part No.: TC26-0388


| ⚠ WARNING | |
|---|---|
|  | <ul style="list-style-type: none"> • Avoid flames and sparks. • STOP engine while refueling.  ONLY use diesel. (ULTRA LOW SULFUR FUEL ONLY) <small>TC26-0388A</small> |

6. Part No.: T4625-52351



7. Part No.: Z2131-95321

▲ WARNING



When the ROPS is folded in the down position, there is nothing to protect the operator during a vehicle roll-over.

Lower the ROPS bar only when absolutely necessary.

DO NOT wear the seat belt when the ROPS is in the DOWN position.

ALWAYS wear the seat belt when the ROPS is in the UP position.

Operate the machine smoothly, no sudden turns, starts, or stops.

Check the area before operating for proper overhead clearance.

DO NOT come in contact with any overhead object with the ROPS bar.

Z2131-95321

8. Part No.: TD26-1009

▲ WARNING

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.


- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65warnings.ca.gov/diesel

TD26-1009

9. Part No.: MM605-12422

▲ WARNING



SHIELD MISSING/OPEN DO NOT OPERATE

Replace or close shield before operating machine. Failure to comply could result in death or serious injury.

10. Part No.: T2555-52332

▲ DANGER

- Start engine only from operators seat, If safety start switch is bypassed engine can start with transmission in gear.
- Do not connect or short across terminals on starter solenoid.

Starting in gear causing runaway can result in serious injury.

T2555-52331



DECAL MAINTENANCE

Safety decals are attached to the mower for safe operation. Make sure to follow the instruction on the decals as well as the following instructions:

1

CAUTION

- **Keep the decals clean and intact.** If any decal is dirty, wash it with soap and dry with a soft cloth.
- **Never use a solvent, such as a thinner or acetone, since it can ruin the decals.**
- **Do not spray high-pressure water directly onto the decal.** The decal may be damaged.
- **If a decal is damaged or lost, contact your local KIOTI dealer immediately to install a new decal.**
- **When applying a decal, clean the mounting surface first and attach a new decal in the correct position, press gently to remove air bubbles.**
- **If a decal is attached to a component to be replaced, replace the decal as well.**



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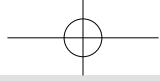


ABOUT SERVICE

| | |
|---|------------|
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| ENGINE SERIAL NUMBER..... | 2-2 |
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| SERVICING ENGINE AND DRIVE TRAIN COMPONENTS | 2-4 |
| GENUINE PARTS..... | 2-4 |

2

2



VEHICLE IDENTIFICATION NUMBER MOWER SERIAL NUMBER



(1) Model and Serial Number Plate

The serial number is located at the upper left part of the main frame on the front wheel bracket.

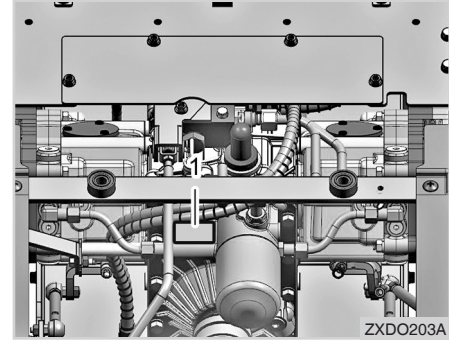
ENGINE SERIAL NUMBER



(1) Engine Serial Number

The serial number is located at the right side of the engine.

TRANSMISSION NUMBER



(1) Transmission Serial Number

The serial numbers is located on HST filter of Transmission.



SERVICE

Your local **KIOTI** dealer has the right service solutions for all of your **KIOTI** products and can provide the correct methods for service and maintenance. We recommend you contact your authorized **KIOTI** dealer for all repairs. Use only approved **KIOTI** service parts from an authorized dealer.

NOTE

- The replacement of any parts on this machine by any other manufacturer other than original **KIOTI** brand parts may adversely affect the performance, safety or longevity of this machine.
- To maintain optimal performance, always use **KIOTI** genuine parts.

In case of mechanical trouble, refer to “Troubleshooting” in chapter 8 of this manual. If the problem cannot be corrected, please contact your nearest authorized **KIOTI** dealer.

► INFORMATION REQUIRED BEFORE CONTACTING A DEALER

- Model and product serial number.
- In case of engine, the engine serial number.
- Circumstances of breakdown. (Work performed at time of failure)
- Other information in as much detail as possible surrounding the circumstances of the breakdown.

SUPPLYING SERVICE PARTS

Service parts for this machine are available through your local authorized **KIOTI** dealer. When it comes to special parts during the service term, please contact your dealer ahead of time to confirm parts availability, to avoid downtime of the machine.



2-4 ZXD SERIES MOWER

SERVICING ENGINE AND DRIVE TRAIN COMPONENTS

The detail service and repair of the engine, hydraulic pumps and gearboxes are not covered in this manual. Any of these components needing service, especially during the limited warranty period, should only be performed by your authorized **KIOTI** dealer. Any unauthorized work performed during the limited warranty period may void the warranty.

GENUINE PARTS

KIOTI genuine (OEM) parts and fluids pass the strictest standards for quality and performance. Please use only genuine **KIOTI** parts for safety and longevity.



SPECIFICATIONS

SPECIFICATIONS **3-2**

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 SAE FASTENER TORQUE CHART 3-4

 METRIC FASTENER TORQUE CHART 3-5

3

3



SPECIFICATIONS

| ITEM | | ZXD61 | ZXD72 | REMARKS |
|------------------|-----------------------------------|--------------|---------------|--------------|
| ENGINE | Engine Gross | HP (kW) | 24.5 (18.3) | ← |
| | Displacement | cc | 1,233 | ← |
| | Rated revolution | rpm | 3,000 | ← |
| | Fuel Tank Capacity | L (US gals.) | 65 (17.1) | ← |
| TRANS MISSION | Type | | 2HST | ← |
| | Parking Brake | | Wet Disc | ← |
| PTO | PTO revolution | rpm | 2,538 | ← |
| | Type | | Ind./wet disc | ← |
| DIMENSION | Overall Length | mm(in.) | 2,258 (88.9) | 2,328 (91.7) |
| | Overall Width (W/O Mower deck) | mm(in.) | 1,515 (59.6) | ← |
| | Overall Height | mm(in.) | 2,092 (82.4) | ← |
| | Wheel base | mm(in.) | 1,440 (56.7) | 1,510 (59.4) |






| ITEM | | ZXD61 | ZXD72 | REMARKS |
|--------------|---------------------|--------------|---------------|----------------|
| TIRE SIZE | Front | 15 X 6.5-8 | ← | Semi-pneumatic |
| | Rear | 26 X 12.0-16 | ← | Turf |
| GROUND SPEED | Forward | km/h(mph) | 0~17.7(11) | ← |
| | Reverse | km/h(mph) | 0~11.5(7.1) | ← |
| MOWER DECK | Cutting Width | mm(in.) | 1,550 (61) | 1,829 (72) |
| | Cutting height | mm(in.) | 25~127 (1~5) | ← |
| | Blade tip velocity | m/s(fpm) | 96 (18,909) | 94 (18,582) |
| | Number of blades | | 3 | ← |
| | Discharge direction | | Side | ← |
| | Lift System | | Hyd. Cylinder | ← |
| WEIGHT | | kg(lbs) | 875 (1,929) | 898.2 (1,980) |

※ The specifications are subject to change without notice.

TORQUE TIGHTENING CHART SAE FASTENER TORQUE CHART

SAE FASTENER TORQUE CHART

Note : Use these torques, unless special torques are specified. Values are for UNC and UNF thread fasteners, plated or unplated as received from supplier. Fasteners can be dry or lubricated with normal engine oil.
Values do not apply if graphite, moly-disulphide or other extreme pressure lubricant is used.

| SAE Grade | 2 | | | | 5 | | | | 8* | | | |
|--|---|------|------|------|--|------|------|------|---|------|------|------|
| Bolt head identification (see note 1) |  | | | |  | | | |  | | | |
| Bolt Size | lb-ft | | | | lb-ft | | | | lb-ft | | | |
| | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| 1/4 | 5 | 6 | 7 | 8 | 9 | 11 | 12 | 15 | 12 | 15 | 16 | 20 |
| 5/16 | 10 | 12 | 14 | 16 | 17 | 20.5 | 23 | 28 | 24 | 29 | 33 | 39 |
| 3/8 | 20 | 23 | 27 | 31 | 35 | 42 | 48 | 57 | 45 | 54 | 61 | 73 |
| 7/16 | 30 | 35 | 41 | 47 | 54 | 64 | 73 | 87 | 70 | 84 | 95 | 114 |
| 1/2 | 45 | 52 | 61 | 70 | 80 | 96 | 109 | 130 | 110 | 132 | 149 | 179 |
| 9/16 | 65 | 75 | 88 | 102 | 110 | 132 | 149 | 179 | 160 | 192 | 217 | 260 |
| 5/8 | 95 | 105 | 129 | 142 | 150 | 180 | 203 | 244 | 220 | 264 | 298 | 358 |
| 3/4 | 150 | 185 | 203 | 251 | 270 | 324 | 366 | 439 | 380 | 456 | 515 | 618 |
| 7/8 | 160 | 200 | 217 | 271 | 400 | 480 | 542 | 651 | 600 | 720 | 814 | 976 |
| 1 | 250 | 300 | 339 | 406 | 580 | 696 | 787 | 944 | 900 | 1080 | 1220 | 1464 |
| 1 1/8 | | | | | 800 | 880 | 1085 | 1193 | 1280 | 1440 | 1736 | 1953 |
| 1 1/4 | | | | | 1120 | 1240 | 1519 | 1681 | 1820 | 2000 | 2468 | 2712 |
| 1 3/8 | | | | | 1460 | 1680 | 1980 | 2278 | 2380 | 2720 | 3227 | 3688 |
| 1 1/2 | | | | | 1940 | 2200 | 2631 | 2983 | 3160 | 3560 | 4285 | 4827 |

Note : Bolt head identification marks as per grade. Manufacturing marks will vary. * Thick nuts must be used with Grade 8 bolts.

**METRIC FASTENER TORQUE CHART**

| METRIC FASTENER (ISO) TORQUE CHART | | | | | | |
|--|-------------|-------------|-------------|-------------|--|-------------|
| Note : Use these torques, unless special torques are specified. Values are for UNC and UNF thread fasteners, plated or unplated as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, moly-disulphide or other extreme pressure lubricant is used. | | | | | | |
| ISO Class No. | 8.8 | | 10.9 | | 12.9 | |
| Bolt head identification (see note 1) | 8.8 | | 10.9 | | 12.9 | |
| Bolt Size | Nm | | Nm | | Nm | |
| | Min. | Max. | Min. | Max. | Min. | Max. |
| M4 | 3 | 4 | 4 | 5 | Because of the low ductility of these fasteners, the torque range is to be determined individually for each application. As a general rule, the torque ranges specified for grade 10.9 fasteners can be used satisfactorily on 12.9 fasteners. * M14 is not a preferred size. | |
| M5 | 6.5 | 8 | 9.5 | 11 | | |
| M6 | 10.5 | 12 | 15 | 17.5 | | |
| M8 | 26 | 31 | 37 | 43 | | |
| M10 | 52 | 61 | 73 | 87 | | |
| M12 | 90 | 107 | 125 | 150 | | |
| *M14 | 144 | 172 | 200 | 245 | | |
| M16 | 217 | 271 | 310 | 380 | | |
| M20 | 434 | 515 | 610 | 730 | | |
| M24 | 675 | 815 | 1050 | 1275 | | |
| M30 | 1250 | 1500 | 2000 | 2400 | | |
| M36 | 2175 | 2600 | 1120 | 1240 | | |

Note : Bolt head identification marks as per grade. Manufacturing marks will vary.



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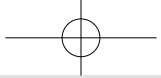


MOWER CONTROLS LAYOUT

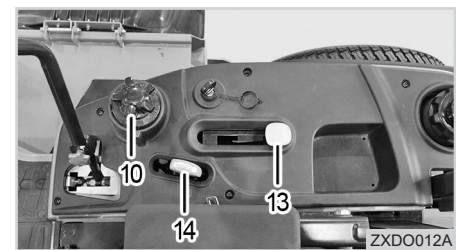
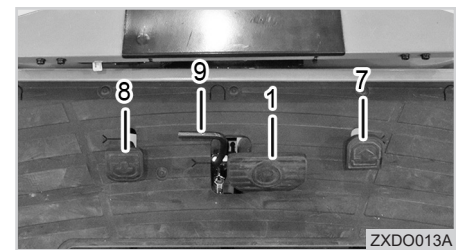
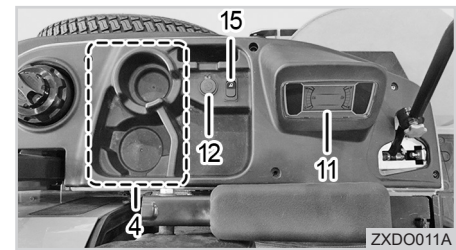
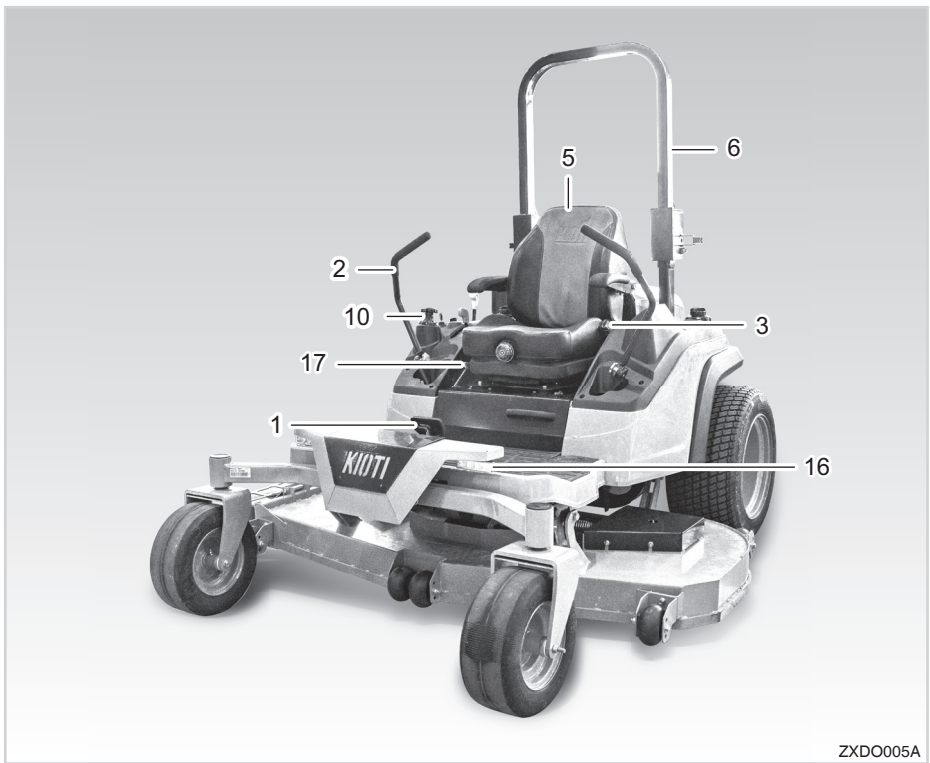
4

4

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EXTERIOR VIEW



- (1) Brake Pedal
- (2) Steering Levers
- (3) Seat Belt
- (4) Cup Holder
- (5) Seat

- (6) ROPS
- (7) Deck Lift Pedal RH (up)
- (8) Deck Lift Pedal LH (down)
- (9) Parking Brake Lock Pedal
- (10) Deck Height Dial

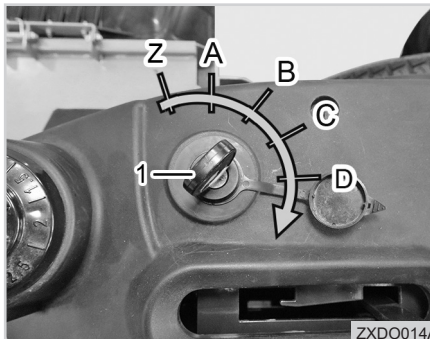
- (11) Display Panel
- (12) DC Power Outlet
- (13) PTO Lever
- (14) Throttle Lever
- (15) Work Lamp Switch

- (16) Work Lamp
- (17) Seat Release Lever

LONG-TERM STORAGE

1. Store it away from direct sunlight and rain. Keep it in a well-ventilated area.
2. Drain fuel from the fuel tank and evaporator.
3. Keep the deck lowered down for long-term storage.
4. Depress the brake pedal and engage the brake pedal lock lever.
5. Remove the battery and keep it in a dark and dry place.
6. Remove the ignition key and hoard it.

DESCRIPTION OF OPERATING SYSTEM KEY SWITCH



(1) Key Switch
 (Z) Pre-heat (A) Stop (B) ACC
 (C) ON (D) START

To start the engine, insert the ignition key into the switch and turn it clockwise to the START position. There are five positions on the key switch: Pre-heat, OFF, ACC, ON and START

- **Pre-heat (Z)**
 The position “Z” indicates the “manual preheat”. This position is a self-return type, so the key should be held there while pre-heating.

The pre-heating indication lamp on the dash board will turn on at the same time. **Pre-heating more than 30 seconds consecutively can reduce the preheat system’s life.**

- **OFF (A)**
 When the key switch is in position "A", the engine and all electrical devices in the vehicle are turned off.
- **ACC (B)**
 When the key switch is turned to the position “B”, USB socket can be operated.
- **ON (C)**
 The position "C" indicates the "ON" position. As soon as the key switch is turned to this position, the oil pressure warning lamp and battery charge warning lamp comes on. (These turn off automatically.)



 **CAUTION**

- Stop the engine immediately if the oil pressure warning lamp does not go off after the engine is started. The engine may be severely damaged.
- If the battery charge warning lamp does not go off after the engine is started, check the electrical systems, such as the alternator, for damage. Continuing to use the engine under this condition can discharge the battery or damage other electrical devices.

 **NOTE**

- The ignition key is not directional and can be inserted in any direction.
- Be careful not to leave the ZTR unattended as the same key is used for Diesel ZTR. It can be stolen.

 **CAUTION**

Caution before starting Engine.

1. Under normal condition, warning lamp turns on about one second at the time of Key-On, and then turns off automatically.
2. In case of warning lamp flashing, confirm flashing pattern. Refer to owners manual troubleshooting section to help with error diagnosis.
3. Be sure to turn key to off position when servicing the unit and disconnect the negative (-) battery cable.
4. Reconnect the battery cable when service is complete and turn the key to the on position to see if the issue has been corrected.

Do not operate Engine except in case of emergency.

 **NOTE**

- The pre-heating operation will automatically be activated in this position "C" (ON). The automatic preheat operation is indicated by the glow plug indicator. Make sure to preheat the engine until the glow plug indicator goes off (Approx. 8 seconds but depending on ambient temperature.) in cold weather before turning key switch to start position.

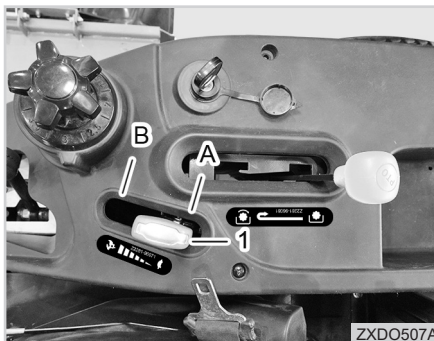
•  **START (D)**

The position "D" indicates "Start". As soon as the engine is started, release the key then the key will return to the position "C".

⊕ IMPORTANT

- To start the engine, place **STEERING LEVERs** in the neutral gates position, PTO lever in the **OFF** position and engage the parking brake. Then, sit on the seat and turn the key switch to the **START** position.

THROTTLE LEVER

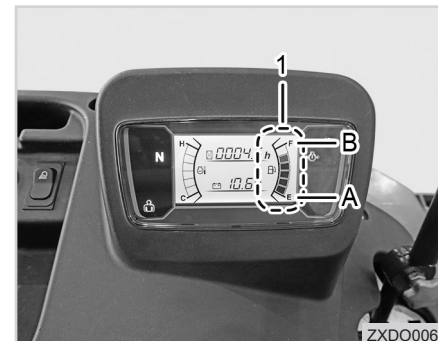


(1) Throttle Lever

(A) : Low Speed (B) : High Speed

Move the engine speed lever to **LOW SPEED**() or **HIGH SPEED**() to adjust the engine RPM's.

FUEL GAUGE



(1) Fuel Gauge

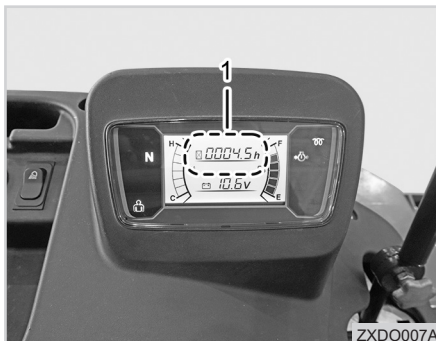
(A) Empty (B) Full

You can visually check the amount of fuel without removing the fuel cap. If you continue to operate while you are running low on fuel, air may enter the fuel supply, so be sure to refill before the gauge reaches the empty position.

NOTE

- Make sure to use only correct fuel as the engine can be damaged if unqualified fuel is used.
- Use fuel for winter season in cold weather to start the engine easier.
- The gauge reading can move on a hill or curve as fuel slopes in the tank.

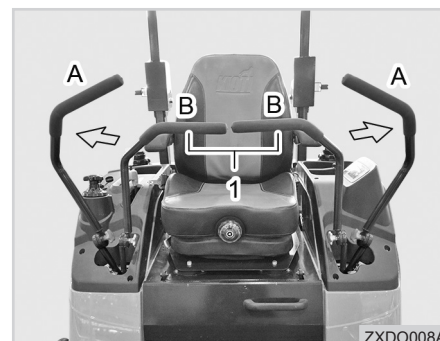
HOUR METER



(1) Hour Meter

The hour meter indicates the total run time of the machine.

STEERING LEVERS



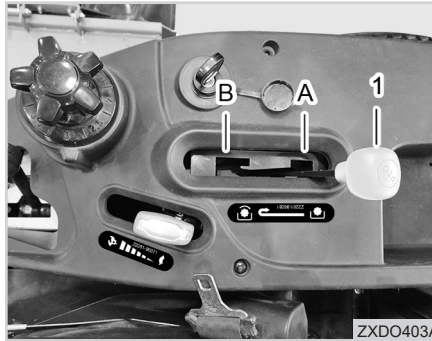
(1) Steering Levers
(A) Neutral Lock (B) Neutral

The steering levers are used together to propel the mower forwards or backwards, to turn, and to accelerate or brake.

Turn to section 5-11 for instructions.

**CAUTION**

- Do not move steering levers from forward to reverse or reverse to forward position rapidly. Sudden direction changes could cause loss of control or damage to the machine or property.
- Operate at medium speed until you are used to operating the machine.

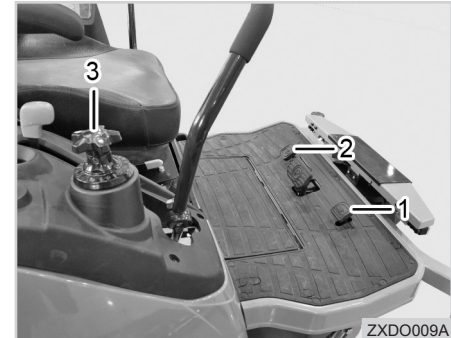
PTO LEVER

(1) PTO Lever
(A) Disengage (B) Engage

Push the lever towards the front of the unit and then push it outboard so it is captured by the retention tab to engage the PTO.

NOTE

- When disembarking the unit the PTO will need to be disengaged and the parking brake will need to be applied to prevent the unit from shutting off.
- Do not engage the blades until you are ready to start mowing.

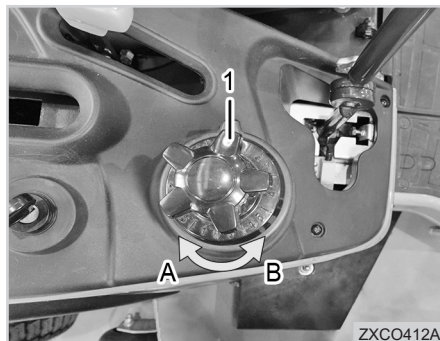
DECK LIFT PEDAL

(1) Deck Lift Pedal (RH)
(2) Deck Lift Pedal (LH)
(3) Deck Height Dial

The deck is raised and lowered using the pedals pictured above. Depressing the right pedal raises the deck and the left pedal will lower the deck. Be sure that when lowering the deck there is nothing obstructing the descent of the deck. Lowering the deck has potential to cause bodily harm or damage to objects that are in the pathway of the descending desk.

In order to set the cutting height of the mower deck, depress the deck lift pedal, then adjust the cutting height with the deck height dial.

CUTTING HEIGHT DIAL

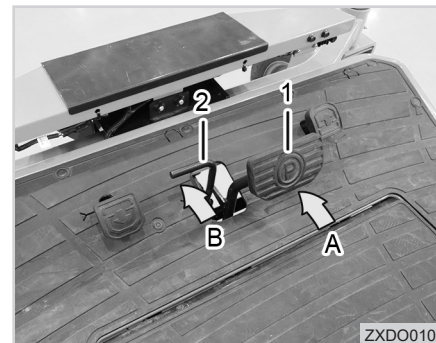


(1) Deck Height Dial
(A) Longer (B) Shorter

With the deck raised in the highest position, Use the Deck Height Dial to adjust the cutting height of the mower blades. Turn the dial to CW(A) for longer the height and to CCW(B) for shorter the height. Use the numbers on the dial as a guide. It is recommended to use a higher cutting height when cutting tall grass and rough terrain, and a lower height when mowing flat, soft low grass.

It is recommended to raise the deck while driving the mower without mowing to reduce the possibility of the deck coming into contact with unintended objects.

PARKING BRAKE PEDAL



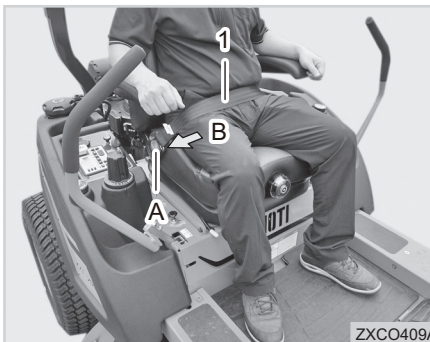
(1) Brake Pedal
(2) Parking Brake Lock Pedal
(A) Depress (B) Engaged

To engage the parking brake, depress both the brake pedal and the parking brake lock pedal at the same time. Release the brake pedal ensuring that it is retained by the park brake lock. Then release the parking brake lock pedal. To verify the parking brake has been engaged you can turn the mower key to the "On" position and verify the park brake light is illuminated.

SEAT BELT

⚠ CAUTION

- If someone gets off the seat without the parking brake being engaged, the unit will shut off.



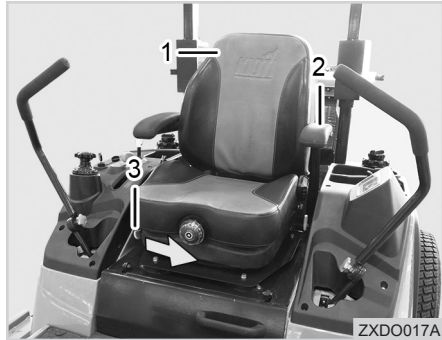
(1) Seat Belt
(A) Release Button (B) Release

Seat belts are self-retracting. When latching the seat belt, ensure that you hear and feel a click when inserted. Gently pull on the seatbelt to make sure it is securely latched.

⚠ WARNING

- The seat belt should only be used to secure the operator when the ROPS (Roll Over Protection System) is in the upright position. Do NOT wear the seat belt when the ROPS is in the folded down position. Do not operate the mower if a ROPS is not installed.

SEAT



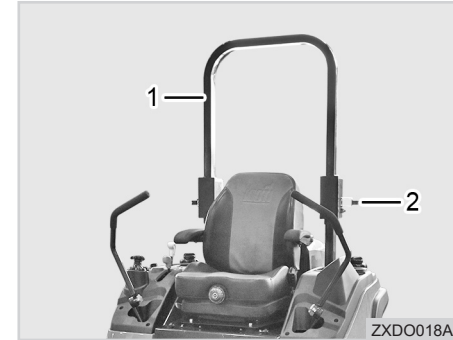
(1) Seat (2) Arm Rest
(3) Seat Adjustment Lever

To adjust the seat back and forth, push the seat adjustment lever at the right, bottom, front of the seat inboard and move the seat to the desired position and release the lever. Continue to slide the seat forward or backward to ensure the seat is locked in position.

WARNING

- *Only adjust the seat when the machine is stopped.*
- *When the seat is adjusted to the desired position, push gently on the seat deck and backrest to ensure it has locked in place.*
- *The operator should always be the only passenger on the mower.*

ROPS



(1) ROPS (2) Folding Fix Pin

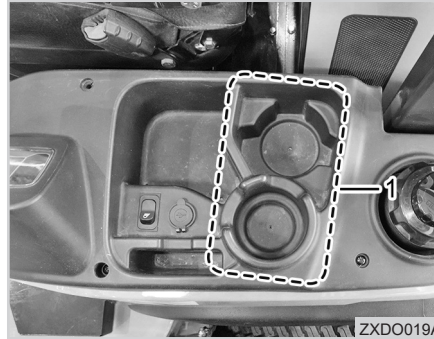
The ROPS (Roll Over Protective System) is an integrated safety device, designed to protect the operator in the event of a vehicle roll over. To function as an effective safety device, the ROPS should be extended to the full, upright position as pictured above and the seat belt should be worn. The ROPS should only be lowered if the area the mower is travelling in is affected by an obstruction from overhead, such as a tree or lower



building over-hang. When using the machine with the ROPS in the lowered position, the seat belt should NOT be worn. To Raise or Lower the ROPS: Pull the Fix Pins from each side of the support bar, then raise or lower, then install the fix pins into the available holes, making sure the pins lock in place.

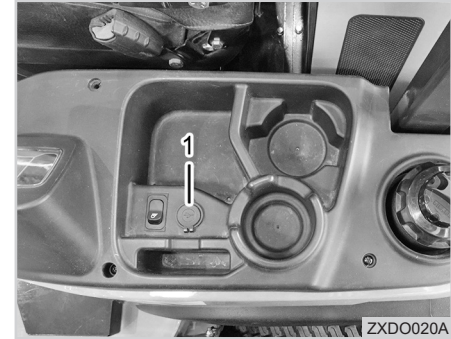
**WARNING**

- ***The seat belt should always be fastened when the ROPS is in the UP position. Never wear the seat belt when the ROPS is folded in the DOWN position.***

CUP HOLDER

(1) Cup Holder

The cup holder is conveniently positioned at the top of the left fuel tank to allow cans or cups to be stowed. Be careful when traveling over bumps or on slopes as drink may be ejected.

USB POWER OUTLET

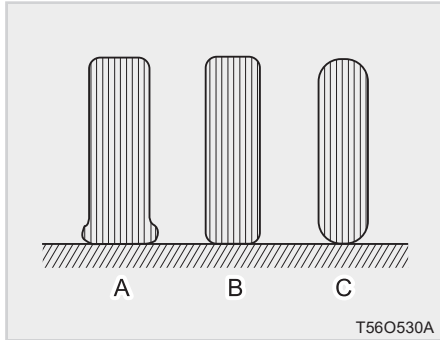
(1) USB Power Outlet

The USB power outlet is located next to the display panel.

**IMPORTANT**

- **Do not use usb power outlet for purposes other than charging mobile phones.**

TIRES



(A) Under Inflated (B) Properly Inflated
(C) Over Inflated

The pressure will fluctuate with ambient air temperature. Check and adjust the tire pressure before each use. Incorrect tire pressure can lead to adverse effects such as change in driving characteristics, loss of traction, turf damage, or altered cut quality.

| ITEM | MAXIMUM TIRE INFLATION PRESSURE |
|-------|--|
| Front | semi-pneumatic |
| Rear | 138 kPa (1.4 kgf/cm ² , 20 psi) |

⚠ WARNING

- *Inflating air above the specified pressure may cause the tire to rupture and result in an accident.*
- *Do not attempt to remove the tire from the wheel. If service is necessary, take wheel/tire assembly to a qualified tire service center or your local KIOTI authorized dealer.*

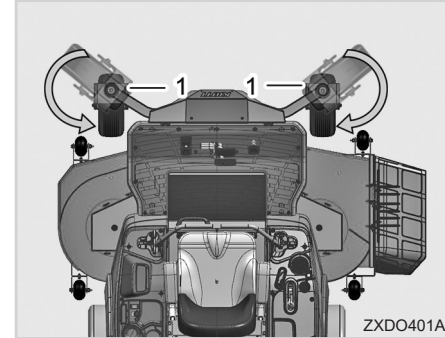
⚠ CAUTION

- **Do not operate with loose rim, wheels, or axle bolts.**
- **If bolts are loose, tighten them to the specified torque and check them frequently.**

⊕ IMPORTANT

- **Do not use tires other than the size or type specified for your mower.**

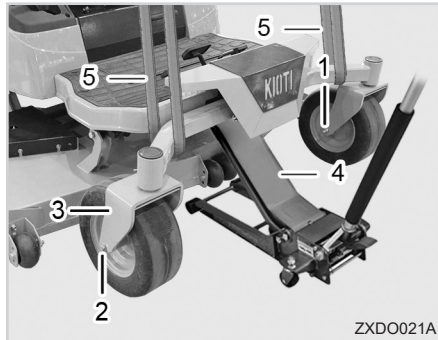
WHEEL FRONT WHEEL



(1) Wheel & Wheel Support Fork Bracket

To install or remove the front wheel, follow the steps below:

1. Park the machine on a flat surface, stop the engine, and engage the parking brake.
2. Rotate both left and right wheel forks so the wheel/fork combination is pointed towards the mower (same position as when the mower is traveling forwards)



- (1) Nut (2) Wheel Bolt
(3) Wheel Support Fork Bracket
(4) Jack (5) Strap for Hoist

3. Position a jack underneath the articulation axle. Reference P. 5-23 for additional information if needed.

The machine should not be worked on with just a jack alone, but should be supported with jack stands and/or a hoist.

4. Remove the nuts and wheel bolts, then remove the front wheel from the support fork.

5. Install the front wheels into the support fork bracket, oriented towards the mower for forward movement, then insert the wheel bolt from the outside. Tighten to the torque specs listed below.

⊕ IMPORTANT

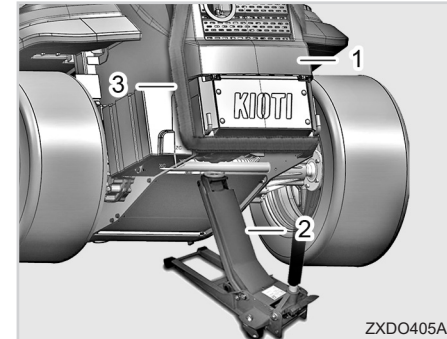
- **Insert the front wheel bolt from the outside of the bracket.**
- **Be sure to tighten the nut slowly while rolling the wheel by hand so that it rotates smoothly during operation.**
- **Make sure the fork is oriented towards the mower for forward travel.**

| MODEL | FRONT TIRE SIZE |
|----------|-----------------|
| ZXD61/72 | 15 x 6.5 - 8 |

TIGHTENING TORQUE OF WHEEL BOLT (NUT)

20 ~ 25 N · m
(14.7 ~ 18.4 lbf · ft)
(2.0 ~ 2.5 kgf · m)

REAR WHEEL



- (1) Rear Bumper (2) Jack
(3) Strap for Hoist

To install or remove the rear wheel, follow the steps below:

1. Park the machine on flat surface, stop the engine, and engage the parking brake.
2. Position a jack underneath the bar of rear frame. Reference P5-23 for additional information if needed. The unit should not be worked on with just a jack alone, but should be supported with jack stands and/or a hoist.

3. Remove the wheel bolts, then remove the rear wheel.
4. Install the rear wheels, then insert the wheel bolt. Tighten to the torque specs listed below.

When replacing the rear wheel, tighten the nut with the following torque. After tightening, recheck the torque after operating for 10 minutes.

| MODEL | REAR TIRE SIZE |
|----------|----------------|
| ZXD61/72 | 26 x 12.0 - 16 |

| TIGHTENING TORQUE OF WHEEL BOLT (NUT) |
|---|
| 140~150 N · m (103.2~110.6 lbf· ft) (14.2~15.3 kgf · m) |



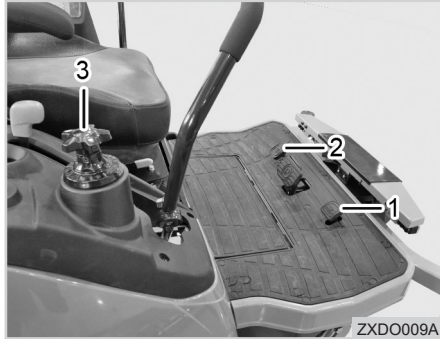
OPERATION

| | |
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| MOWER DECK INSTALLATION | 5-2 |
| MOWER DECK REMOVAL..... | 5-4 |
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5



DECK MOWER DECK INSTALLATION

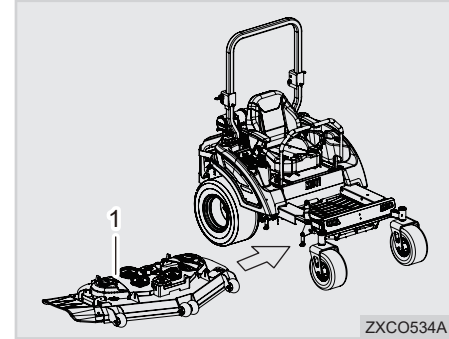


(1) Deck Lift Pedal (2) Deck Lower Pedal
(3) Deck Height Dial

1. Before mounting the mower deck raise the deck lift link in the highest position.
2. Place the mower deck at the side of the machine. Slide the mower deck under the machine, and make sure that the mower gear box is placed in the center of the machine.

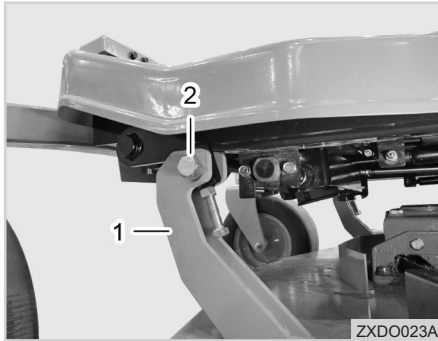
⚠ CAUTION

- Before mounting the mower deck:**
1. Set the PTO to the OFF position.
 2. Park mower on flat surface.
 3. Turn engine off.
 4. Engage the parking brake.



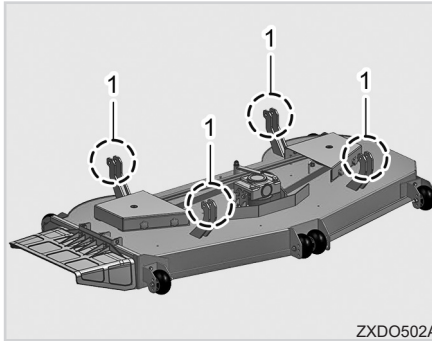
(1) Mower Deck

3. Attach the deck with the hardware provided with the mower. (Be sure to rotate the wheel fork assemblies so they face away from the deck. This is the same direction when the mower is traveling in reverse and the wheels are trailing the mower.)



(1) Lift Link (2) Mounting Hardware

4. Place 3" ~ 3.25" blocks underneath the deck and set the deck height to 3". Then lower the deck and adjust the rake and level.



(1) Lifting Position

⊕ IMPORTANT

- **When attaching the mower deck, make sure to level the deck from right to left and rake the deck from front to rear.**

5. Raise the discharge chute and rotate the right blade so the cutting edge faces forward. Confirm that the blade tip is set to 3" (+/- 1/16")

To achieve the 3" blade height, the deck may need to be placed on blocks or other supports.

6. Repeat step 5 for the left side of the deck
7. Once the deck height is confirmed at 3", install the deck with the mounting hardware provided with the mower.

TIGHTENING TORQUE

59 ~ 69 N · m
 (43 ~ 51 ft · lb)
 (6 ~ 7 kgf · m)

5

8. Raise the deck 2-3 times and confirm operation is correct. Re-set the deck to 3" cutting height.

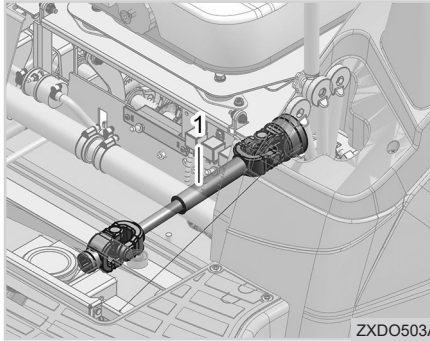
Confirm the right blade and left blades are rotated with the cutting edge facing forward. Re-measure and confirm the height of the front cutting edge of each side blade is 3" (+/- 1/16").



9. To adjust the side to side or front to rear (RAKE) height of the deck, you will need to make adjustments to each corner of the deck. To make adjustments, locate the adjuster mounted at the top of each deck lift support. There is one adjuster located at each corner or lifting position on the deck, four (4) in total.

10. Now measure the back cutting edge of each blade. The cutting height should measure between 1/8" & 1/4" higher than the front cutting edge (RAKE).

11. Once the side to side cutting height and front to rear cutting height (RAKE) have been confirmed, the deck is ready to cut.



(1) Universal Joint

12. After mounting and adjusting the mower deck, be sure to install the universal joint.

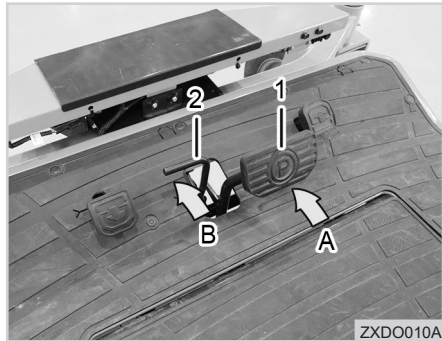
MOWER DECK REMOVAL

To remove the mower deck follow these quick steps:

1. Make sure the PTO is disengaged.
2. Place the mower on a flat surface, engage the parking brake, turn off the engine and remove the key.
3. Remove the universal joint.
4. Be sure to rotate the wheel fork assemblies so they face away from the deck. This is the same direction when the mower is traveling in reverse and the wheels are traveling the mower.
5. Lower the deck till it sits on the ground.
6. Loosen and remove the deck mounting bolts at each corner of the deck (4)
7. Remove the deck mounting bolts.
8. Before removing the mower deck raise the mower deck in the highest position.
9. Slide the deck out from under the mower on the side.

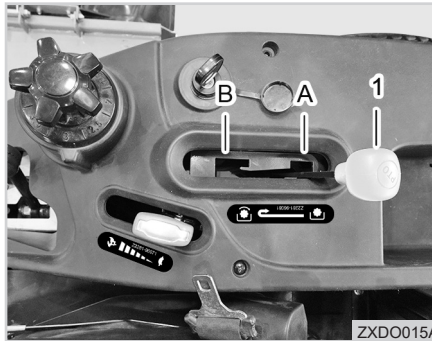


OPERATING THE ENGINE STARTING THE ENGINE



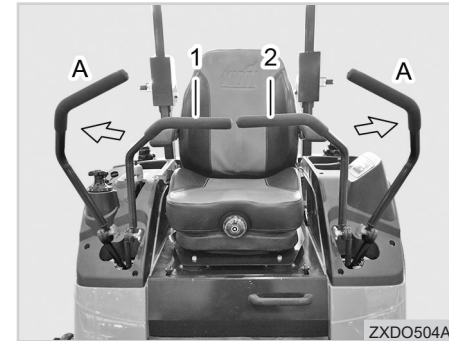
(1) Brake Pedal
(2) Parking Brake Lock Pedal
(A) Depress (B) Engaged

1. Sit on the Operator's seat. The parking brake should be engaged. An indicator light on the display will show the park brake symbol if the brake is engaged.



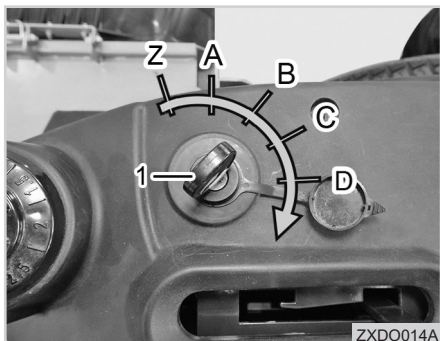
(1) PTO Lever
(A) Disengage (B) Engage

2. Place the PTO lever to the "OFF" position (disengage). The PTO symbol should not be illuminated on the display.



(1) RH Steering Lever
(2) LH Steering Lever
(A) Neutral Lock

3. Make sure the steering levers are in the neutral lock position. The N light will be illuminated on the display.



(1) Key Switch
 (Z) Pre-heat (A) Stop (B) ACC
 (C) ON (D) START

4. Insert the key into the key switch and turn it "ON" and maintain it until the preheat lamp is turned off.

While pre-heating, the pre-heat lamp on the dash board illuminates.

It is normal that the charge warning lamp and engine oil pressure warning lamps come on when the key is in "ON" position before the engine start.

NOTE

Operating principle of auto pre-heating system.

- The glow plug lamp comes on for 6 seconds and then goes off when the key switch is turned to the "Start" or "Stop" position.

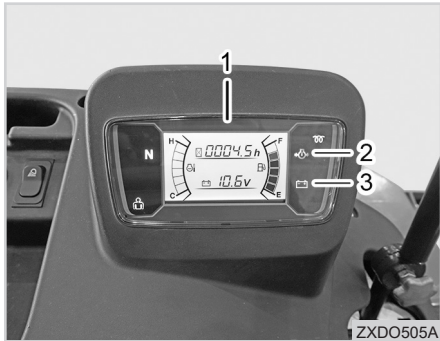
The engine should be started within 6 seconds after the glow plug lamp goes off. After the engine is started, post-heat is performed for 15 seconds with the key switch in the "ON" position.

- The after-heating is a function to keep the glow plugs activated for approx. 15 seconds after the engine is started in order to enhance the engine combustion performance and to reduce harmful emissions right after engine start.

WARNING

- **Never operate the start motor for more than 10 consecutive seconds as it consumes an excess of battery power. If the engine cannot be started within 10 seconds, wait for 30 seconds and try again.**
- **Never try to crank while the engine is running.**

5. When the engine is started, release the key. Then, the key is automatically turned back to the "ON" position.
6. Warm up the engine for 3 to 4 minutes (10 minutes in winter).



- (1) Instrument Panel
(2) Engine Oil Pressure Warning Lamp
(3) Charge Warning Lamp

7. Ensure that all the warning lamps on the instrument cluster are "OFF".

If any lamp remains on, immediately stop the engine and determine the cause.

ENGINE CHECK LAMPS

1. If the oil pressure warning lamp (2) does not go "OFF" in 4 to 5 seconds after the engine is properly started, stop the engine immediately and check the engine oil level. If the engine oil level is proper, contact your local **KIOTI** Dealer.

WARNING

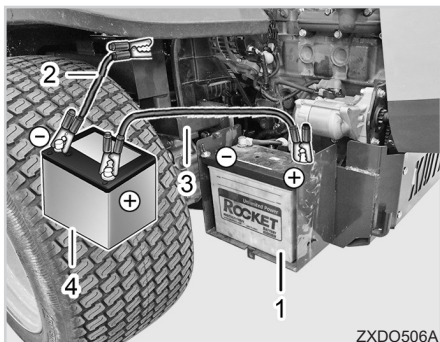
- ***The engine can be severely damaged if it is run with the oil pressure warning lamp "ON".***

2. If the charge warning lamp (3) does not go "OFF" in 4 to 5 seconds after the engine is properly started, it means that the battery is not being charged. Have the charging system, such as the battery and alternator, serviced.

WARNING

- ***If driving the mower for an extended period of time with the charge warning lamp "ON", the battery can be discharged and the mower's electrical system can be damaged.***

JUMP STARTING



(1) Dead Battery (2) Jumper Cables (-)
(3) Jumper Cables (+) (4) Helper Battery

If the battery becomes discharged and the mower will not start, it is possible to jump-start the discharged battery with one from a working mower, spare battery or a jump pack. Disassemble the battery cover on the left side of the engine hood.

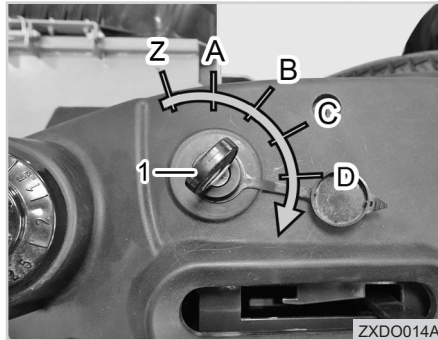
1. Make sure that the battery used to jump start the discharged one matches in voltage. Use only a 12 volt battery for this mower.
2. Connect the alligator clips on both ends of the red positive cable to the positive terminals of both batteries.
3. Connect one clip of the black negative cable to the negative terminal of the jumper battery and the other clip to the mower negative terminal on the mower with the discharged battery.
4. Attempt to start the engine. If the engine turns over and starts then proceed to the next steps. If the engine does not turn over, the discharged battery may need some time to get a sufficient charge to start the mower. Wait five minutes and try to start the engine again. If the engine will not turn over and start, call a certified repair shop for assistance and further instructions.
5. Disconnect the black/negative cable.
6. Disconnect the red cable from the positive (+) battery terminals.
7. Run the engine for at least 30 minutes to charge the discharged battery.
8. If the battery is discharged again, replace it or check the charging system.

⊕ IMPORTANT

- **When connecting the cables, make sure that the (+) and (-) terminals of the jumper cables do not contact each other as arcing may occur.**
- **Do not allow cables to get caught in moving parts.**



STOPPING THE ENGINE



(1) Key Switch
 (Z) Pre-heat (A) Stop (B) ACC
 (C) ON (D) START

1. Disengage the PTO.
2. Make sure the steering lever is in neutral lock and the parking brake is engaged.
3. Run the engine at the idle speed for approx. 2 to 3 minutes, and then turn the key switch to the "OFF" position to stop the engine.

⚠ WARNING

- **Never touch the muffler or hot covers until they are cooled down after running the engine or driving the mower.**

⊕ IMPORTANT

- **Turn off all the electrical devices and remove the ignition key before leaving the mower.**

WARMING UP

It is recommended always to warm up the engine before driving in order to maintain the durability of the engine and prevent malfunction of the engine. Before warming up the engine, make sure that each part in the engine is properly lubricated and each hydraulic part is in a perfect condition in order to prevent malfunction in the engine as well as the hydraulic system.



HOW TO WARM UP ENGINE

1. Start the engine and run it at a low speed and without load for approx. 3 to 4 minutes.
2. In cold weather, increase the warming up time to 10 minutes.
3. If it is very cold, warm up the engine for approx. 15 minutes.
4. The engine throttle can be open for 50 % in order to shorten the warming up time.
5. The engine is sufficiently warmed up when the temperature gauge on the instrument panel indicates 1/4 of the normal temperature range, regardless of the warming-up time.
6. Do not increase the work load rapidly after starting work.
7. Run the engine without load for approx. 2 to 3 minutes before stopping the engine after work.

WARNING

- ***Warming up the engine excessively increases fuel consumption and affects the durability of the mower negatively.***
- ***Excessive engine warm-up may cause a fire or accident.***
- ***Never leave the mower unattended while warming up.***
- ***Be sure to apply parking brake while warming up the engine.***

MOWER OPERATION TIPS FOR BREAKING-IN

New mower break in should occur gradually over the first 5-15 hours of use. During the initial break-in period, be sure to follow the recommended guidelines below:

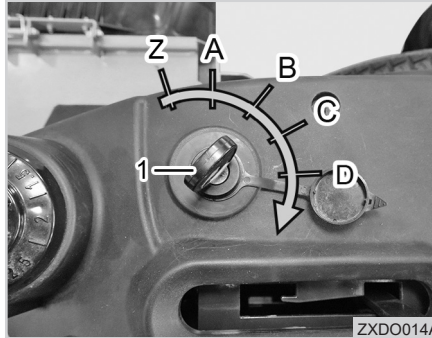
1. Start the engine and idle the engine at a low speed for 3 to 4 minutes in advance of work.
2. Increase the idling time in cold weather.
3. Do not overload the engine or lug it excessively. If cutting tall or overgrown grass, slow the ground speed to prevent overloading or lugging the engine excessively.
4. Idle the engine at a low speed for 2 to 3 minutes before stopping it.



OPERATION

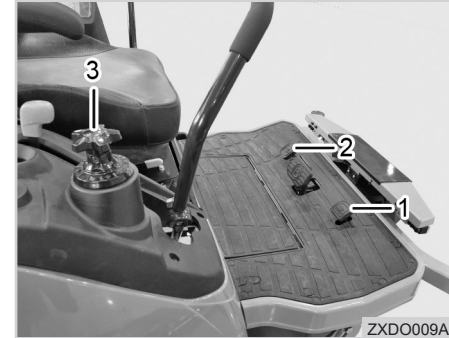
⚠ WARNING

- *On a slope, if the engine stops, immediately apply the parking brake so that the unit does not move.*
- *Never allow passengers or anyone on the mower other than the operator.*
- *Do not drive in ditches or other places that are likely to collapse or other places where the ground is likely to give way.*
- *Avoid sudden acceleration and sudden stopping, and be sure to operate at reduced speeds when turning.*
- *When backing up, make sure that there are no people or obstacles around you.*



- (1) Key Switch
 (Z) Pre-heat (A) Stop (B) ACC
 (C) ON (D) START

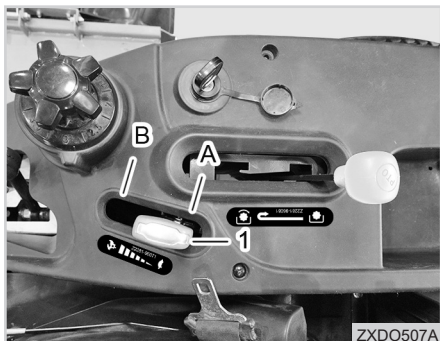
1. Start the engine according to the engine start-up procedure. (Outlined in pages 5-5 through 5-7.)



- (1) Deck Lift Pedal (2) Deck Lower Pedal
 (3) Deck Height Dial

2. The deck is raised and lowered using the pedals pictured above. Depressing the right pedal raises the deck and the left pedal will lower the deck. Be sure that when lowering the deck there is nothing obstructing the descent of the deck. Lowering the deck has potential to cause bodily harm or damage to objects that are in the pathway of the descending desk.

In order to set the cutting height of the mower deck, depress the deck lift pedal, then adjust the cutting height with the Deck Height Dial.

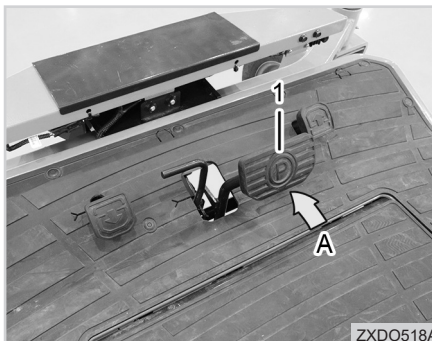


(1) Throttle Lever
 (A) 🐢 : Low Speed (B) 🐎 : High Speed

3. Use the throttle lever to slowly accelerate the engine speed from idle to medium speed.

⊕ IMPORTANT

- When operating, set the throttle lever to “medium speed” or higher and do not operate at low speed.

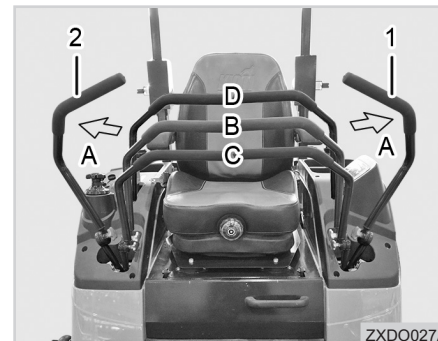


(1) Brake Pedal
 (A) Depress

4. To disengage the parking brake, depress the brake pedal.

⚠ WARNING

- *Do not park on steep slopes with the engine running under any circumstances. It can cause serious accidents.*

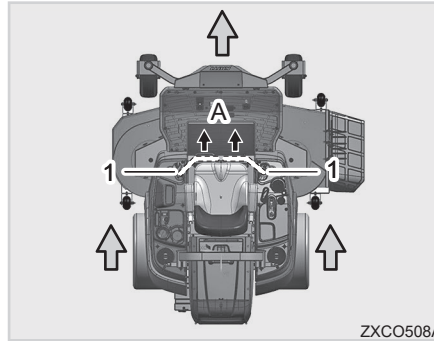


(1) LH Steering Levers (2) RH Steering Levers
 (A) Neutral Lock (B) Neutral
 (C) Forward (D) Reverse

5. The steering levers control the mowers direction of travel and speed. The levers can be used together to initiate direction, turns, acceleration/speed and braking depending on terrain and field conditions.

**⚠ CAUTION**

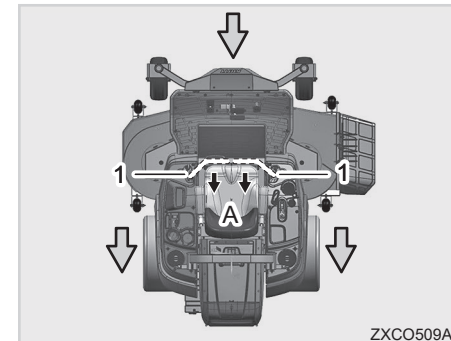
- The park brake must be released when the steering levers are brought inboard out of the neutral gate. If the park brake is engaged, and the drive levers are brought out of the neutral gate, the mower will shut off.



(1) LH Steering Levers (2) RH Steering Levers
(A) Forward

► MOVING FORWARD

“Slowly” Push both steering levers forward at the same time to move the machine forward.



(1) LH Steering Levers (2) RH Steering Levers
(A) Reverse

► MOVING REVERSE

“Slowly” Pull both steering levers toward you at the same time to move the machine in reverse.

⚠ WARNING

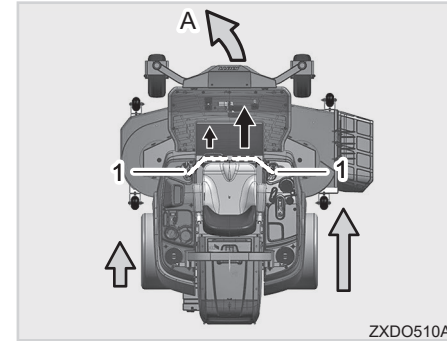
- *Mowing in reverse should be minimized as visibility is limited and can lead to destruction of property and/or bodily harm or death. Instead of mowing in reverse for extended periods, perform a zero radius turn and mow in the forward direction.*

⊕ IMPORTANT

- **Contact your authorized KIOTI Dealer for service should the mower not track straight on smooth, level ground when the steering levers are in the full forward or rearward position**

📖 NOTE

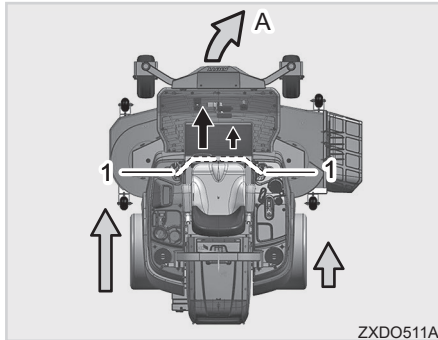
- To turn the mower, move one lever in the forward direction and the other lever in the reverse direction. Caution and slow lever movements should be used when learning the operational characteristics of the mower to prevent harsh or erratic operation.



(1) Steering Levers
(A) General Left Turn

▶ FORWARD LEFT TURN

When the right steering lever is pushed further forward than the left steering lever, the Mower makes a forward left turn.

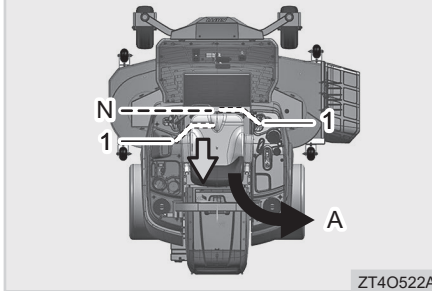


(1) Steering Levers
(A) General Right Turn

► FORWARD RIGHT TURN

When the left steering lever is pushed further forward than the right steering lever, the Mower makes a forward right turn.

FRONT END TURNS TO THE LEFT

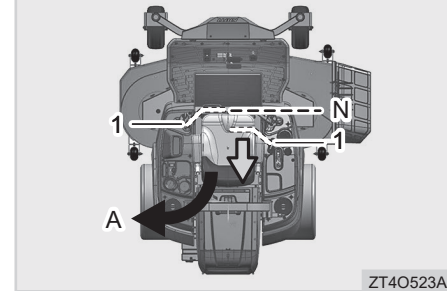


(1) LH Steering Levers
(2) RH Steering Levers
(A) Reverse Right Turn

► REVERSE RIGHT TURN

When the left steering lever is pulled further rearward than the right steering lever, the Mower makes a reverse right turn.

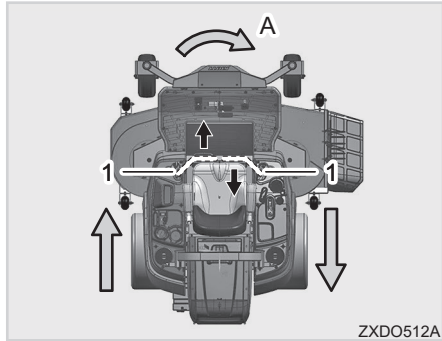
FRONT END TURNS TO THE RIGHT



(1) LH Steering Levers
(2) RH Steering Levers
(A) Reverse Left Turn

► REVERSE LEFT TURN

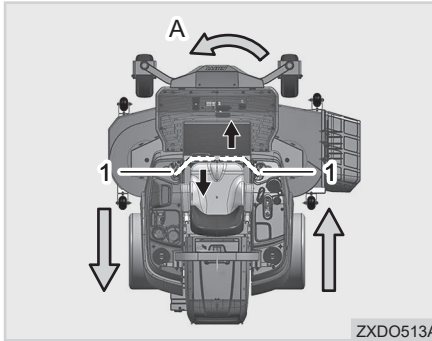
When the right steering lever is pulled further rearward than the left steering lever, the Mower makes a reverse left turn.



(1) Steering Levers
(A) Sharp Right Turn

► **RIGHT ZERO TURN**

Push the left lever forward and pull the right lever back at the same time to rotate the machine to the right (clockwise) with zero turning radius.



(1) Steering Levers
(A) Sharp Left Turn

► **LEFT ZERO TURN**

Push the right lever forward and pull the left lever back at the same time to rotate the machine to the left (counter-clockwise) with zero turning radius.

⊕ IMPORTANT

- Do not make sharp turns or perform zero-turns at high speed as the operator can be thrown from the machine.
- Turf damage can occur if one wheel is left stationary while performing a zero radius turn. It is recommended to perform a zero radius turn by following the instructions of pulling back on one lever and pushing the other lever forward to make sure both tires are moving to avoid damaging the turf.



RESTARTING ON A SLOPE

When you need to restart after stopping on a slope, follow the procedure below.

1. Engage the parking brake so that the machine does not move, and start the engine.
2. Set the throttle lever to "medium speed".
3. Release the parking brake.
4. Move the machine slowly and carefully by operating the steering levers.
5. This mower is designed for traction and stability under normal, dry mowing conditions. Caution should be used when traveling on slopes, especially if the grass is wet. Wet grass reduces traction and steering control.
6. Stay two cut widths (width of the mower deck) away from ditches, slopes and drop-offs.
7. To prevent loss of control and roll over situations, do not start or stop quickly, avoid unnecessary turns

and travel at a slow speed. If loss of traction occurs, disengage the PTO and proceed slowly off of the slope.

8. Avoid sudden starts when driving uphill. This may cause the machine to tip back-wards.
9. Be careful when traveling down hill. The machine weight will transfer to the front of the machine, causing the drive wheels to slip and loose braking or steering control.
10. Do not drive on slopes greater than 15 degrees.
11. Engaging the parking brake will not regain traction if sliding on a slope. The mower should be steered to go straight down the hill and drive out of the slope.

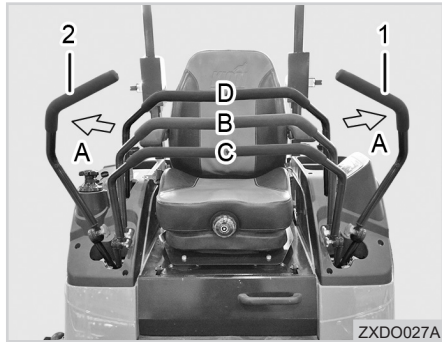
WARNING

- ***DO NOT operate this mower on steep slopes. To check if the slope is too steep, attempt to back the mower up the edge of the slope with the mower deck in the down position. If the wheels do not slip or loose traction, proceed a slow as possible with extreme caution.***

CAUTION

- **Loss of control on a slope could occur if:**
 - You start or stop suddenly
 - Travel speed is too fast
 - Change directions quickly
- **Pay special attention when working on or near slopes to prevent loss of control or rollover of the mower.**

STOPPING

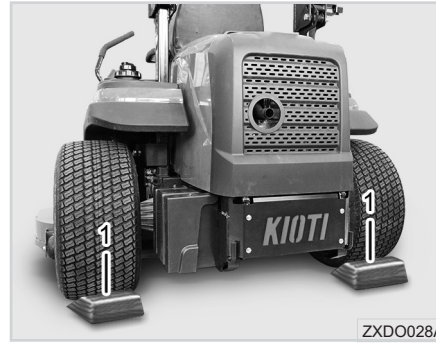


(1) LH Steering Levers (2) RH Steering Levers
 (A) Neutral Lock (B) Neutral
 (C) Forward (D) Reverse

Under normal conditions, when the steering levers are returned to the neutral position, the mower will stop.

1. Stop the machine by moving both steering levers to the "neutral" position.
2. Engage the parking brake.
3. Move the throttle lever to the idle speed position and set the PTO switch to "OFF".
4. Stop the engine.

PARKING



(1) Chocks

If you need to park on a slope, place chocks behind the wheels so that the machine cannot roll down the slope.

1. Stop movement of the mower by positioning the steering levers to the Neutral position.
2. Depress brake pedal and parking brake lock pedal to engage the parking brake and pull the PTO lever to "OFF".
3. Reduce the engine RPMs to idle speeds.

4. Turn the ignition key to the "OFF" position to stop the engine.

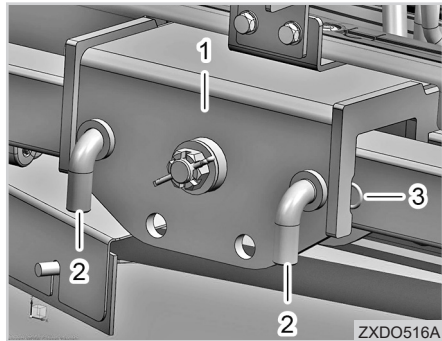
CAUTION

- **Make sure the mower is completely stopped and that the parking brake is securely engaged, and then get off the mower.**
- **Do not park on dry hay, straw or debris. Contact with a hot muffler could lead to a fire.**
- **Loose material under the wheels when stopped or parked could lead to accidental mower movement due to loss of traction.**

5. Install chocks around the rear tires to prevent accidental mower movement.



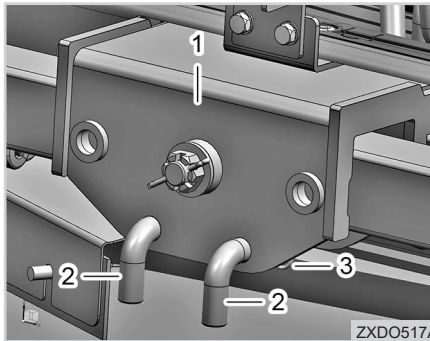
PIVOTING FRONT AXLE HOW TO PIVOT FRONT AXLE



(1) Front Axle
(2) L-Pin
(3) Hairpin

1. Remove L-pins and Hairpins from front axle.
2. Insert L-pins into lower holes.
3. Install hairpins between the axle mount frame and the front axle.

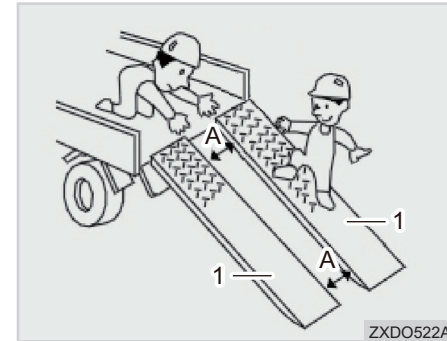
HOW TO FIX FRONT AXLE



(1) Front Axle
(2) L-Pin
(3) Hairpin

1. Insert L-pins into middle holes on front axle.
2. Install hairpins between the axle mount frame and the front axle.

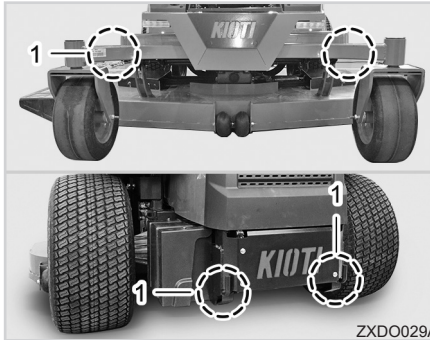
TRANSPORTING



(1) Loading Ramp
(A) Parallel

1. When loading the mower on a truck or trailer, be sure to use ramps designed to safely handle the weight of the mower. Be sure the ramps are wider than the rear tires of the mower.
2. Always secure the ramps to the transporting vehicle to minimize the opportunity for the ramps to fall or detach from the hauling equipment.

- 3 Raise the deck to its highest position.
- 4 It is recommended to load in reverse and unload in forward if possible to minimize the opportunity for the mower to raise the front wheels off the ramps and become difficult to control.
- 5 If the rear wheels begin to spin while loading, the ramp angle is too steep. Drive the mower back down and reposition the ramps to decrease the loading angle if possible.
- 6 When loading/unloading, operate the mower slowly as equipment or operators could be hurt in the event of a rollover or loss of control.
- 7 Once loaded, engage the parking brake and **TURN OFF THE ENGINE** before dismounting from the machine.



(1) The front and rear securing points

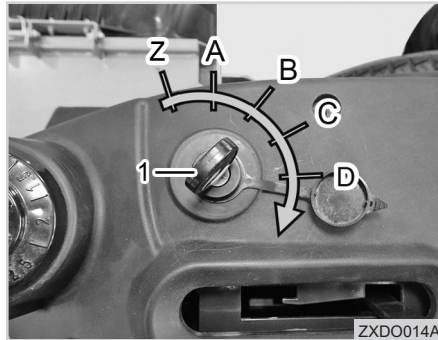
- 8 Securely fasten the mower to the transporting vehicle with straps or chains. Be sure to utilize the front and rear securing points designed into the mower (see attached picture).

CAUTION

- Do not tow this unit as it may damage the transaxle.
- Make sure that the vehicle you are using to transport with has all the lighting and markings required by law.



OPERATING THE MOWER



(1) Key Switch

(Z) Pre-heat

(A) Stop

(B) ACC

(C) ON

(D) START

1. Start the engine with the throttle set to low.
2. Set the throttle to medium, engage the PTO.
3. Increase the throttle speed to wide open.
4. Using the techniques from 5-13 through 5-16 maneuver the mower to cut grass.

⚠ WARNING

- *Never put hands into the discharge chute while the engine is running for any reason.*
- *If the mower discharge becomes clogged, ensure the engine is off, the steering levers are in neutral, the parking brake is set and the engine/blades have come to a complete stop before dismantling the machine to clear the discharge.*

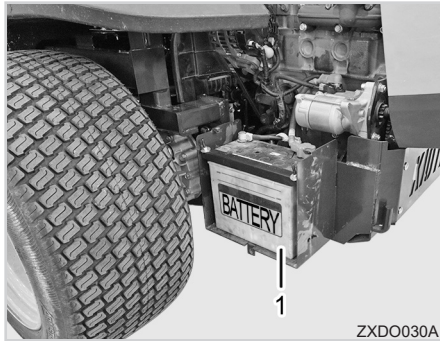
⊕ IMPORTANT

- **Clean the fan and screens to prevent the engine from overheating.**

⊕ IMPORTANT

- Always set the throttle lever to the “high” position for the best cutting performance.
- If the area to be cut is very overgrown, cut with the deck in the highest position on the first pass, then cut again at the desired height.
- If the mower travel speed is too fast or the blade speed drops due to engine overloading from over grown or dense areas, the grass will not be cut clean.
- When not mowing, set the PTO switch to the “OFF” position and place the deck in the highest position.
- If the RPM begins to decrease while working, lower the driving speed in order to maintain the same blade speed.

BATTERY

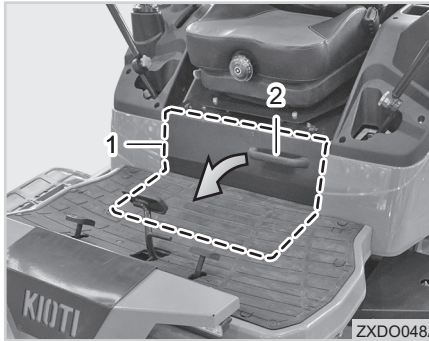


(1) Battery

To access the battery:

1. Park the machine on a flat surface, stop the engine, and engage the parking brake.
2. Disassemble the battery cover on the left side of the engine hood.
3. Disconnect (-) negative terminal first. Reconnect (-) negative terminal last. Battery should only be disconnected or reconnected in well ventilated areas as arcing can occur and lead to combustion of fumes from the mower.

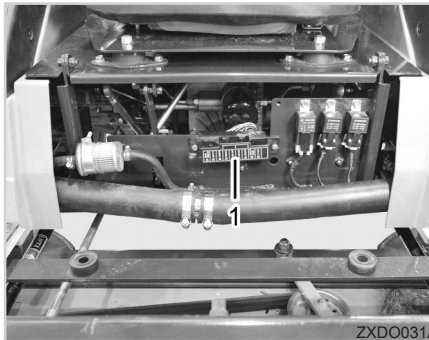
FUSE LOCATIONS



(1) Access Panel (2) Grip

To access the fuse panel:

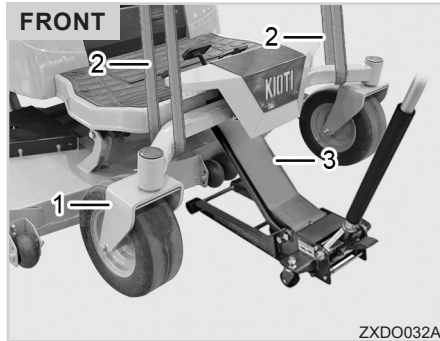
Pull the handle on the access panel located below the seat and at the base of the foot rest.



(1) Main fuse



HOW TO LIFT THE MOWER

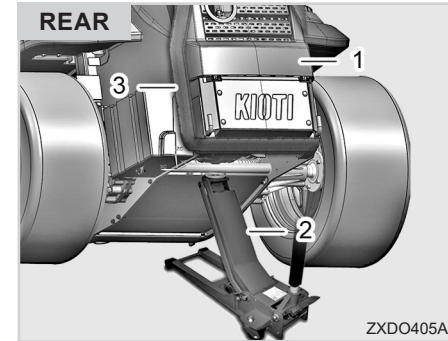


(1) Wheel
(2) Strap for Hoist
(3) Jack

1. The mower must be lifted for maintenance including blade removal, debris removal and front wheel removal.
2. When lifting the front of the mower, you can lift the cast support assembly with tow strap rated for the weight of the mower or position a jack underneath the locked articulating axle.

⚠ CAUTION

- Do not work under a mower that is not firmly supported with jack stands.
- To prevent accidental movement of the machine, make sure the parking brake is engaged and rear wheels are chocked before lifting or performing any work.



(1) Rear Bumper
(2) Jack
(3) Strap for Hoist

3. The machine should not be worked on with just a jack alone, but should be supported with jack stands and/or a hoist.

CLEANING THE MOWER DECK

Be sure the engine is off, the parking brake is set and the key has been removed from the ignition switch.

Daily mower cleaning can be performed by wiping away debris or using compressed air.

Follow the recommended procedure outlined on P 5-23 for lifting the mower to gain better access underneath the deck.

Clean underneath the deck with compressed air or water.

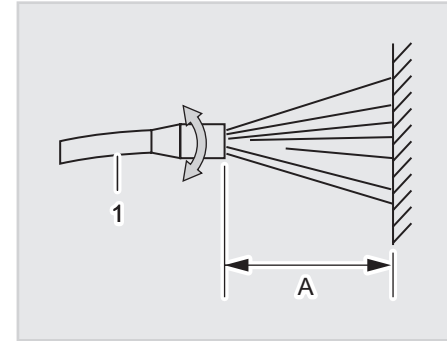
When using a pressure washer, be sure to keep the nozzle a minimum of 8 feet away from the mower surface at all times. Pressurized water sprayed at a close distance can cause personal injury or damage to the mower's paint, electrical or mechanical systems.

Always be sure to wear proper eye protection when using pressurized water to clean and eye + ear protection when using pressurized air to clean your mower.

CAUTION

- **Always inspect the area surrounding the mower to be sure no hoses, tools or foreign objects are underneath or in the mower's path before starting the engine**
- **Before starting the engine, place the throttle lever at idle, make sure the PTO is off and the parking brake is engaged.**

WASHING MOWER



(1) High-pressure Washer
(A) At least 8 feet

When cleaning with high pressure water, always be mindful of the following:

1. **Electrical Parts and wiring harnesses:** Water intrusion can cause shorts in the electrical system. Which could lead to wire harness malfunction, electrical component failure or eventually fire.
2. **Hoses:** Do not apply direct water



pressure to hoses, fuel lines, etc. Hoses subjected to high pressure water could come loose, break or be damaged resulting in fluid loss or fire.

3. Moving Mechanical Parts: Direct high pressure water to the engine and drive parts can cause malfunction and damage.

 **WARNING**

- ***DO NOT wash a hot or running engine. Cold water could damage the engine. Use compressed air to clean the engine if it is still hot or wait until the engine is cool before washing. Always use proper eye and ear protection when using compressed air or eye protection with water.***



MEMO



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KIOTI



MAINTENANCE

RECOMMENDED MAINTENANCE SCHEDULES 6-2

LUBRICANTS 6-4

DAILY CHECKS 6-5

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- CHECKING AND ADDING FUEL 6-6
- CHECKING AND CLEANING THE AIR INTAKE SCREEN 6-8
- CHECKING THE TRANSAXLE FLUID LEVEL 6-8
- LUBRICATION 6-9
- CLEANING THE AIR FILTER 6-10

EVERY 50 HOURS 6-11

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- CHECKING BLADES 6-11

EVERY 100 HOURS 6-12

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CHECK THE BATTERY 6-17

EVERY 200 HOURS 6-19

REPLACING TRANSAXLE OIL FILTER (HST) 6-19

EVERY 400 HOURS 6-19

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EVERY 1 YEAR 6-21

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6



RECOMMENDED MAINTENANCE SCHEDULES

To prevent accidents, breakdowns and keep your mower in good working condition; regular inspections and maintenance are required.

| MAINTENANCE SERVICE INTERVAL | MAINTENANCE PROCEDURE |
|-------------------------------|---|
| 1. Before each use or daily | <ul style="list-style-type: none"> • Check the level of engine oil, transmission fluid, coolant of radiator. • Check leakage of oil, fluid and coolant. • Check the damaged of machine body and mower blades including bent, broken, etc. • Check loosening of parts including bolts, nuts, mower deck mount, etc. • Check the tire pressures. • Check the condition of the belts including ripped, frayed, etc. • Check the safety equipment including safety shield, decals, switches, etc. • Check the air cleaner filter of engine. • Check for mower blade damage. • Clean the engine and exhaust system area and the air intake screen. • Clean the grass and debris build-up from the machine and cutting deck. • Clean the grass build-up from under the cutting deck. • Inspect deck hanger, spindle cover and drain chute. |
| 2. Weekly | <ul style="list-style-type: none"> • For daily use, lubricate the grease fittings refer to 6-9. (For non-daily use, every 25 hours) |
| 3-1. Every 25 hours | <ul style="list-style-type: none"> • For non-daily use, lubricate the grease fittings refer to 6-9. (For daily use, once per weekly) |
| 3-2. After the first 50 hours | <ul style="list-style-type: none"> • Change the engine oil after the first 50 hours. |
| 3-3. Every 50 hours | <ul style="list-style-type: none"> • Clean the air cleaner element, or replace if needed. |



| MAINTENANCE SERVICE INTERVAL | MAINTENANCE PROCEDURE |
|--------------------------------|--|
| 4-1. After the first 100 hours | <ul style="list-style-type: none"> • Check the wheel hub castle nut torque specification after the first 100 hours. • Check the wheel lug nuts after the first 100 hours. |
| 4-2. Every 100 hours | <ul style="list-style-type: none"> • Change the engine oil and replace filter. • Check the fuel lines and fuel filter. • Check the parking brake. • Check the battery. |
| 5. Every 200 hours | <ul style="list-style-type: none"> • Replace the transaxle oil and filter. |
| 6. Every 400 hours | <ul style="list-style-type: none"> • Change the hydraulic fluid and replace filter. • Replace the fuel filter. |
| 7. Every 500 hours | <ul style="list-style-type: none"> • Replace the air cleaner element. • Check the wheel hub slotted nut torque specifications . |
| 8. Yearly | <ul style="list-style-type: none"> • Replace the air cleaner element. |

⊕ IMPORTANT

- **Air cleaner should be cleaned more often in dusty conditions than in normal condition.**
- **Do not repair or replace components with parts other than Genuine KIOTI Parts. Your Authorized KIOTI Dealer should be your first source for parts and repairs.**

LUBRICANTS

To prevent serious equipment damage, use only genuine **KIOTI** fluids, oils and grease, of equivalents.

| NO. | ITEM | CAPACITY | LUBRICANTS |
|-----|-----------------|-----------------------|---|
| 1 | Fuel | 17.1 U.S.gal. (65 L) | Ultra-low sulfur diesel (Sulfur content: 15 ppm or less) |
| 2 | Coolant | 3.9 U.S qt. (3.7 L) | An antifreezing solution (Ethylene glycol) + Pure water (50:50) |
| 3 | Engine oil | 3.9 U.S qt. (3.7 L) | Oil Viscosity: SAE 10W-30 API service classification CJ or higher |
| 4 | Transaxle fluid | 13.7 U.S qt. (13.0 L) | Daedong: UTF 55 Shell: Donax-TD Exxonmobil: Mobilfluid 424 Exxon Hydraul 560 BP: Tractran UTH |
| 5 | Grease | As much as is needed | SAE Multi-Purpose Type Grease |

※ Oil capacity when the oil is at the maximum fill level of the dipstick

WARNING

- **Check the oil level daily before operating the mower. Always keep the oil level between the minimum and maximum levels on the dipstick. Correct the oil level, if needed, before operating.**
- **Always check and add oil with the mower on a flat, level surface.**



DAILY CHECKS GENERAL INFORMATION

It is a good practice to know the condition of your mower before you start it. You should perform a routine check daily, before each use.

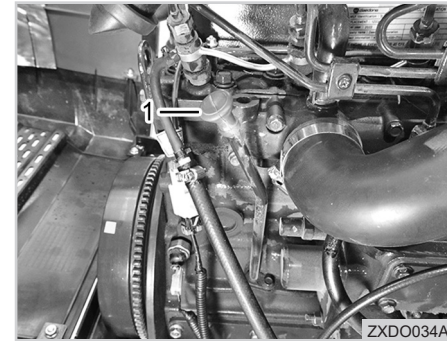
1. Inspect any issues detected during the previous day's operation. Be sure to make any repairs to broken or damaged items before using the mower.
2. Perform a pre-operation check by walking around the machine, looking for the following:
 - Loose bolts or nuts
 - Loose mower deck mounts
 - Any damage or deformation of the body
 - Oil or fluid leakage
 - Torn or frayed belts
 - Bent, broken or damaged blades
 - Damaged or under-inflated tires
 - Damaged or missing safety equipment including safety shields, decals, switches, etc.

For detailed information, refer to the recommended maintenance schedules in this chapter.

CAUTION

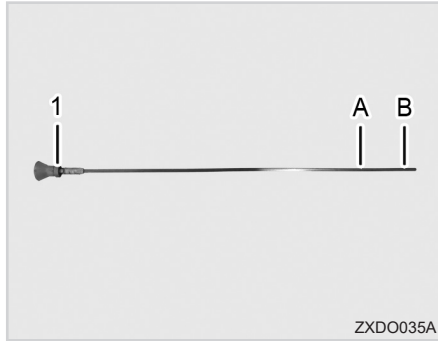
- **Before inspecting or working on any mower, place the mower on a flat, level surface, make sure the PTO is off, the parking brake is engaged and the engine is turned off with the key removed from the ignition.**
- **If fuel or fluid spills, clean it thoroughly.**
- **The battery, wiring, muffler or surrounding areas of the engine can catch on fire if there is debris or spilled fuel present. Check and clean as needed.**
- **Never perform an engine inspection on a running engine or an engine that is still hot from operation. Failure to comply could lead to serious injury including cuts, abrasions, burns, etc.**

CHECKING ENGINE OIL LEVEL



(1) Dipstick

1. Check the engine oil daily.
2. Park the mower on a level surface, engage the parking brake, TURN OFF THE ENGINE and lower the mower deck to the ground.
3. If the engine was just running, wait for approx. 5 minutes before checking the oil level.



ZXDO035A

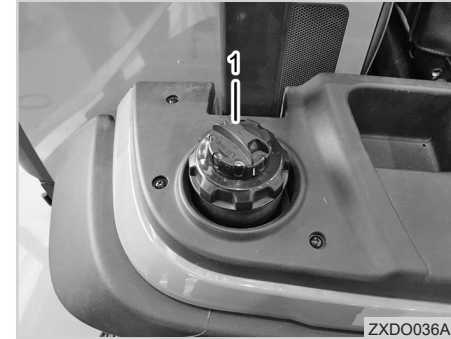
(1) Oil Dipstick
(A) Upper Level (B) Lower Limit

⚠ CAUTION

To avoid injury:

- Be sure to set the parking brake, stop the engine before checking the oil level and let the engine cool.

CHECKING AND ADDING FUEL



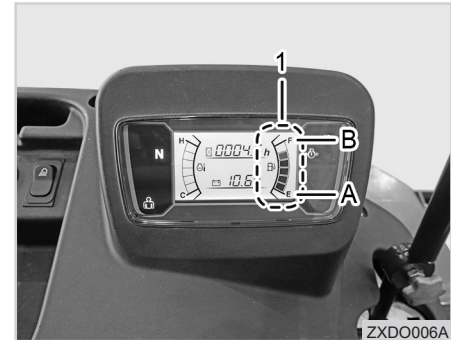
ZXDO036A

(1) Fuel Tank Cap

4. Open the engine shroud.

To check the oil level, remove the dipstick, wipe it clean, replace it and pull out again. Check to see that the oil level is between the specified range (2 notches).

5. If the oil level is too low, add new oil so that the level is within the specified range.



ZXDO006A

(1) Fuel Gauge
(A) Empty (B) Full

** DANGER**

- ***Never fuel a hot mower!***
- ***Fuel in the fuel tank can become pressurized. Open fuel cap slowly in a well ventilated area, wait for pressure to be released to avoid serious or fatal injury from discharged spraying fuel. No smoking or open flames.***
- ***Never remove the fuel cap or refuel near open flames or cigarettes.***
- ***To avoid injury from burns, allow the mower to cool before removing the fuel tank cap and refueling.***

 CAUTION

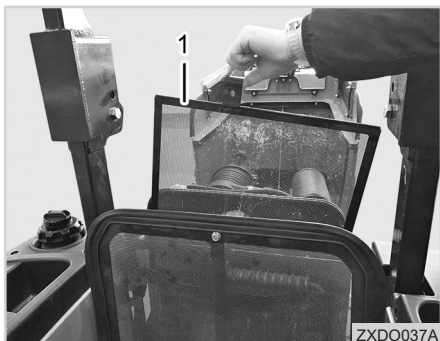
To avoid personal injury:

- Do not smoke while refueling.
- Only add fuel in a well-ventilated area.
- Be sure to stop the engine before refueling.
- Refuel through a filter if required to prevent the introduction of contaminants into the fuel tank.

 IMPORTANT

- Be careful not to let the fuel tank become empty. Otherwise air will enter the fuel system, necessitating bleeding before the next engine start.
- Be careful not to spill fuel when re-fueling. Should a spill occur, clean the spill at once to prevent fires.
- If the mower is to be stored for 30 days or longer, the addition of a fuel stabilizer to the tank is recommended. Once applied, the engine should be operated for a period of 5-10 minutes at high idle to distribute the stabilizer throughout the fuel system.

CHECKING AND CLEANING THE AIR INTAKE SCREEN

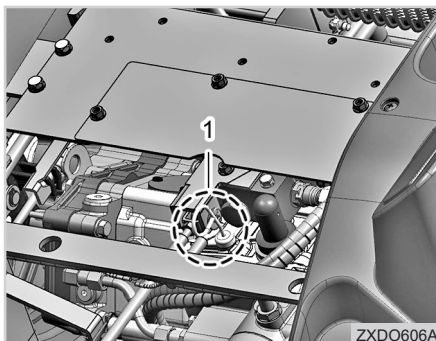


(1) Air Intake Screen

Check the air intake screen and the air inlet daily for debris or foreign material that could reduce air intake. Dust or stains around the air intake screen, air inlet or around the engine cooling area will reduce cooling performance.

1. Make sure that the air intake is free of grass pieces and debris
2. If the screen is dirty, clean the screen with a brush or cloth.
3. Remove all dust and dirt from the engine shroud.

CHECKING THE TRANSAXLE FLUID LEVEL



(1) Oil Filler Neck

1. Park the mower on a level surface, **TURN OFF THE ENGINE**, engage the parking brake and lower the mower deck.
2. Make sure the parking brake is set, set all **STEERING LEVERs** into the neutral position.
3. Lift up the mower seat by pulling the release lever outboard on the machine.
4. Pull the transaxle dip stick and check the fluid level.

5. If the oil level is too low, add some new oil so that the level is within the allowable range.

+ IMPORTANT

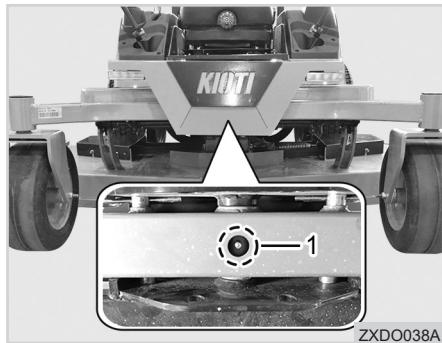
- If the oil level drops too low, do not start the engine before bringing the oil level within the safe operating range.



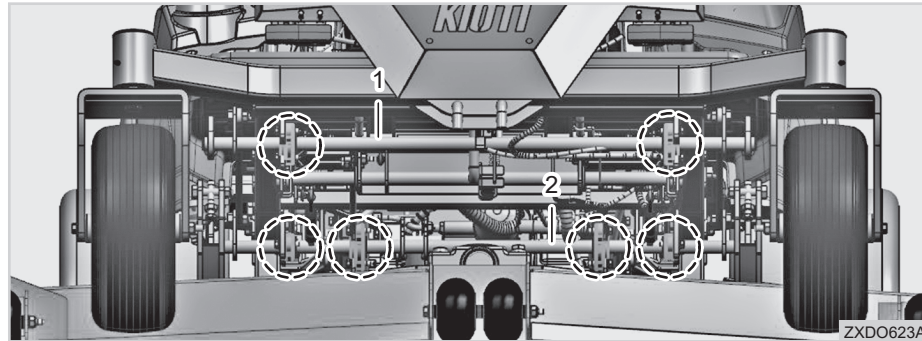
LUBRICATION

Apply a high quality, multi-purpose grease to each of the locations shown here, at the recommend intervals below.

Be sure to record the date and hours each time maintenance is performed on the mower.

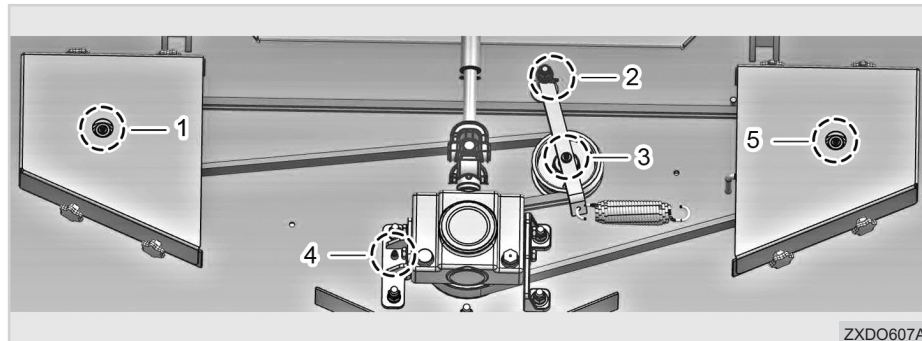


(1) Deck Front Link Pipe (LH/RH)



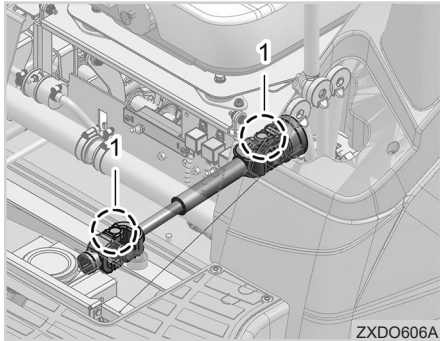
(1) Lift Front Shaft Ass'y

(2) Lift Rear Shaft Ass'y

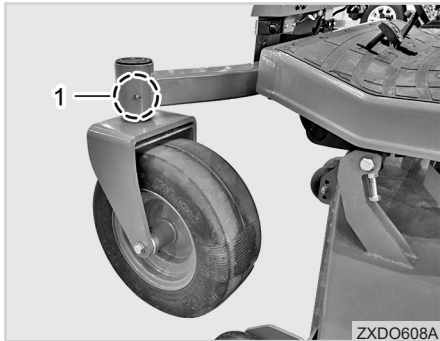


(1) RH Deck Spindle
(2) Belt Tension Arm
(3) Deck Belt Tensioner Pulley

(4) Gearbox / U-Joint
(5) LH Deck Spindle



(1) Universal Joint



(1) Front Wheel (LH/RH)

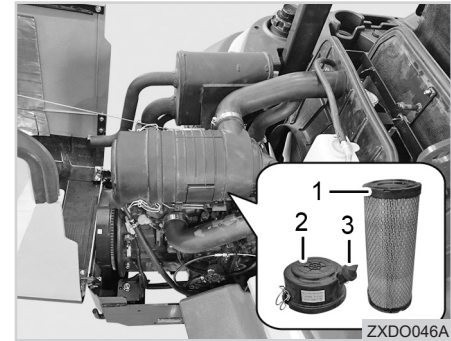
1. Grease the places mentioned above. Use multipurpose high grade grease and record the running time when greasing.
2. Be sure to stop the mower, turn the PTO off, engage the parking brake, **TURN OFF THE ENGINE** and remove the key from the ignition before performing any maintenance on the mower, including greasing.

NOTE

Recommend greasing intervals are as follows :

- For daily use, lubricate the grease fittings once per week.
- For non-daily use, lubricate the grease fittings every 25 hours.

CLEANING THE AIR FILTER

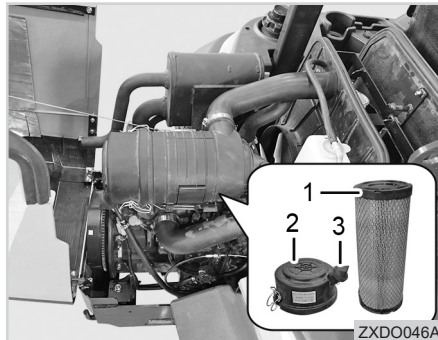


- (1) Filter (2) Dust Cap
 (3) Evacuator Valve

1. Release two latches on either side of the dust cap.
2. Remove dust cap.
3. Pull out air filter, and use compressed air to clean the filter.
4. Dust cap should be installed with the evacuator valve oriented down (there is a marking on the dust cap that says top with arrows pointing up).



EVERY 50 HOURS AIR FILTER MAINTENANCE



(1) Filter (2) Dust Cap
(3) Evacuator Valve

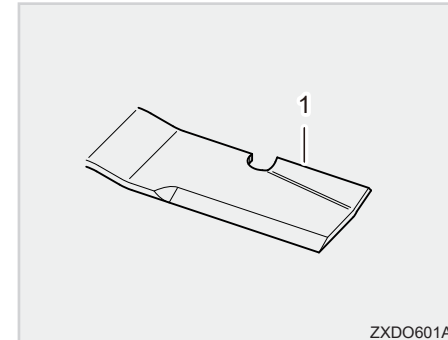
clean the entire filter area.
Re-install when finished.

⊕ IMPORTANT

- The air cleaner should be inspected more frequently when the mower is operated in dry and dusty conditions.
- Never start the engine with the filter removed.

1. Open the air filter cover and remove the air cleaner element.
2. The air filter uses a dry element. Never apply oil to the element.
3. To clean the filter, use clean dry compressed air on the inside of the filter. Air pressure at the nozzle must not exceed 2 kgf/cm² (29 psi). Maintain reasonable distance between the nozzle and the filter. Rotate the filter while blowing to

CHECKING BLADES



(1) New Blade

NEVER place any part of your body, tools or other items near a mower deck before you've confirmed the mower is on a flat surface, the parking brake is engaged, the PTO is off, the blades are not rotating, the engine is off and the key has been removed from the ignition switch.

1. The blades can be inspected by raising the discharge chute and looking underneath the deck or lifting and securing the front of the mower.

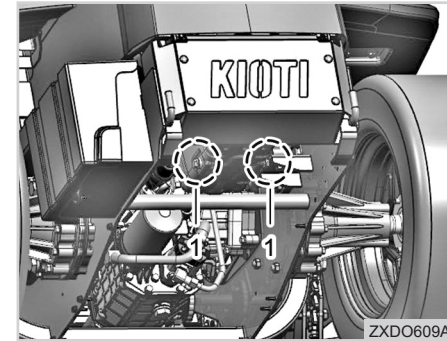
- For best performance, the blades should be maintained and kept sharp. Blades with dull, blunt or cutting edges with knicks and gouges should be sharpened or replaced as needed. Bent, cracked or damaged blades should be replaced immediately and could lead to serious issues if left unattended.
- Always torque the blades to the correct specification when removing or replacing.
- Inspect the blades daily to make sure the blades are tight and sharp with no signs of damage.

BLADE TIGHTENING TORQUE

103 ~ 118 N · m
 (76 ~ 87 ft · lb)
 (10.5 ~ 12.0 kgf · m)

⚠ WARNING

- Improperly equipped blades or related components used to secure the blade are extremely dangerous. If you do not use the original parts or if they are installed incorrectly, the blades or other parts may protrude causing serious injury or death.***
- Always wear the proper hand and eye protection when working with cutter blades.***

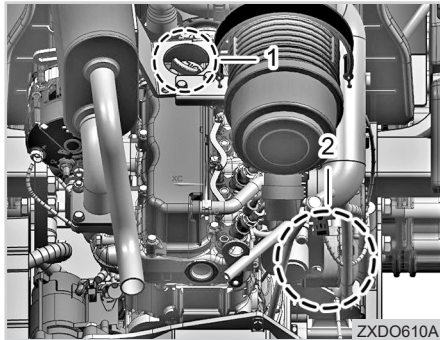
**EVERY 100 HOURS
CHANGING THE ENGINE OIL
AND REPLACING FILTER**

(1) Engine Oil Drain (LH & RH)

- Park the mower on level ground and start the engine to warm it up.
- Stop the engine, apply the parking brake, and remove the drain plug.
- To drain the used oil, remove the drain plug at the bottom of the engine and drain the oil completely into the oil pan.

All the used oil can be drained out easily when the engine is still warm.

- Remove engine oil filler cap to allow easy draining of engine oil.



(1) Engine Oil Filler (2) Engine Oil Filter

5. Remove the oil filter on the right side of the engine.
6. Apply a thin film of oil to the O-ring of a new filter and tighten the O-ring firmly by hand.
7. Add the engine oil to the specified level and tighten the oil filter with additional half turn by hand.
8. Run the start motor for approx. 10 seconds to deliver oil to each part.

9. Run the engine for approx. 5 minutes and check if the oil warning lamp comes on. If it does not come on, stop the engine. (It is normal that the oil warning lamp is off while the engine running)
10. Check the engine oil level again with the oil dipstick. If the level is low, add more oil.

| | |
|------------|------------|
| ENGINE OIL | SAE 10W-30 |
|------------|------------|

Oil capacity (with filter)

3.9 US qt (3.7 L)

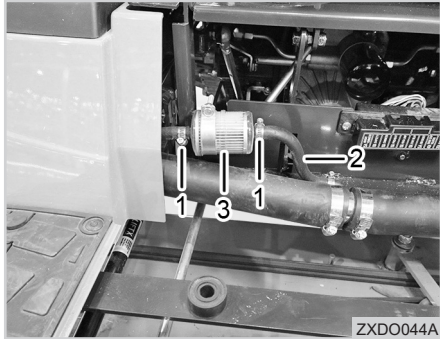
⊕ IMPORTANT

- **Only use oil that meets or exceeds the minimum engine manufacturer's requirements. Use only filters recommended by the engine manufacturer.**

⚠ WARNING

- *Engine oil becomes hot during operation and can burn when contacting the skin.*
- *Be sure to wear approved eye protection and gloves when changing the engine oil to prevent contact with the eye or hands.*
- *Prolonged skin contact over an extended time with engine oil could lead to skin disorders or skin cancer. Use soap and warm water to wash thoroughly to remove oil from the skin.*
- *Keep used oil out of the reach of children. Be sure to dispose of oil through approved recycling centers or oil waste facilities.*

CHECKING THE FUEL LINES/FUEL FILTER



(1) Pipe Clamp (2) Fuel Line
(3) Fuel Filter

1. The fuel line is made of rubber and could deteriorate if exposed to heat and sunlight over an extended period of time.
2. Inspect fuel lines for cracks, damage or leaks periodically. If required, replace the fuel line and clamps to prevent risk of fire or loss of performance.
3. Check the fuel filter frequently and replace it immediately if it is clogged up by dust or dirt.

4. Contact your Authorized **KIOTI** Dealer for assistance with maintenance or to make repairs above your skill set or technical capabilities.

⚠ CAUTION

- **Before performing any inspections or maintenance, make sure the parking brake is engaged and the engine is turned off.**
- **Inspect the fuel lines regularly. The fuel lines are subject to wear and aging with time. Failure to perform periodic inspections may lead to a fuel leak. Fuel leaking on a hot engine could cause a fire.**

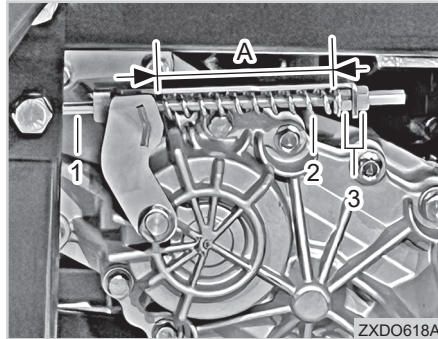
⊕ IMPORTANT

- **When disconnecting the fuel lines for replacement, plug both ends with cloth or paper to prevent dust or foreign material from entering it. Otherwise, the fuel pump could be damaged.**



ADJUSTING PARKING BRAKE

When the parking brake is locked.



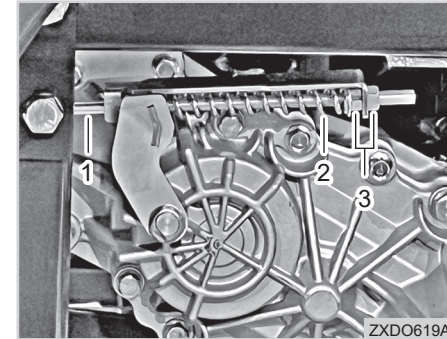
- (1) Brake Rod (2) Brake Spring
 (3) Nut
 (A) Parking Brake Spring Length

Proper brake spring length with the brake engaged to the lock position (A)

115 to 117 mm (4.5 to 4.6 in.)

5. If the length of the brake spring is not correct, adjust it. (See “Adjustment of brake spring length” below.)

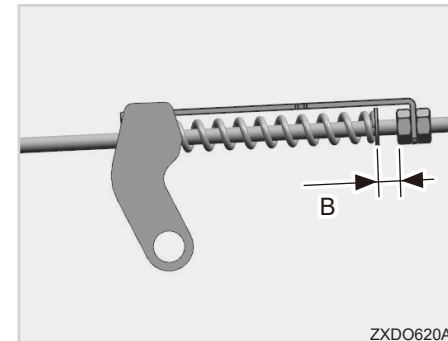
When the parking brake is released.



- (1) Brake Rod (2) Brake Spring
 (3) Nut

CHECK BRAKE SPRING

1. Place the steering levers to the “NEUTRAL LOCK” position.
2. Be sure to chock the rear wheels.
3. Engage the parking brake to the lock position.
4. Check the length of the brake springs on both sides



(B) Parking Brake Spring Play

6. Release the parking brake completely.
7. Hold the brake rod lightly.
8. Check the brake spring play.

Proper brake spring length (B)

0.5 to 1.0 mm (0.02 to 0.04 in.)

9. If the brake spring play is not correct, adjust it. (See “Adjustment of brake spring play” below.)

NOTE

Adjustment of brake spring length

1. Place the motion control lever to the “NEUTRAL LOCK” position.
2. Engage the parking brake to the lock position.
3. Loosen the lock nuts.
4. Adjust the spring length to the recommendation
5. Lock the nuts.
6. Check the brake spring play to the recommendation. If there is no play, adjust the brake spring play again. (See “Adjustment of brake spring play” below.)
7. Adjust the other side spring to the same dimension.

NOTE

Adjustment of brake spring play

1. Place the motion control lever to the “NEUTRAL LOCK” position.
2. Be sure to chock the rear wheels.
3. Release the parking brake completely.
4. Loosen the lock nuts.
5. Hold the brake rod by hand.
6. Tighten the nut to the correct space between the end of the spring and the nut.
7. Lock the nuts.
8. Adjust the other side spring to the same dimension

**⚠ WARNING**

- *Do not operate the mower if the parking brake is not operable. Damage to the mower or operator could occur.*

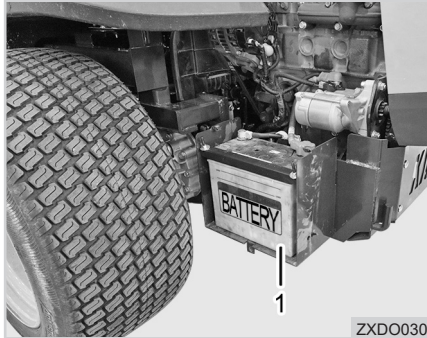
⊕ IMPORTANT

- **Improper adjustment of the parking brake can damage the mower.**

📖 NOTE

- If the procedures above do not allow you to adjust the brake to hold properly, contact your Authorized **KIOTI** Dealer for service.

CHECKING AND CHARGING THE BATTERY CHECK THE BATTERY



(1) Battery

Periodically check the battery condition and charge level in accordance with the manufactures recommendation.

Mishandling the battery shortens the service life and adds to maintenance costs. If the battery is insufficiently charged, the engine will be hard to start. It is important to inspect the battery periodically.

1. The battery cables should always be clean and firmly connected. When

installing a new or used battery, clean the battery terminals before installation.

2. Check the battery and cables for damage and corrosion.
3. Apply dielectric grease to the terminals and cable ends in order to prevent corrosion.

⚠ WARNING

Batteries produce explosive gas:

- ***Always charge the battery in a well ventilated area to allow the gases produced during charging to dissipate.***

CHARGING

1. To slow charge the battery, connect the battery positive terminal to the charger positive terminal and the negative to the negative, and then recharge in the standard fashion.
2. Boost charging is only for emergencies. It will partially charge the battery at a high rate and in a short time. Repetitive boost charging will shorten the battery's service life or possibly damage the mower's charging system.
3. When the battery is discharged and should be replaced, replace it with a new one with the same specification and capacity.

| BATTERY TYPE | VOLTS (V) |
|------------------------------|-----------|
| 300 CCA/ SP-35 or equivalent | 12 |


CAUTION

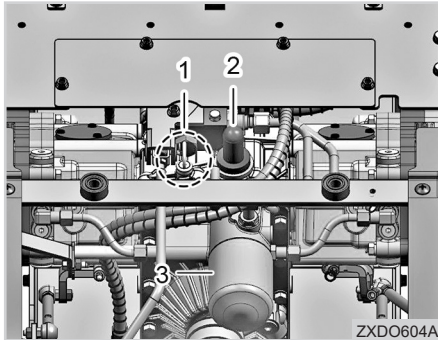
- **Keep the battery fully charged. If the battery's electrolyte fluid concentration is too low during the winter season, the battery may freeze.**
- **Do not start the engine with a frozen battery.**
- **Never check the charge status of the battery by placing a metal object across the posts. Use a voltmeter or hydrometer.**

DIRECTIONS FOR STORAGE

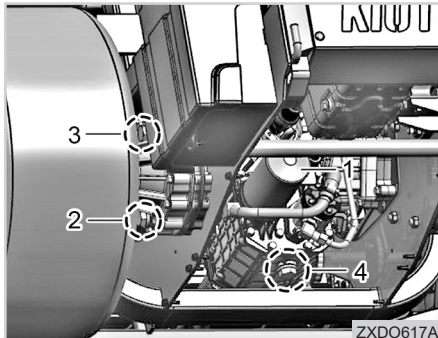
1. When storing the mower for a long period, remove the battery from the unit and store in a dry place out of direct sunlight.
2. The battery self discharges while it is stored. Recharge it once every three months in hot seasons and once every six months in cold seasons.



EVERY 200 HOURS REPLACING TRANSAXLE OIL FILTER (HST)



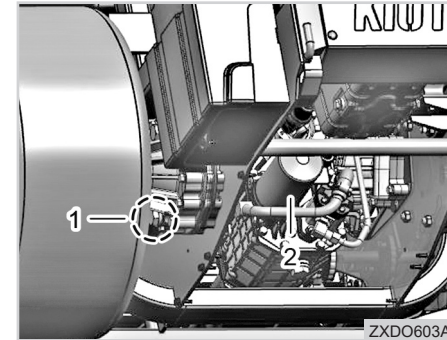
- (1) TM(HST) Oil Gauge
(2) TM Oil Filler
(3) TM(HST) Filter



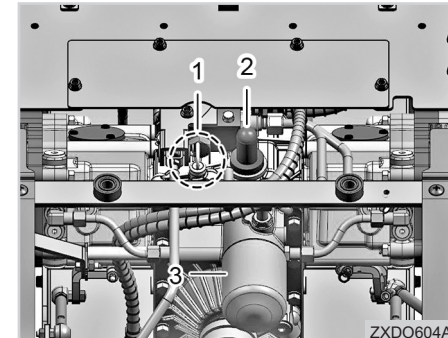
- (1) TM Oil Filter (2) TM Oil Drain
(3) TM Oil Filler (4) TM(HST) Oil Drain

1. Place oil pan underneath the oil filter. (Do not drain oil.)
2. Remove the oil filter by using the filter wrench.
3. Apply a slight coat of oil onto the new filter gasket.
4. Tighten the filter until it contacts the mounting surface. Tighten filter by hand an additional 1/2 turn only.
5. After the new filter has been replaced, the transmission fluid level normally lowers a little. Add fluid to proper level. Check for oil leaks around filter gasket.

EVERY 400 HOURS CHANGING TRANSMISSION FLUID



- (1) TM(HST) Oil Drain (2) TM Filter



- (1) TM(HST) Oil Gauge
(2) TM Oil Filler
(3) TM(HST) Filter

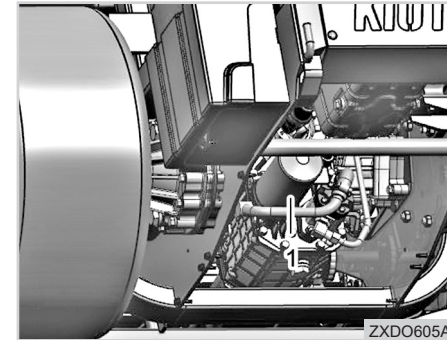
The fluid in the transmission case is also used for the hydrostatic drive system.

1. To Drain the transmission oil, place oil pan underneath the transmission case and the rear axle gear case (RH & LH) and remove the drain plug at the bottom of the transmission case and the rear axle gear case (RH & LH).
2. After draining, reinstall the drain plug.
3. Fill the UTF 55 hydraulic transmission fluid or its equivalent up to the upper line of the gauge.
4. After running the engine for a few minutes, stop it and check the oil level again; add oil to the prescribed level.

CAUTION

- **Operate only low rpms immediately after changing the transmission fluid and filter.**
- **Keep the engine at medium speed for a few minutes to insure proper lubrication of all parts so there is no damage to transmission.**

REPLACING HYDRAULIC FLUID FILTER



(1) TM Oil Filter

1. To drain the transmission oil, place oil pan underneath the transmission case and the rear axle gear case (RH & LH) and remove the drain plug at the bottom of the transmission case and the rear axle gear case (RH & LH).
2. After draining, reinstall the drain plugs.
3. Remove the oil filter by using the filter wrench.



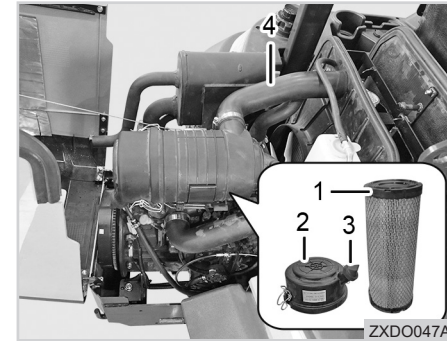
4. Apply a slight coat of oil onto the new filter gasket.
5. Tighten the filter until it contacts the mounting surface. Tighten filter by hand an additional 1/2 turn only.
6. After new filter has been installed, fill transmissions with UTF55 hydraulic transmission fluid or its equivalent to the upper line of the dip stick.
7. Operate the machine at low RPM for a couple of minutes and recheck fluid level. Fill as needed to make sure fluid level is at the top line of the dip stick.

REPLACING THE FUEL FILTER

Replace the fuel filter every 400 hours or sooner if the filter becomes clogged or debris is visibly present in the filter housing. Only use a filter approved by the engine manufacturer.

Always contact your Authorized **KIOTI** Dealer for assistance with maintenance or service that is beyond your technical capabilities.

EVERY 1 YEAR REPLACING AIR CLEANER ELEMENT



- (1) Filter (2) Dust Cap
(3) Evacuator Valve (4) Suction Hose

Failure to inspect and clean or replace the air filter periodically could lead to reduced performance and shortened life expectancy of the engine. The air filter should be inspected daily, cleaned every 50 hours and replaced once per year. Cleaning and replacement should be more frequent if the mower is operated in dry, dusty conditions.

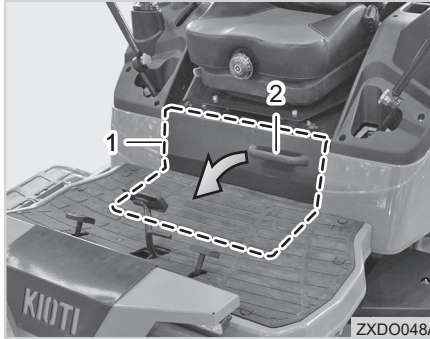
1. Inspect the intake hose and air cleaner housing for damage.

SERVICE AS REQUIRED REPLACING FUSES

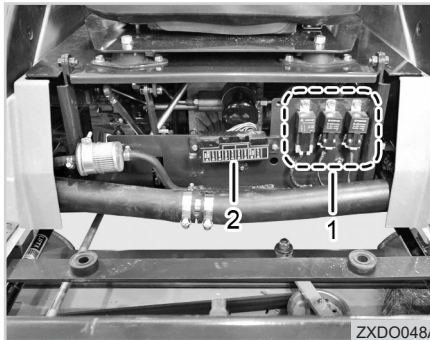
2. **KIOTI's** diesel mower has a dust cap that is held on with 2 clips. Once the two clips are released the dust cap pulls off and the filter element can be removed by pulling it out as well.
3. Clean the inside of the air cleaner housing thoroughly.
4. Replace the air cleaner element and inspect the housing for damage.
5. Secure the cap to the main housing using the two clips.

⚠ CAUTION

- Only use genuine KIOTI components to ensure the exact fit and performance to prevent damage and maintain your mowers for year's of service.
- Make sure dust cap is attached securely to prevent dust from entering.
- Do not allow dust or foreign matter to enter the air intake port when removing the element.



(1) Center Step (2) Grip



(1) Relay (2) Fuse Box

To access the fuse panel:

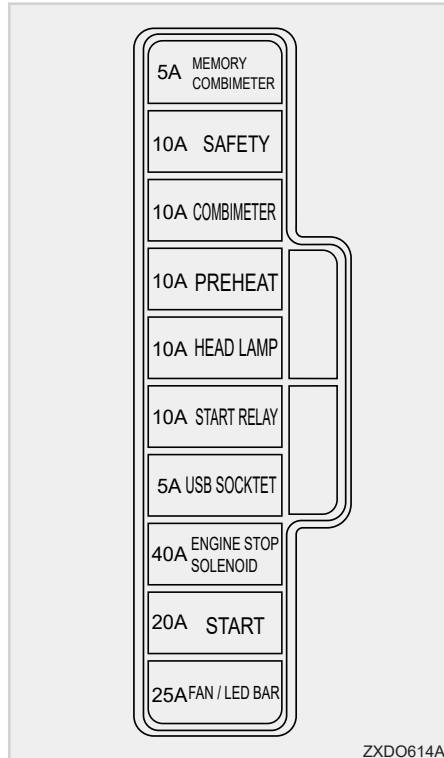
Pull handle located on the access panel located in front of the seat of the mower.

⊕ IMPORTANT

- Never use wire or silver foil as a fuse replacement.



The main fuse protects the following functions.



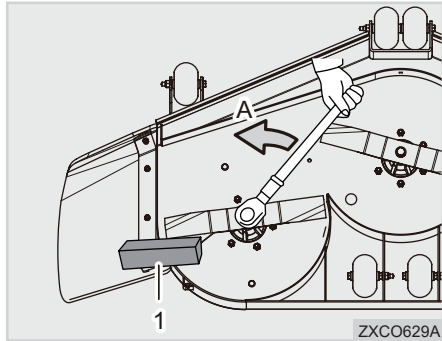
INSPECTION AND SHARPENING BLADES

1. Make sure that the engine is off, the parking brake is set, and the blades have stopped moving completely.
2. Raise the mower deck to its highest, locked position.
3. Use care when checking the cutting blades. Do not touch the blades directly, wear safety gloves or use a blade buddy to hold the blades during removal.
4. Bent, broken, or severely worn blades should be replaced with new blades.
5. When sharpening blades, do not remove more than 1/4" of material from the overall blade width. A further reduction in the width of the blade could lead to reduced performance and durability. Always sharpen the blade cutting edge at the same angle as the original.

WARNING

- ***Always confirm the mower is on a flat surface, the parking brake is engaged, the PTO is off, the blades are not rotating, the engine is off and the key has been removed from the ignition switch before performing any work on the mower.***

REPLACING BLADES



(1) Block
(A) Loosen

1. Remove grass & dirt from the top & underneath the mower deck before removing the blades. When re-installing, be sure to remove any dirt/debris from underneath the spindle covers. All covers should be installed and in place before operating the mower.
2. Lift the front of the mower to make the blades visible and accessible. Be sure to use jack stands, make sure the parking brake is set and the

mower is secure before performing any work on the mower.

3. Place a block of wood between the blade and the mower housing to prevent the spindle from rotating when loosening the mower blade.
4. When sharpening the blade, hold the blade firmly, firmly in a vise. Use a large file or a small grinder with buffing wheel to remove nicks from the blade or restore the original angle to the cutting edge.
5. To check the balance of the blade, pass a small rod through the center hole. If the blade is unbalanced, file the heavy side of the blade until the blade is balanced.
6. When mounting the blade, be sure to insert the spring between the blade and the bolt. And allow the blade to balance. The blade should rest level side to side. If not, sharpen the heavier side (the side that angles downward) more. Perform the balance test again to

confirm the blade is balanced before re-installing on the mower deck.

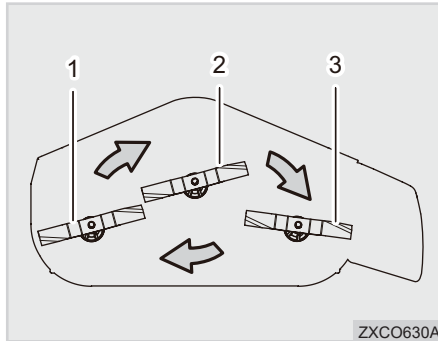
7. Remove grass and dirt from above and inside the mower before inspecting or replacing the blade. In particular, clean the inside of the belt cover. If not cleaned, the life of the belt will be shortened.

⊕ IMPORTANT

- When removing the blade mounting bolts, use an appropriate socket or wrench.

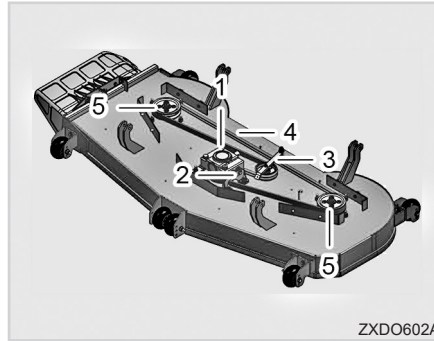


REPLACING MOWER BELT



(1) Blade (LH) (2) Blade (Center)
(3) Blade (RH)

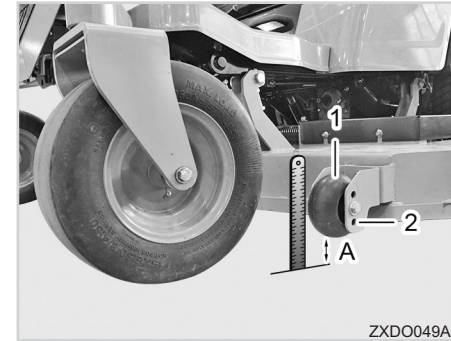
8. Tighten the blade mounting bolts to a torque of 103 to 118 N-m (76 to 87 ft-lb or 10.5 to 12.0 kgf · m).



(1) Gearbox (2) Gearbox Bracket, RH
(3) Belt Tensioner (4) Belt
(5) Spindle

1. Remove the left and right belt cover from the mower deck.
2. Clean around the gear box.
3. Remove the mower belt from the belt tensioner.
4. Remove the gearbox bracket which mounts the gearbox to the mower deck and slip the mower belt over the top of the gearbox.
5. To install a new belt, reverse the above procedure.

ADJUSTING ANTI-SCALP ROLLERS



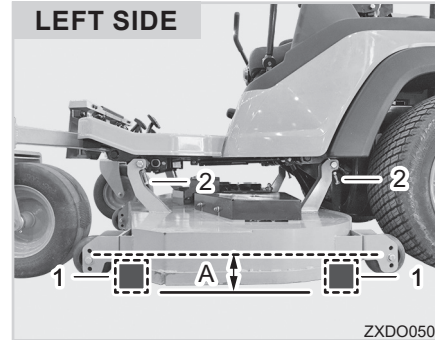
(1) Anti-Scalp Roller (2) Height Adjust Hole
(A) Ground Height: 0.75 in.

1. Inspect the machine tire air pressure and inflate to the correct pressure.
2. Adjust the mower deck to your preferred cutting height (most often used) with lower the mower deck.
- 3v. Adjust the right front anti-scalp wheel to approximately 0.75 inches . If you normally cut at a height above 3 inches, it is recommended to adjust the anti-scalp wheels to the lowest setting.

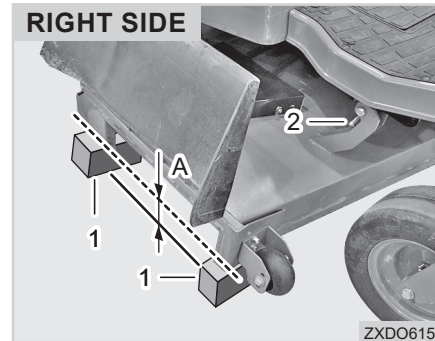
⊕ IMPORTANT

- Check the Anti-scalp wheels adjustments whenever the mower deck cutting height changes.
- The deck is designed to free float and not run on the anti-scalp wheels all the time. Running the deck on the anti-scalp wheels will diminish cutting performance and also cause accelerated wear to the anti-scalp wheels.

ADJUSTING DECK LEVEL (SIDE TO SIDE)

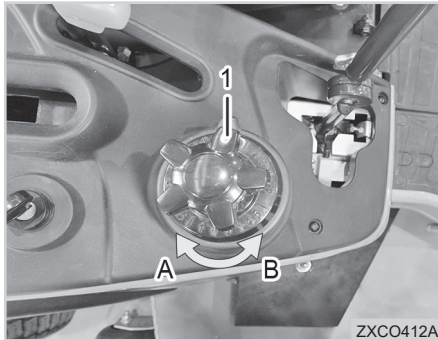


(1) Block (2) Deck Height Adjust Bolt
(A) Blade Height



(1) Block (2) Deck Height Adjust Bolt
(A) Blade Height

1. Park the machine on a flat surface, stop the engine and engage the parking brake. Make sure the deck is in the highest position. Confirm the air pressure in all 4 tires is set to the maximum recommended inflation.
2. Using 4 blocks of the same size, place a block under each corner of the deck. Soft wood blocks are not recommended as the deck may settle into the blocks. Treated wood, metal or other solid, durable material are recommended. Be sure the deck edge is resting on the blocks and no part of the anti-scalp wheels are resting on the block.



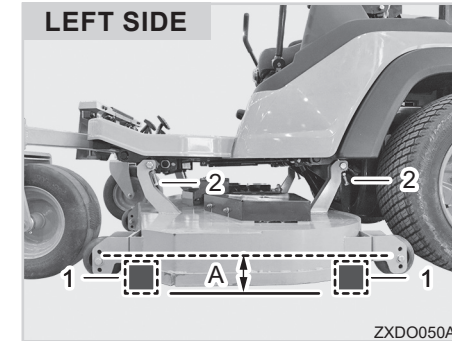
(1) Deck Height Dial
(A) Shorter (B) Longer

3. Place the cutting height pin in the cutting height position that equals the height of the blocks and gently lower the deck onto the blocks. Note: The blades are approximately 3/16" (4.76 mm) higher than the lower edge of the deck.
4. Check the following 2 items:
 - 1) Make sure the deck is resting on the blocks at all 4 corners.
 - 2) Raise the discharge chute and rotate the right blade so the

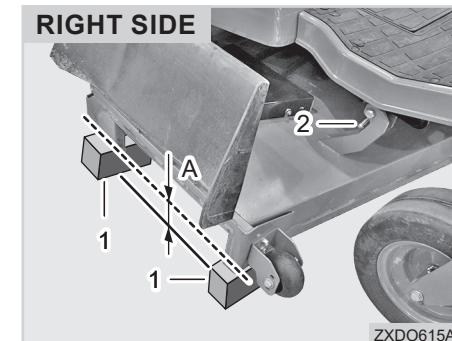
cutting edge is pointing forward. Measure the height of the blade. The height should be within 1/8" (3.175 mm) of the selected cutting height.

5. At each corner of the deck, loosen the lock nut. Adjust the four adjustment bolts so that the deck is level. Retighten the lock nuts.
6. Once complete, raise/lower the deck multiple times. Re-check the blade height and adjusting bolts to confirm the deck position has not changed.

ADJUSTING DECK RAKE (FRONT TO REAR)

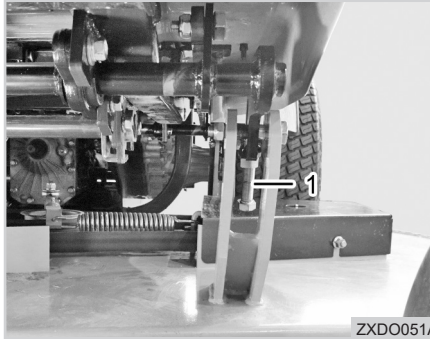


(1) Block (2) Deck Height Adjust Bolt
(A) Blade Height



(1) Block (2) Deck Height Adjust Bolt
(A) Blade Height

1. Follow the steps outlined for the deck level process. To adjust the rake, the rear blocks will need to be $1/8"$ - $1/4"$ (3.175 mm - 6.35 mm) taller than the front blocks.
2. To confirm the rake is correct, rotate the blade so the cutting edge should be facing to the side of the mower. The front cutting edge should measure within $1/8"$ of the cutting height position selected. The rear cutting edge should measure $1/8"$ - $1/4"$ (3.175 mm - 6.35 mm) higher than the front edge. The difference between the front cutting edge and rear cutting edge is the rake of the deck. The difference measured in the heights of the front/rear cutting edges should match the difference between the front blocks and rear blocks used when performing this process.



(1) Deck Height Adjust Bolt



STORAGE AND DISPOSAL

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MOWER STORAGE DAILY STORAGE

1. Remove dust, debris and grass residue daily from the mower deck, underneath the spindle covers, and around the engine and transaxle areas daily. Always check for loose or missing hardware or other maintenance issues while cleaning or inspecting the mower.
2. Always store the mower indoors or underneath a shelter or covered area if possible.

DANGER

- ***Use caution when operating the mower in an enclosed area. Be sure to ventilate the area well and allow exhaust gases to escape. Exhaust gases contain Carbon Monoxide which is a colorless and odorless gas that can cause severe issues, including death with prolonged exposure.***

LONG-TERM STORAGE

IMPORTANT

- **If the mower is not used for an extended period of time, follow the instructions below to prevent corrosion and performance deterioration of the mower while it is stored.**

1. Always check for loose or missing hardware. Tighten or replace as needed.
2. Grease and lubricate all pivot points. Apply a light film of grease to any bare metal surfaces that may rust or corrode during long-term storage.
3. Remove any weights, grass collection or other items added to the mower.
4. Inflate the tires to the maximum recommended operating pressure.
5. Change the engine oil and filter. Operate the engine for 5-10 minutes to circulate the fresh oil throughout the system.
6. With mower deck lowered to the ground, coat any exposed area with grease.
7. Remove the battery from the mower. Store the battery following the battery storage procedures. (See section "Battery" in Chapter Maintenance)
8. Store the mower indoors or underneath a shelter or covered area if possible.
9. Clean the mower and remove dust, debris and grass residue. Always store the mower "clean" and free of any materials that rodents or other animals may utilize for nesting.
10. Store the unit with the tires resting on concrete or blocks to prevent premature deterioration of the tires.
11. Cover the exhaust to prevent material build-up during storage or animals nesting.

12. Attach a tag onto the mower to inform the storage condition of the mower.

 **CAUTION**

- **Never clean the mower while the engine is running.**
- **Remove the key from the ignition during storage.**
- **Cover the mower after the muffler and the engine have cooled down.**
- **If you are not removing the battery during storage, disconnect the both terminals of the battery from the mower's electrical system.**

USING MOWER AFTER LONG TERM STORAGE

1. Check the tire air pressure and inflate the tires to the recommended operating pressure if they are low.
2. Reinstall the battery or re-connect the cables. It is recommended to charge the battery prior to installation or re-connection to ensure the battery is at full charge.
3. Check all fluid levels.
4. Remove any grease applied to bare metal surfaces or exposed areas covered to prevent rust.
5. Apply grease to the lubrication points.
6. Get onto the mower and start the engine and allow it to run for a few minutes before moving the mower.
7. Check the operation of all components by turning left/right and moving forward/backwards, engage the parking brake. Raise/lower and raise the deck. Engage the PTO. Stop the mower, dis-engage the PTO, apply the parking brake and **TURN OFF THE ENGINE** and inspect for leaks,

damaged or frayed belts, loose or missing hardware.

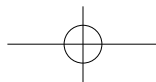
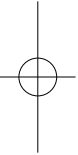
8. Repair any items damaged during storage before putting the mower into use.



USAGE AND DISPOSAL

In order to protect the environment, use and dispose of all waste fluids, damaged or replaced parts on the mower with the following in mind:

1. Catch oil or coolant in containers designed to handle those products. Never mix oil and coolant in the same container. Always dispose of used fluids according to local state, province or municipality regulations.





TROUBLESHOOTING

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ENGINE TROUBLESHOOTING

| CAUSE | | COUNTERMEASURES |
|---|--|--|
| 1. Engine does not turn over | • Steering levers are not in neutral | • Set steering levers to "Neutral" |
| | • The parking brake is not engaged | • Engage the parking brake |
| | • The PTO is in the "ON" position | • Set the PTO switch to the "OFF" position. |
| | • Battery is discharged | • Charge or replace the battery |
| | • Fuse failure | • Check the fuses |
| | • Relay or switch defective | • See your KIOTI dealer |
| | • Electrical connections are corroded or loose | • Clean and check electrical connections |
| 2. Engine turns over but will not start | • Out of fuel | • Refuel |
| | • Clogged or damaged fuel hose or fuel filter | • Clean or replace fuel line or see your KIOTI dealer |
| | • Poor fuel quality | • Change fuel and fuel filters |
| | • Water and dust in the fuel system | • Fuel change or see your KIOTI dealer |
| | • Dirty or clogged air cleaner filter | • Clean or replace air cleaner filter |



| CAUSE | | COUNTERMEASURES |
|--|--|---|
| 2. Engine turns over but will not start | • Fuse short | • Replace fuse |
| | • Relay or switch defective | • See your KIOTI dealer |
| | • Battery is weak | • Charge or replace the battery |
| 3. Insufficient engine power | • Engine overload | • Reduce workload |
| | • Fuel filter clogged | • Replace fuel filter |
| | • Air cleaner filter contamination | • Clean or replace air cleaner filter |
| 4. Engine is running rough, not smooth | • Clogged air cleaner | • Clean or replace air cleaner |
| | • Poor fuel quality | • Change fuel and fuel filters |
| 5. When the exhaust color is white or blue | • Excessive engine oil | • Reduce engine oil level to specified value |
| | • Piston ring worn or stuck | • See your KIOTI dealer |
| | • Improper weight or grade of engine oil | • Change engine oil/filter and refill with correct weight and grade per engine manufacturer's recommendations |



| CAUSE | | COUNTERMEASURES |
|--|---|---|
| 6. When the exhaust color is black or gray | • Engine overload | • Reduce workload |
| | • Old or stale fuel | • Drain fuel and refill with ultra-low sulfur diesel (Sulfur content: 15 ppm or less) |
| | • Clogged fuel filter | • Replace fuel filter |
| | • Clogged air filter | • Clean or replace air cleaner filter |
| 7. When the engine overheats | • Engine overload | • Reduce workload |
| | • Engine oil is low | • Check oil level and replenish if necessary |
| | • Contamination of engine air intake and cooling fins | • Clean engine air intake |
| | • Clogged air cleaner filter element | • Clean or replace air cleaner element |
| | • Engine speed is too low | • Operate engine at "high speed" |
| | • Driving too fast/excessive work load | • Drive slower/reduce workload |

※ If you have any questions or require assistance diagnosing or repairing your mower, please contact your authorized **KIOTI Dealer**.



BATTERY TROUBLESHOOTING

| | CAUSE | COUNTERMEASURES |
|---|---|---|
| 1. The engine will not turnover | • The battery is discharged | • Recharge or replace the battery |
| | • Damaged or corroded battery connections | • Clean and reconnect battery terminals |
| | • Dead battery | • Replace battery |
| | • Defective wiring and switch | • See your KIOTI dealer |
| 2. The battery will not charge | • Defective battery | • Replace battery |
| | • Defective alternator | • See your KIOTI dealer |
| 3. Terminal or battery connections become hot | • Weak or defective connection | • Clean and re-tighten terminals |

※ If you have any questions or require assistance diagnosing or repairing your mower, please contact your authorized **KIOTI** Dealer.



MOWER TROUBLESHOOTING

| CAUSE | | COUNTERMEASURES |
|---|---|--|
| 1. The engine is running but the mower will not move | • Insufficient transaxle oil | • Inspect and refill the transaxle to the correct level |
| | • Transaxles are not engaged | • Inspect drive linkages |
| 2. Mower does not drive smoothly | • Insufficient transaxle oil | • Transaxle oil replenishment |
| | • Clogged transaxle filter | • Replace transaxle filter |
| | • Linkage is out of adjustment | • See your KIOTI dealer |
| 3. The mower moves when the parking brake is released or does not sit still when steering levers are in neutral | • HST shift to transaxle linkage is out of adjustment | • See your KIOTI dealer |
| | • Steering lever linkage pivot is sticking | • Lubricate the linkage |
| 4. When the blades do not rotate | Lever out of adjustment | • See your KIOTI dealer |
| | • Mower belt is broken | • Replace mower belt |
| | • Mower belt or pto shaft is broken | • Remove broken belt or PTO shaft and replace with new part or see your KIOTI dealer. |
| | • Mower belt is not connected | • Reinstall mower belt on the pulley |
| 5. The discharge outlet becomes clogged | • Grass is too wet | • Allow the grass to dry before continuing to operate |
| | • Cutting too low or removing too much material for a single pass | • Increase cutting height and cut grass twice |



| | CAUSE | COUNTERMEASURES |
|--|---|---|
| 5. The discharge outlet becomes clogged | • Engine speed too low | • Increase engine speed |
| | • Travel speed is too fast | • Reduce travel speed |
| 6. The mower belt is slipping | • Weak or improperly adjusted | • Replace spring |
| | • Worn or damaged belt | • Replace mower belt |
| 7. Overall cut finish is poor or leaving uncut grass | • Travel speed is too fast | • Reduce travel speed |
| | • Engine speed is too low | • Increase engine speed to maximum |
| | • Cutting too low or removing too much material for a single pass | • Increase cutting height and cut grass twice |
| | • Worn or damaged blade | • Sharpen or replace blades |
| | • Grass and debris deposits underneath deck | • Clean the underside of the mower deck |
| 8. Cut is not even or uniform from side to side | • Mower deck is not level | • Check and adjust deck level if needed |
| | • Travel speed is too fast | • Reduce travel speed |
| | • Worn or damaged blade | • Sharpen or replace blades |
| | • Low tire pressure | • Inflate tire to specified air pressure |



| | CAUSE | COUNTERMEASURES |
|------------------------------------|---|---|
| 9. Excessive vibration | • Grass and debris deposits underneath deck | • Clean the underside of the mower deck |
| | • Broken belt | • Replace with new belt |
| | • Twisted belt | • Remove twist from belt or install a new belt if damaged |
| | • Broken pulley | • Replace with new pulley |
| | • Damaged or broken blade | • Replace with a new blade |
| 10. Mower scalps or cuts into soil | • Blade height is too low | • Raise blade height |
| | • Un-even terrain | • Inflate tires to maximum recommended pressure. Check and adjust anti-scalp wheels based on desired cutting height |
| | • Bent blade | • Replace with new blade |
| 11. When the mower's load is high | • Engine speed is too low | • Increase engine speed to maximum |
| | • Travel speed is too fast | • Reduce travel speed |
| | • Grass and debris is wrapped around the blades | • Inspect and clean the underside of the mower deck as needed |

※ If you have any questions or require assistance diagnosing or repairing your mower, please contact your authorized **KIOTI** Dealer.



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