OPERATOR'S MANUAL

KUBOTA ZERO TURN MOWER
MODEL Z122R

READ AND SAVE THIS MANUAL

KUBOTA Corporation
English (U.S.A.)
Code No. K3001-7122-5

PRINTED IN U.S.A. © KUBOTA Corporation 2014
KUBOTA Corporation is ···

Since its inception in 1890, KUBOTA Corporation has grown to rank as one of the major firms in Japan.

To achieve this status, the company has through the years diversified the range of its products and services to a remarkable extent, until today, 30 plants and 35,000 employees produce over 1,000 different items, large and small.

All these products and all the services which accompany them, however, are unified by one central commitment. KUBOTA makes products which, taken on a national scale, are basic necessities. Products which are indispensable, products intended to help individuals and nations fulfill the potential inherent in their environment. For KUBOTA is the Basic Necessities Giant.

This potential includes water supply, food from the soil and from the sea, industrial development, architecture, construction and transportation.

Thousands of people depend on KUBOTA's know-how, technology, experience and customer service. You too can depend on KUBOTA.

Abbreviation List

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>PTO</td>
<td>Power Take Off</td>
</tr>
<tr>
<td>RH/LH</td>
<td>Right-hand and left-hand sides are determined by facing in the direction of forward travel</td>
</tr>
<tr>
<td>ROPS</td>
<td>Roll-Over Protective Structures</td>
</tr>
<tr>
<td>rpm</td>
<td>Revolutions Per Minute</td>
</tr>
<tr>
<td>SAE</td>
<td>Society of Automotive Engineers</td>
</tr>
</tbody>
</table>

Universal Symbols

As a guide to the operation of your machine, various universal symbols have been utilized on the instruments and controls. The symbols are shown below with an indication of their meaning.

- Safety Alert Symbol
- Read Operator's Manual
- Gasoline Fuel
- Fuel-Level
- Parking Brake-Engaged position
- Parking Brake-Disengaged position
- Engine-Stop
- Engine-Run
- Starter Control
- Power Take-Off Switch Control-Off Position (Disengaged)
- Power Take-Off Switch Control-On Position (Engaged)
- Hours
- Cutting Height
- Fast
- Slow
- Engine Speed Control
- Choke

California Proposition 65

WARNING
Engine exhaust, some of its constituents, certain vehicle components and fluids, contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

IMPORTANT
The engine in this machine is not equipped by the manufacturer with a standard spark arrester. It is a violation of California Public Resource Code Section 4442 to use or operate this engine on or near any forest-covered, brush-covered land, or grass-covered land unless the exhaust system is equipped with a working spark arrester meeting state laws. Other states or federal areas may have similar laws.

Canadian Electromagnetic Compatibility (EMC):
This machine complies with Industry Canada ICES-002.
FOREWORD

You are now the proud owner of a KUBOTA ZERO TURN MOWER. This machine is a product of KUBOTA's quality engineering and manufacturing. It is made of excellent materials and under a rigid quality control system. It will give you long, satisfactory service. To obtain the best use of your machine, please read this manual carefully. It will help you become familiar with the operation of the machine and contains many helpful hints about machine maintenance. It is KUBOTA's policy to utilize, as quickly as possible, every advance in our research. The immediate use of new techniques in the manufacturing of products may cause some small parts of this manual to become outdated. KUBOTA distributors and dealers will have the most up-to-date information. Please do not hesitate to consult them.

SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.

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

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

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

IMPORTANT : Indicates that equipment or property damage could result if instructions are not followed.

NOTE : Gives helpful information.
CONTENTS

ADJUSTING CUTTING HEIGHT ................................................................. 23
OPERATING MOWER ................................................................................... 24
PTO Switch ................................................................................................. 24
Starting ......................................................................................................... 25

TIRES AND WHEELS .................................................................................. 26

TIRES ........................................................................................................... 26
Inflation Pressure ......................................................................................... 26

WHEELS ........................................................................................................ 26
Remove and Install Front Caster Wheels ....................................................... 27

MAINTENANCE ............................................................................................ 28

SERVICE INTERVALS ................................................................................. 28

LUBRICANTS AND FUEL ........................................................................... 30

PERIODIC SERVICE .................................................................................... 31

HOW TO RAISE THE OPERATOR'S SEAT ................................................. 31

DAILY CHECK ............................................................................................. 32
Checking Engine Oil Level ........................................................................... 32
Checking Amount of Fuel and Refueling ...................................................... 33
Checking and Cleaning Air Intake Screen ................................................... 34
Checking Tire Pressure ................................................................................ 34
Inflation Pressure ......................................................................................... 34
Checking Movable Parts ............................................................................ 35

EVERY 50 HOURS ......................................................................................... 35
Checking Engine Start System ..................................................................... 35
Checking OPC System ................................................................................ 36
Checking Carbon Canister Air Filter ........................................................... 37
Checking Muffler and Spark Arrester (if equipped) ................................. 37

EVERY 100 HOURS ....................................................................................... 38
Changing Engine Oil .................................................................................... 38
Cleaning Air Cleaner Paper Element ......................................................... 39
Cleaning Engine Shroud ............................................................................. 40
Checking Spark Plug ................................................................................... 40
Checking Fuel Filter .................................................................................... 40
Battery Condition ........................................................................................ 41
Adjusting Choke Cable ............................................................................... 42
Adjusting Throttle Cable ............................................................................ 44

EVERY 200 HOURS ....................................................................................... 45
Replacing Engine Oil Filter ........................................................................ 45
Replacing Air Cleaner Paper Element ......................................................... 46

EVERY 300 HOURS ....................................................................................... 47
Cleaning Combustion Chamber ................................................................. 47
Checking Engine Valve Clearance ............................................................. 47

EVERY 500 HOURS ....................................................................................... 47
Electric Clutch Adjustment ........................................................................ 47

EVERY 1 YEAR ............................................................................................ 48
Replacing Fuel Filter ................................................................................... 48
Checking Fuel Lines .................................................................................... 48
Checking Muffler and Spark Arrester (if equipped) ..................................... 48
Replacing Spark Plug .................................................................................. 48
Checking Engine Valve Clearance ............................................................. 48
Careful operation is your best insurance against an accident. Read and understand this manual carefully before operating the machine. All operators, no matter how much experience they may have had, should read this and other related manuals before operating the machine or any implement attached to it. It is the owner’s obligation to instruct all operators in safe operation. This mowing machine is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

1. **BEFORE OPERATING**

1. The ZERO TURN MOWING MACHINE has different steering characteristics than other machines with a steering wheel and does not have a service brake pedal (but, has a parking brake lever. Normal slowing down and stopping is done with the motion control levers.). Read and understand the operators manual before operating the machine. Practice operating machine at low engine speed without mower engaged in an unobstructed area.
2. Know your equipment and its limitations. Read all instructions in this manual and machine safety labels before attempting to start and operate the machine.
3. Pay special attention to the safety labels on the machine itself.
4. KUBOTA recommends the use of a Roll Over Protective Structures (ROPS) and seat belt in almost all applications. This combination will reduce the risk of serious injury or death, should the machine be upset.
   If the ROPS is loosened or removed for any reason, make sure that all parts are reinstalled correctly before operating the machine.
   Never modify or repair a ROPS because welding, bending, drilling, grinding, or cutting may weaken the structure.
   If any structural member of the ROPS is damaged, replace the entire structure at your local KUBOTA Dealer.
5. Always use the seat belt if the machine has the ROPS.
   Check the seat belt regularly and replace if frayed or damaged.
6. Do not allow any bystanders around or near machine during operation.
7. Do not allow passengers, children or non-qualified operators on the machine at any time. The operator must remain in the machine seat throughout operation.
8. Do not operate the machine or any attachments while under the influence of alcohol, medication, controlled substances or when fatigued.
9. Do not wear loose, torn, or bulky clothing around machine. The clothing may catch on moving parts or controls, leading to the risk of accident. Wear and use any additional safety items such as hard hat, safety boots or shoes, eye and hearing protection, gloves, etc. as appropriate or required.
10. Do not wear radio or music headphones while operating the machine.
   Safe operation requires your full attention.
11. Carefully check the vicinity before operating machine or any implement attached to it. Clear the work area of objects (wires, rocks, etc.) that might be picked up and thrown. Check for overhead clearance which may interfere with a grass catcher or ROPS.
12. Check brakes and other mechanical parts for correct adjustment and wear. Replace worn or damaged parts promptly. Check the tightness of all nuts and bolts regularly. (For further details, see "PERIODIC SERVICE" and "ADJUSTMENT" section.)
13. Keep all shields and guards in place. Replace any that are damaged or missing.
14. Before allowing other people to use your machine, explain how to operate and have them read this manual before operation.
15. In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern and prudence of personnel involved in the operation, transport and maintenance of the equipment.

16. Keep the machine and attachments in good operating condition and keep safety devices in place and in proper working condition.

17. Do not modify the machine. Unauthorized modification may affect the function of the machine, which may result in personal injury.

18. Use only implements approved by KUBOTA. Use proper ballast to front or rear of machine to reduce the risk of upsets. Follow the "Safe Operation" procedures, specified in the manuals with equipment.

19. Keep your machine clean. Accumulations of dirt, grease, and trash can contribute to fires and lead to personal injury.

20. The exhaust gas from the muffler is very hot. To prevent fire, do not expose dry grass, mowed grass, oil and any other combustible materials to exhaust gas. Use a spark arrester where required. Also keep the engine and muffler clean all the time.

2. OPERATING

◆ Starting
1. Always sit in the operator's seat when starting engine or operating levers or controls.

2. Before starting the engine make sure that the motion control levers are in neutral lock, the parking brake is applied, and Power Take Off (PTO) is disengaged (OFF).

3. Do not start engine by shorting across starter terminals. The machine may start in gear and move if normal starting circuitry is bypassed.

4. Do not operate or idle engine in a non-ventilated area. Carbon monoxide gas is colorless, odorless, and deadly.

5. Do not start engine while tilting deck.

6. Check before each use that operator presence controls are functioning correctly. Test safety systems. (See "Checking Engine Start System" and "Checking OPC System" in "EVERY 50 HOURS" in "PERIODIC SERVICE" section.) Do not operate unless they are functioning correctly.

◆ Working
1. Do not turn sharply when driving at high speed.

2. To avoid tip over, slow down when turning on uneven terrain or before stopping.

3. Do not operate near ditches, holes, embankments, or other terrain, which may collapse under the machine weight. The risk of machine tip over increases when the ground is loose or wet.

4. Park the machine on a firm and level surface.
Operators, age 60 years and above
Data indicates that operators, age 60 years and above, are involved in a large percentage of machine-related injuries. These operators should evaluate their ability to operate the machine safely enough to protect themselves and others from serious injury.

Operation on slopes
Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not mow it. If the engine stops when operating on a slope apply the parking brake immediately to prevent machine run away.

DO
1. To avoid tip over, operate across the slopes not up and down. Stay off hills and slopes too steep for safe operation.
2. Remove obstacles such as rocks, tree limbs, etc.
3. Stay alert for holes in the terrain and other hidden hazards. Keep away from drop-offs. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
4. Follow the manufacturer's recommendations for wheel weight or counterweights to improve stability.
5. Keep all movement on the slopes slow and gradual. Do not make sudden changes in speed or direction.
6. Avoid starting or stopping on a slope. If tires lose traction, disengage PTO and proceed slowly straight down the slope.
7. Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tip-over or loss of control.
8. Use special caution when changing direction on slopes. Slow down, and use extra caution when changing direction on a slope.

DO NOT
1. Do not turn on slopes unless necessary. If necessary, turn uphill slowly and gradually.
2. Do not mow near drop-offs, ditches, or embankments. The mower could suddenly turn over if a wheel is over the edge of cliff or ditch, or if an edge caves in.
3. Do not mow on wet grass. Reduced traction could cause sliding and loss of control.
4. Do not try to stabilize the machine by putting your foot on the ground.
5. Do not use grass catcher on steep slopes.
6. Do not start or stop suddenly when going uphill or downhill. Avoid sudden start and stops on slopes.
7. Never "freewheel". Do not let the machine travel downhill with motion control levers at neutral lock position or in neutral.
8. Do not operate machine without the mower deck installed.

Stopping
1. Park the machine on level ground.
2. Make sure that the machine and all attachments have come to a complete stop before dismounting.
3. Before dismounting, apply parking brake, place the motion control levers in their neutral lock positions, disengage the PTO, lower all attachments to the ground, turn off the engine, and remove the key.
4. Do not park the machine on dry grass or leaves.

3. TRANSPORTING
1. Disengage power to attachment(s) when transporting or not in use.
2. Do not tow this machine. Use a suitable truck or trailer when transporting on public roads.
3. Use extra care when loading or unloading the machine into a trailer or truck.
4. This machine is not allowed to be used on public roads.

4. SERVICING AND STORAGE

Servicing
1. Before servicing, park the machine on a firm, level surface and apply the parking brake. Remove the key to prevent accidental start-up.
2. Allow the machine time to cool before touching the engine, muffler, etc.
3. Always stop the engine before refueling. Avoid spills and overfilling. Wipe up spilled fuel immediately.

(1) Fuel tank cap

4. Use extra care in handling gasoline fuels. They are flammable.
(1) Use only an approved container.
(2) Do not remove fuel cap or refuel with the engine running. Allow engine to cool before refueling. Do not smoke while refueling or when standing near fuel.
(3) Do not refuel the machine indoors and always clean up spilled fuel or oil.
(4) Do not store the machine or fuel container inside where there is an open flame, such as in a water heater.

5. Do not smoke when working around battery or when refueling. Keep all sparks and flames away from battery and fuel tank.

A battery, especially when charging, will give off hydrogen and oxygen gases, which can explode and cause serious personal injury.

6. Before "jump starting" a dead battery, read and follow all the instructions.

7. Disconnect the battery’s ground cable before working on or near electric components.

8. Do not use or charge the refillable type battery if the fluid level is below the LOWER (lower limit level) mark. Otherwise, the battery component parts may prematurely deteriorate, which may shorten the battery's service life or cause an explosion. Check the fluid level regularly and add distilled water as required so that the fluid level is between the UPPER and LOWER levels.

9. Keep first aid kit and fire extinguisher handy at all times.

10. Do not attempt to mount a tire on a rim unless qualified to do so and all proper safety precautions are followed.

11. Always maintain the correct tire inflation pressure. Do not inflate tires above the recommended pressure shown in the Operator’s Manual.

12. Provide adequate support when changing wheels.

13. Make sure that wheel nuts and bolts have been tightened to the specified torque.

14. Do not make adjustments or repairs with the engine running.

15. Keep machine free of grass, leaves, or other debris build-up.

16. Do not change the engine governor setting or overspeed the engine.

17. Do not run a machine inside a closed area.

18. Mower blades are sharp and can cut your hands. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.

19. Keep nuts and bolts, especially blade attachment bolts, tight and keep equipment in good condition.

20. Never tamper with safety devices. Check their operation for proper function regularly.

21. Waste products such as used oil, fuel, coolant, brake fluid, and batteries, can harm the environment, people, pets and wildlife. Please dispose of properly.

22. Do not use beverage containers for waste fluids or other products. Someone, particularly children, may drink them by mistake.

23. Securely support machine or any machine elements with stands or suitable blocking before working underneath. For your safety do not rely on hydraulically supported devices, they may leak down, suddenly drop or be accidently lowered.

24. See your local Recycling Center or KUBOTA Dealer to learn how to recycle or get rid of waste products.

- A Material Safety Data Sheet (MSDS) provides specific details on chemical products; physical and health hazards, safety procedures, and emergency response techniques. The seller of the chemical products used with your machine is responsible for providing the MSDS for that product upon request.

Storage

1. Keep the machine and supply of fuel in locked storage and remove the ignition key to prevent children or others from playing or tampering with them.

2. To avoid sparks from an accidental short circuit, always disconnect the battery's ground cable (-) first and reconnect it last.

3. To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without adequate ventilation.

4. To reduce fire hazards, clean the machine thoroughly before storage. Dry grass and leaves around the engine and muffler may ignite.
5. DANGER, WARNING AND CAUTION LABELS

(1) Part No. K3001-6542-1

**WARNING**

TO AVOID SERIOUS INJURY OR DEATH
1. Mow across slopes.
   - Not up and down.
2. Use extreme caution when operating on slopes.
3. Loss of traction may occur when operating on slopes.
4. Drive slowly on slopes.
5. Do not operate on wet slopes.
6. Avoid sudden starts.
7. Execute turns slowly.

**WARNING**

TO AVOID SERIOUS INJURY OR DEATH
1. Do not remove Roll-Over Protective Structure (ROPS) for any application.
2. Do not modify or repair a ROPS because welding, grinding, drilling or cutting any portion may weaken the structure.
3. Fasten SEAT BELT before operating.

(2) Part No. K1025-6595-1

California Proposition 65

**WARNING**

Engine exhaust, some of its constituents, certain vehicle components and fluids, contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

1BDABDYM92A
1BDABEIA050A
1BDABEIA092A
(1) Part No. K3001-6541-1

**DANGER**

**TO AVOID POSSIBLE INJURY OR DEATH FROM A MACHINE RUNAWAY.**
1. Do not start engine by shorting across starter terminals or bypassing the safety start switch. Machine may start in gear and move if normal starting circuitry is bypassed.
2. Start engine only from operator's seat with motion control levers in neutral lock position and PTO OFF. Never start engine while standing on the ground.

(2) Part No. K3011-6584-1
- Gasoline fuel only
- No fire

(3) Part No. K3011-6543-1

**WARNING**

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

(4) Part No. K3001-6548-1
- Hot surface - Burn to finger or hand
- Do not touch muffler.
TO AVOID INJURY FROM BATTERY GASES AND ACIDES

- Keep away cigarettes, flames or sparks.
- Always shield eyes and face from battery.
- Keep out of reach of children.
- Poison causes severe burns.
- Contains sulfuric acid.
- Read and understand operator’s manual.
- Danger explosive gases.
6. CARE OF DANGER, WARNING, AND CAUTION LABELS

1. Keep danger, warning and caution labels clean and free from obstructing material.
2. Clean danger, warning and caution labels with soap and water, and dry with a soft cloth.
3. Replace damaged or missing danger, warning and caution labels with new labels from your local KUBOTA Dealer.
4. If a component with danger, warning and caution label(s) affixed is replaced with new part, make sure new label(s) is (are) attached in the same location(s) as the replaced component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.
After reading this manual thoroughly, you will find that you can do some of the regular maintenance yourself. Your dealer has knowledge of your new machine and has the desire to help you get the best performance and the most value from it. However, when in need of parts or major service, be sure to consult your local KUBOTA Dealer. When in need of parts, be prepared to give your dealer the product identification number (PIN)/serial number, and the ROPS, engine and mower serial numbers. Locate the PIN and serial numbers now, and record them in the space provided.

To be filled in by purchaser

<table>
<thead>
<tr>
<th>Type</th>
<th>PIN/Serial number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine</td>
<td></td>
</tr>
<tr>
<td>ROPS</td>
<td></td>
</tr>
<tr>
<td>Engine</td>
<td></td>
</tr>
<tr>
<td>Mower</td>
<td></td>
</tr>
</tbody>
</table>

To be filled in by purchaser

◆ Warranty
This machine is warranted under the Kubota Limited Express warranty, a copy of which may be obtained from your selling dealer. No warranty shall, however, apply if the machine has not been handled according to the instruction given in the Operator’s Manual even it is within the warranty period.

◆ Scrapping the machine and its procedure
To put the machine out of service, correctly follow the local rules and regulations of the country or territory where you scrap it. If you have questions, consult your local KUBOTA Dealer.
(1) ROPS serial number
<table>
<thead>
<tr>
<th><strong>SPECIFICATIONS</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Model</strong></th>
<th><strong>Z122RKW</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine</strong></td>
<td><strong>KAWASAKI GH739V</strong></td>
</tr>
<tr>
<td>Model</td>
<td></td>
</tr>
<tr>
<td>Max. engine power (Gross) kW (HP)</td>
<td>16.0 (21.5) <em>1</em>2</td>
</tr>
<tr>
<td>Type</td>
<td>Air-cooled gasoline engine</td>
</tr>
<tr>
<td>Number of cylinders</td>
<td>2 (V-Twin)</td>
</tr>
<tr>
<td>Bore and stroke mm (in.)</td>
<td>78 x 76 (3.07 x 2.99)</td>
</tr>
<tr>
<td>Total displacement cm³ (cu. in.)</td>
<td>726 (44.3)</td>
</tr>
<tr>
<td>Rated revolution rpm</td>
<td>3600</td>
</tr>
<tr>
<td>Fuel</td>
<td>Unleaded gasoline</td>
</tr>
<tr>
<td>Starter</td>
<td>Electric</td>
</tr>
<tr>
<td>Lubrication</td>
<td>Full pressure lubrication</td>
</tr>
<tr>
<td>Cooling</td>
<td>Air cooled</td>
</tr>
<tr>
<td>Battery</td>
<td>U1 (12 V, RC: 45 min, CCA: 300, CA: 410)</td>
</tr>
<tr>
<td><strong>Sizes</strong></td>
<td><strong>Capacity</strong></td>
</tr>
<tr>
<td>Overall length mm (in.)</td>
<td>1890 (74.4)</td>
</tr>
<tr>
<td>Overall width w/o mower deck mm (in.)</td>
<td>1076 (42.4)</td>
</tr>
<tr>
<td>Overall height With ROPS mm (in.)</td>
<td>1660 (65.4)</td>
</tr>
<tr>
<td>Wheelbase mm (in.)</td>
<td>1236 (48.7)</td>
</tr>
<tr>
<td>Min. ground clearance mm (in.)</td>
<td>104 (4.1)</td>
</tr>
<tr>
<td>Tread Front mm (in.)</td>
<td>616 (24.3)</td>
</tr>
<tr>
<td>Rear mm (in.)</td>
<td>885 (34.8)</td>
</tr>
<tr>
<td>Weight (W/MOWER DECK) kg (lbs.)</td>
<td>282 (621)</td>
</tr>
<tr>
<td><strong>Traveling system</strong></td>
<td><strong>Tires</strong></td>
</tr>
<tr>
<td></td>
<td>Front 11 x 4 - 5 (4PR) Smooth</td>
</tr>
<tr>
<td></td>
<td>Rear 18 x 7.5 - 10 (4PR)</td>
</tr>
<tr>
<td>Traveling speeds Forward mph (km/h)</td>
<td>6.5 (10.5)</td>
</tr>
<tr>
<td>Reverse mph (km/h)</td>
<td>4 (6.4)</td>
</tr>
<tr>
<td>Steering</td>
<td>2 - Hand levers</td>
</tr>
<tr>
<td>Transmission</td>
<td>2 - HST w / Gear</td>
</tr>
<tr>
<td>Parking brake</td>
<td>Hand lever applied, released</td>
</tr>
<tr>
<td>Min. turning radius mm (in.)</td>
<td>0 (0)</td>
</tr>
<tr>
<td><strong>PTO</strong></td>
<td><strong>Drive system</strong></td>
</tr>
<tr>
<td></td>
<td>Belt</td>
</tr>
<tr>
<td>Clutch type</td>
<td>Electric</td>
</tr>
</tbody>
</table>

(Specifications and design subject to change without notice)
NOTE:
*1 Engine Max rpm
*2 These Kawasaki engines have been tested in accordance with SAE J1995, verified by TÜV Rheinland Group, and certified by SAE International. The gross power ratings of these engines were determined by using measurements according to SAE J1995 which were witnessed by SAE-approved witnesses from TÜV Rheinland Group. Torque ratings of these engines were not certified by SAE. Actual power and torque output will vary depending on numerous factors, including, but not limited to, the operating speed of the engine in application, environmental conditions, maintenance, and other variables.
*3 Oil amount when the oil level is at the upper level.

<table>
<thead>
<tr>
<th>Model</th>
<th>RCK42P-122Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable machine</td>
<td>Z122RKW</td>
</tr>
<tr>
<td>Mounting method</td>
<td>Parallel linkage</td>
</tr>
<tr>
<td>Adjustment of cutting height</td>
<td>Dial gauge</td>
</tr>
<tr>
<td>Cutting width</td>
<td>mm (in.) 1067 (42)</td>
</tr>
<tr>
<td>Cutting height</td>
<td>mm (in.) 38.1 to 108 (1.5 to 4.25)</td>
</tr>
<tr>
<td>Weight (Approx.)</td>
<td>kg (lbs.) 45.3 (100)</td>
</tr>
<tr>
<td>Blade spindle speed</td>
<td>r/s (rpm) 52.2 (3133)</td>
</tr>
<tr>
<td>Blade tip velocity</td>
<td>m/s (fpm) 89.8 (17700)</td>
</tr>
<tr>
<td>Blade length</td>
<td>mm (in.) 548 (21.6)</td>
</tr>
<tr>
<td>Number of blades</td>
<td>2</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Total length</td>
<td>mm (in.) 888 (35.0)</td>
</tr>
<tr>
<td>Total width</td>
<td>mm (in.) 1401 (55.2)</td>
</tr>
<tr>
<td>Total height</td>
<td>mm (in.) 293.5 (11.6)</td>
</tr>
</tbody>
</table>
The KUBOTA Machine has been thoroughly tested for proper performance with implements sold or approved by KUBOTA. Use with implements which are not sold or approved by KUBOTA and which exceed the maximum specifications listed below, or which are otherwise unfit for use with the KUBOTA Machine may result in malfunctions or failures of the machine, damage to other property and injury to the operator or others. [Any malfunctions or failures of the machine resulting from use with improper implements are not covered by the warranty.]

<table>
<thead>
<tr>
<th>Implement</th>
<th>Maximum loading weight</th>
<th>Implement weight $W_i$</th>
<th>Maximum total weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z122RKW</td>
<td>Front axle $W_f$</td>
<td>Rear axle $W_r$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>83 kg (184 lbs.)</td>
<td>362 kg (798 lbs.)</td>
<td>50 kg (110 lbs.)</td>
</tr>
</tbody>
</table>

**NOTE:**
- These limits include operator weight with seat in rearmost position.
ILLUSTRATED CONTENTS

(1) Parking brake lever.............................. 10, 18
(2) Motion control lever.............................. 10, 19
(3) Seat belt............................................... 17
(4) Cup holder............................................ -
(5) Operator’s seat..................................... 17
(6) ROPS................................................... -
(7) Mower lift pedal.................................... 18
(8) Cutting height control dial..................... 23
(9) Key switch............................................ 12
(10) Hour meter......................................... 13
(11) PTO switch.......................................... 24
(12) Throttle lever...................................... 18
(13) Light switch (if equipped)...................... 17
(14) Choke knob......................................... 12
ILLUSTRATED CONTENTS

(1) Anti-scalp roller (Front, bolt shift type)....... 23

(2) Discharge chute
MOWER MOUNTING

MOUNTING THE MOWER DECK

WARNING
To avoid serious injury:
- Park the machine on a firm and level surface.
- Apply the parking brake.
- Stop the engine and remove the key.

1. Before mounting the mower deck, raise the lift links to the full up position.
2. Adjust the cutting height control dial to 1.5 in. position.
3. Change the direction of the front tires as shown in the figure.
4. Place the mower deck at the right side of the machine.
5. Slide the mower deck under the machine, then lower mower lift links.
6. Attach the lift links to the mower deck with attaching hardware.
7. Attach the PTO belt to the engine pulley. Refer the belt routing.

- Lift link
- Clevis pin
- Snap ring
- PTO belt
- Engine pulley
- Out side
IMPORTANT:

- Check to see that the PTO belt is attached to the pulleys. Make sure that the longer hook of the spring is set to the pulley side.

8. After mounting the mower, check the mower level. If necessary, adjust the mower level and anti-scalp rollers.

ADJUSTING THE MOWER
See "OPERATING THE MOWER" section.

DISMOUNTING THE MOWER DECK
For dismounting the mower deck, reverse the above procedures.
OPERATING THE ENGINE

WARNING
To avoid serious injury:
- Read and understand "SAFE OPERATION" in the front of this manual.
- Read and understand the danger, warning and caution labels located on the machine.
- To avoid danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.
- Never start the engine while standing on the ground. Start the engine only from operator's seat.

MOUNT AND DISMOUNT MACHINE SAFELY
DO NOT step on either side of the mower deck when mounting and dismounting the machine. When mounting the machine from either side, step over the mower deck.

STARTING THE ENGINE

1. Sit on the operator's seat.

2. Apply the parking brake.

To apply the parking brake:
Place the parking brake lever in the "ENGAGED" position.

To release the parking brake:
Place the parking brake lever in the "DISENGAGED" position.
3. Make sure that the PTO switch is in the "DISENGAGED" (OFF) position.

4. Place the motion control levers in the "NEUTRAL LOCK" position.

5. Set the throttle lever as follows.
   - Place the throttle lever midway between the "SLOW" and the "FAST" positions.

6. Set the choke knob to the "ON" position.
7. Insert the key into the key switch. Turn the key switch to the "START" position and release the key to the "ON" position when the engine starts.

IMPORTANT:
- Because of the start interlocks, the engine can not be started except when the PTO switch is disengaged (OFF), the parking brake lever is applied, motion control levers are in "NEUTRAL LOCK" position and the operator is sitting on the seat.

Choke Knob
Pull the choke knob to engage choke.
Push in the choke knob to disengage choke.

[For a Cold Engine]
Always engage the choke to start the engine in cold conditions.

The engine/equipment may be operated during the warm-up period, but it may be necessary to leave the choke partially on until the engine warms up.

[For a Warm Engine]
Always place the throttle lever to the usual position after the engine starts.

Throttle Lever
Pulling the throttle lever backward decreases the engine speed and pushing it forward increases the engine speed.

Key Switch
- OFF............ The position where the key can be inserted into or removed from the key switch. [When the key is turned to this position, the engine shuts off.]
- ON.............. The engine keeps running.
- START....... Apply the parking brake and turn the key switch to this position to start the engine.

8. Warm the engine by running at medium speed.
CHECK DURING OPERATING
While operating, make the following checks to see that all the parts are functioning normally.

■ Immediately Stop the Engine if:
  ● The engine suddenly slows down or accelerates.
  ● Unusual noises suddenly occur.
  ● Exhaust fumes suddenly become discolored.

■ Fuel Gauge
The fuel gauge indicates the fuel level.

IMPORTANT:
  ● Do not refuel over "F". Fill the tank only to the bottom of the filler neck in the fuel tank.
  ● Fill the fuel on a level ground.

■ Hour Meter
This meter gives readings for the number of hours the engine has been running.

COLD WEATHER STARTING
If the ambient temperature is below 0 °C (32 °F) and the engine is very cold, start it in the following manner:
1. Pull the choke knob out. ("CHOKE ON" position)
2. Turn the key switch to the START ("" ) position.
   ● Operate the starter 5 seconds.
   ● If the engine does not start, wait 10 seconds.
   ● Repeat this procedure until the engine starts.
3. When the engine starts, release the key to the "ON" (" " ) position.
4. Place the throttle lever midway between the "SLOW" and the "FAST" positions.
5. Push in the choke knob. ("CHOKE OFF" position)
WARMING UP

**WARNING**
To avoid serious injury:
- Be sure to apply the parking brake during warm-up.

For 5 minutes after engine start-up, allow the engine to warm up without applying any load. This is to allow oil to reach every part of the engine. If load should be applied to the engine without this warm-up period, problems may develop such as seizure, breakage or premature wear may develop.

**Warm-up and Transmission Oil in the Low Temperature Range**
Hydraulic oil serves as transmission oil. In cold weather, the oil may be cold with increased viscosity. This can cause delayed oil circulation or abnormally low hydraulic pressure for some time after engine start-up. This in turn can create problems with the hydraulic system.

To prevent the above, observe the following instructions:
Warm up the engine at about 50% of rated rpm according to the table below:

<table>
<thead>
<tr>
<th>Ambient temperature</th>
<th>Warm-up time requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher than 0°C (32°F)</td>
<td>Approx. 5 minutes</td>
</tr>
<tr>
<td>-10 to 0°C (14 to 32°F)</td>
<td>5 to 10 minutes</td>
</tr>
<tr>
<td>-20 to -10°C (-4 to 14°F)</td>
<td>10 to 15 minutes</td>
</tr>
<tr>
<td>Below -20°C (-4°F)</td>
<td>More than 15 minutes</td>
</tr>
</tbody>
</table>

**IMPORTANT:**
- Do not operate unless the engine is well warmed up. If operation is attempted while the engine is still cold, the hydraulic mechanism will not function properly and its service life will be shortened.

JUMP STARTING

**WARNING**
To avoid serious injury:
- Keep cigarettes, sparks, and flames away from battery.
- If the machine battery is frozen, do not jump start the engine.
- Do not connect the other end of negative jumper cable to the negative terminal of the machine battery.

When jump starting the engine, follow the instructions below to start the engine safely.

1. Bring a helper vehicle with a battery of the same voltage as the disabled machine within easy cable reach. "THE VEHICLES MUST NOT TOUCH".
2. Apply the parking brakes of both vehicles and put the shift levers in neutral. Shut the engine off.
3. Put on safety goggles and rubber gloves.
4. Ensure vent caps are securely in place (if equipped).
5. Attach the red clamp to the positive (red, (+) or pos.) terminal of the dead battery and clamp the other end of the same cable to the positive (red, (+) or pos.) terminal of the helper battery.
6. Clamp the other cable to the negative (black, (-) or neg.) terminal of the helper battery.
7. Clamp the other end to the engine block or the frame of the disabled machine as far from the dead battery as possible.
8. Start the helper vehicle and let its engine run for a few moments. Start the disabled machine.
9. Disconnect the jumper cables in the exact reverse order of attachment. (Steps 7, 6 and 5)

**IMPORTANT:**
- This machine has a 12 volt negative (-) ground starting system.
- Use only same voltage for jump starting.
• Use of a higher voltage source on a machine could result in severe damage to the machine electrical system. Use only matching voltage source when "jump-starting" a low or dead battery condition.

STOPPING THE ENGINE

1. After setting the engine throttle to "SLOW", turn the key switch to the "OFF" position.
2. Remove the key.
3. Do not leave the key switch "ON" (key in the "ON" position) as the battery will discharge when the engine is not running.
4. Apply the parking brake.
5. Turn the carburetor fuel valve to "STOP" (OFF) position.

(1) Carburetor fuel valve
(A) "STOP" (OFF)
(B) "RUN"

IMPORTANT:
• Do not stop the engine when the machine is on an incline for a long time. The engine oil may go into the carburetor and the muffler through the valve system.
• Place the throttle control lever in the half speed position to help prevent the engine from backfiring before stopping the engine.
OPERATING NEW MACHINE

How a new machine is operated and maintained will determine the life of the machine. A new machine just off the factory production line has been tested, but the various parts are not accustomed to each other, so care should be taken to operate the machine for the first 50 hours at a slower speed and avoid excessive work or operation until the various parts become "broken-in." The manner in which the machine is handled during the "breaking-in" period greatly affects the life of your machine. Therefore, to obtain the maximum performance and the longest life of the machine, it is very important to properly break-in your machine. In handling a new machine, the following precautions should be observed.

■ Changing Lubricating Oil for New Machines

The lubricating oil is especially important in the case of a new machine. The various parts are not "broken-in" and are not accustomed to each other; small metal grit may develop during the operation of the machine; and this may wear out or damage the parts. Therefore, care should be taken to change the lubricating oil a little earlier than would ordinarily be required.

For further details of change interval hours.
(See "SERVICE INTERVALS" in "MAINTENANCE" section.)

■ Engine Break-in

After the first 8 hours of operation, change the engine oil and filter. (See "EVERY 100 HOURS" in "PERIODIC SERVICE" section.)

⚠️ DANGER

To avoid serious injury or death:
● Do not operate the mower without the discharge chute in the down position.

⚠️ WARNING

To avoid serious injury or death:
● The machine relies upon the engine driven transmission for speed, direction, and motion control. If the engine is not running, the machine cannot be driven or controlled. If the engine stops when operating on a slope, apply the parking brake immediately to prevent machine runaway.
● Do not allow any person other than the driver to ride on the machine.
● Do not drive the machine close to the edges of ditches or banks which may collapse under the weight of the machine, especially when the ground is loose or wet.
● When turning the machine, be sure to reduce the travel speed and operate motion control levers carefully.
● To avoid tip over, operate across slopes, not up and down. Avoid sudden starts and stops on slopes. Slow down, and use extra caution when changing direction on a slope.
● Park the machine on a firm and level surface.
● Watch where you are going at all times. Watch for and avoid obstacles. Be alert at curbs, near trees, and other obstructions and hidden hazards.
● Do not mow near drop-offs, ditches or embankments. The mower could turn over if a wheel is over the edge of a cliff or ditch, or if an edge caves in.
● Do not drive machine on streets or highways. Watch for traffic when you cross roads or operate near roads.
● Look to the rear before and when backing. Make sure the area immediately behind you is clear of obstructions, holes and small children. Use extra caution when machine is equipped with Grass Catcher.
● Keep bystanders especially children and animals away from the mowing area.

⚠️ WARNING

To avoid serious injury:
● Clear the work area of objects which might be picked up and thrown by blades.
● Do not direct the opening of the chute at bystanders or animals. Ejected objects may cause injury. Plan your mowing carefully before starting operation.
● Be sure to disengage the PTO and sit on the operator's seat before starting the engine.
STARTING

1. Adjust the operator's position and apply the seat belt.

**Operator's Seat**

**WARNING**
To avoid serious injury:
- Make adjustments to the seat only while the machine is stopped.
- Make sure that the seat is completely secured after each adjustment.
- Do not allow any person other than the driver to ride on the machine.

**Seat Belt**

**WARNING**
To avoid serious injury or death:
- Always use the seat belt when the ROPS is installed.
- Do not use the seat belt if a foldable ROPS is down or there is no ROPS.

Adjust the seat belt for proper fit and connect to the buckle. The seat belt is an auto-locking retractable type.

**How to adjust the operator's seat**
- Fore-aft adjustment
  Pull the seat adjusting lever and slide the seat.

**Arm rest (if equipped)**
Arm rest may be set at upright position if desired.

**IMPORTANT:**
- After adjusting the operator's seat, be sure to check and see that the seat is securely locked.

2. Select Light Switch Positions.
   (if equipped)

**Light Switch (if equipped)**
Pushing the light switch forward illuminates the headlights and pushing it rearward turns the lights off.
3. Start the engine.  
   See "OPERATING THE ENGINE" section.

4. Raise the implement.

■ Mower Lift Pedal  
The mower lift pedal is used to raise and lower the mower deck. The 4.25 in. cutting height serves as a carry position. To set the mower deck at a desired cutting height, refer to the adjusting cutting height portion of "OPERATING THE MOWER" section.

5. Accelerate the engine.

■ Throttle Lever  
Moving the throttle lever backward decreases the engine speed and moving it forward increases the engine speed.

6. Unlock the parking brake.

■ Parking Brake Lever  
To release the parking brake:  
Place the parking brake lever in the "DISENGAGED" position.
7. Operate the machine.

**Motion Control Lever**

**WARNING**
To avoid serious injury:
- Understand how to use the motion control levers and practice in an unrestricted area at a little more than an idle speed without the mower engaged until becoming proficient in the operation of the machine.
- Do not move motion control 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.
- Do not make sharp turns at high speeds. Fast and sharp turns could cause loss of control.
- Motion control levers must be in "NEUTRAL LOCK" position to safely enter and exit the operator's seat or to carry out maintenance and safety checks.
- This machine can make sharp turns. Always make sure your intended path is clear of obstructions or persons.

**Stop position**
- Neutral lock position
  - Forward and reverse movement of the motion control levers are prevented when levers are in "NEUTRAL LOCK" position. (Engine can only be started with levers in this position.)

**Operating position**
Machine speed and steering is controlled by the motion control levers, when the engine is running and the parking brake is released.

**WARNING**
To avoid serious injury:
- No control is provided by the motion control levers when the engine is off.
- Neutral position
  - Grasp the motion control levers and move them inward from the "NEUTRAL LOCK" position so that the machine is in "NEUTRAL". (Engine cannot be restarted.)
- Forward and Reverse Motion:
  1. Move throttle lever to the "FAST" position.
  2. Release the parking brake.
  3. Move both motion control levers from the "NEUTRAL LOCK" position inward to the "NEUTRAL" position.
  4. Push the control levers slowly forward to begin forward motion.

To move reverse:
Pull both control levers slowly rearward at the same time to begin reverse motion.

To stop:
Move and hold both motion control levers to the "NEUTRAL" position until the machine comes to a stop.

**WARNING**
To avoid serious injury:
- The motion control lever adjustment is important to ensure the machine operates properly.

**NOTE**:
- The motion control linkages are adjustable. If adjustment is required, see "ADJUSTMENT" section. We recommend you to contact your local KUBOTA Dealer.
FORWARD:
- Push both motion control levers forward equally at the same time. For forward travel in a straight line.

REVERSE:
- Pull both motion control levers past center rearward equally at the same time. For rearward travel in a straight line.

GENERAL LEFT TURN:
- Push right motion control lever further forward than the left motion control lever. For forward travel to the left.

GENERAL RIGHT TURN:
- Push left motion control lever further forward than the right motion control lever. For forward travel to the right.

SHARP (ZERO) LEFT TURN:
- Push right motion control lever forward and pull left motion control lever rearward at the same time.

SHARP (ZERO) RIGHT TURN:
- Push left motion control lever forward and pull right motion control lever rearward at the same time.
STOPPING

**WARNING**
To avoid serious injury:
- Park the machine on level ground.
  - If necessary to park on an incline,
    1. Stop the machine,
    2. Apply the parking brake, then
    3. Stop the engine.
- If you stop the engine on an incline without applying the parking brake, the machine could move and run away.

**IMPORTANT:**
- The parking brake lever is for parking use only. If the parking brake is applied when the motion control levers are not in "NEUTRAL LOCK" position, the engine will stop. This feature is to prevent brake and transmission damage during operation.

1. Move both motion control levers to the "NEUTRAL" position to stop the machine.
2. Move both motion control levers to "NEUTRAL LOCK" position.
3. Apply parking brake.
4. Move the throttle lever to the half speed position and push PTO switch to the "DISENGAGE" (OFF) position.
5. Lower all implements to the ground.
6. Turn off the engine and remove the key.

**IMPORTANT:**
- Do not stop the engine when the machine is on an incline for a long time. The engine oil may go into the carburetor and the muffler through the valve system.
- Place the throttle control lever in the half speed position to help prevent the engine from backfiring before stopping the engine.

PARKING

**TO LOCK:**
- Place the parking brake lever in the "ENGAGED" position.

**TO UNLOCK:**
- Place the parking brake lever in the "DISENGAGED" position.

**WARNING**
To avoid serious injury:
- Before leaving the operator's position,
  - Apply parking brake.
  - Lower all implements to the ground.
  - Shut off the engine.
  - Remove the key.
  - Place the motion control levers in the "NEUTRAL LOCK" position.

If necessary to park on an incline, be sure to chock the wheels on the downhill side to prevent accidental rolling of the machine.

![Chocks](1BDABEIA031A)

(1) Chocks
TRANSPORTING

IMPORTANT:
1. Transport the machine on a trailer.
   - Turn the carburetor fuel valve to the "OFF" position.
   - Fasten the machine to the trailer.
2. Do not attempt to tow this machine, or damage to the transmission may result.
3. When transporting the machine over a long distance:
   - Make sure to set the cutting height at 4.25 in. position. (Do not lock.)

Hydrostatic Transaxle Bypass Rods

 WARNING
To avoid serious injury:
- Do not touch muffler or exhaust pipes while they are hot; severe burns could result.

IMPORTANT:
- Do not push the machine without pulling the bypass rods, or transmission damage may occur.
- Never pull the rods with the engine running.

1. While facing the machine from the rear, pull the left side HST bypass rod out of the "OPERATING POSITION" hole and place it into the "BYPASS POSITION" hole. See the figure below.

2. Pull the right side HST bypass rod out of the "OPERATING POSITION" hole and pull to the "BYPASS POSITION". Continue to hold the right side HST bypass rod in the "BYPASS POSITION" in order to move the machine. See the figure below.

3. After moving, place both the right side and left side HST bypass rod back into the "OPERATING POSITION" hole.
MAKING THE MOST OF YOUR MOWER
1. When using your mower for the first time, choose a smooth level area and cut in straight and slightly overlapping strips.
2. The size and type of the area to be mowed will determine the proper mowing pattern. Take into account obstructions, such as trees, fences and buildings. To keep grass clippings off fences, sidewalks, etc., it is advisable to go over the outside of the area to be mowed several times in a clockwise direction. To mow the area remaining, work in a counterclockwise direction so that the clippings are dispersed onto the previously cut area.
3. Always keep the left side of the mower toward trees, posts or other obstacles on the first trip around the obstacle.
4. Most lawns should be mowed to keep the grass approximately 50 to 80 mm (2 to 3 in.) high. Best results are obtained by cutting often and not too short. To keep a green lawn, never mow more than 1/3 of the height of the grass or a maximum of 25 mm (1 in.) in 1 mowing.
   For extremely tall grass, set the cutting height at maximum cutting height for the first mowing, then reset to the desired height and mow again. Allow the grass to grow to 80 mm (3 in.), then cut off only the top inch.
5. For best appearance, grass should be cut in the afternoon or evening when it is free of moisture.

ADJUSTING CUTTING HEIGHT

DANGERS
To avoid serious injury or death:
• Do not engage the mower in the transport position.
1. Before adjusting cutting height, check that all tire pressures are correct. If necessary adjust to the correct tire pressure.
2. To set the cutting height, push and hold the mower lift pedal in the "RAISE" position. Then adjust the cutting height control dial to desired height.

3. Use the higher settings for mowing in a rough area or when mowing tall grass. Lower settings should be used only for smooth lawns where short grass is desired.
4. Lower the mower deck by gently lowering the mower lift pedal. This lowers the mower deck to the "OPERATING" position.
5. Adjust the anti-scalp rollers' height as recommended below for normal operating condition.

**IMPORTANT:**
- Never allow roller to contact the ground continuously as premature roller wear may develop if set incorrectly.
- Anti-scalp rollers must maintain a minimum clearance of 6 mm (1/4 in.) to the ground.

**OPERATING MOWER**

**DANGER**
To avoid serious injury or death:
- Do not operate the mower without the discharge deflector being in place properly.

**WARNING**
To avoid serious injury:
- Clear the work area of objects which might be picked up and thrown.
- Do not direct the opening of the deflector at bystanders especially children or animals. Ejected objects may cause injury. Plan your mowing carefully before starting operations.
- Keep bystanders and animals away from the mowing area.
- Be sure to disengage the PTO clutch of the mower before attempting to start the engine.

**PTO Switch**
To engage the PTO, pull the PTO switch to the "ENGAGED" (ON) position.

1. If you get off the seat while the PTO is running, the engine will stop automatically. (Operator presence control)
2. Before starting the engine, push the PTO switch to the "DISENGAGED" (OFF) position. If it is at the "ENGAGED" (ON) position, the engine will not start.

**NOTE:**
- These interlock features are built-in.
Starting

\section*{WARNING}
To avoid serious injury:
- Engine components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running, or immediately after it is turned off. Never operate the engine without heat shields or guards.

1. Sit on the operator's seat.
2. Start the engine.
3. Engage the PTO switch.
4. Disengage the parking brake.
5. Speed up the engine by moving the throttle lever forward.
6. Push or pull the motion control levers to move forward or backward.

\section*{IMPORTANT :}
- Never attempt to move the machine with the parking brake "ON".

\section*{NOTE :}
- Keep the engine running at full throttle for best results. Control the travel speed with the motion control levers.
- During heavy duty use, operate the machine at a slower ground speed or go over the area twice.
- Keep the mower deck in the raised position when the mower is disengaged.
- The mower will not cut cleanly if the ground speed is too high or if the blade speed drops due to an overload.
- If debris builds up on the grass screen or other cooling air intake areas, stop the engine and clean them. Operating the engine with blocked or dirty air intake and cooling areas causes damage due to overheating.
TIRES AND WHEELS

TIRES

⚠️ WARNING
To avoid serious injury:
- Do not attempt to mount a tire. This should be done by a qualified person with the proper equipment.
- Always maintain the correct tire pressure. Do not inflate tires above the recommended pressure shown in the Operator’s Manual.
- Inflation pressure in front tires rises quickly when using compressed air.

⚠️ WARNING
To avoid serious injury:
Never operate machine with a loose rim, wheel, or axle.
- Whenever bolts are loosened, retighten to specified torque.
- Check all bolts frequently and keep them tightened.

Inflation Pressure
Though the inflation pressure is factory-set to the prescribed level, it naturally drops slowly in the course of time. Thus, check it everyday and inflate as necessary.

<table>
<thead>
<tr>
<th>Tire sizes</th>
<th>Recommended Inflation Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front 11 x 4 - 5,</td>
<td>170 kPa (1.7 kgf/cm², 25 psi)</td>
</tr>
<tr>
<td>4PR Smooth</td>
<td></td>
</tr>
<tr>
<td>Rear 18 x 7.5 - 10,</td>
<td>83 kPa (0.9 kgf/cm², 12 psi)</td>
</tr>
<tr>
<td>4PR Turf</td>
<td></td>
</tr>
</tbody>
</table>

WHEELS

IMPORTANT:
- When re-fitting a wheel, tighten the wheel bolt to the following torques then recheck after traveling 200 m (200 yards) changing directions several times.

108.5 to 130.2 N-m
(80 to 96 lbf-ft
11.1 to 13.3 kgf-m)

Wheels with beveled or tapered holes:
Use the tapered wheel nut.
Remove and Install Front Caster Wheels

◆ Removing
1. Park the machine on a firm and level surface.
2. Stop the engine and apply parking brake.
3. Lift the front of machine with a safe lifting device.
4. Remove the nut and the wheel bolt.
5. Remove the wheel from assembly yoke.

◆ Installing
1. Install the replacement wheel.
2. Install the wheel bolt and the nut.
3. Tighten the nut.

Reference

| Tightening torque | 48 to 56 N-m | (36 to 41 lbf-ft) | (4.9 to 5.7 kgf-m) |

4. Lower machine.

IMPORTANT:
- Make sure that a washer is set on wheel bolt side.
## SERVICE INTERVALS

The following servicing tasks should be carried out on the machine at the stated running-time intervals.

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Indication hour meter (Hr)</th>
<th>Ref. Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>1</td>
<td>Engine oil Change</td>
<td>☝</td>
<td>O</td>
</tr>
<tr>
<td>2</td>
<td>Engine start system Check</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>3</td>
<td>OPC system Check</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>4</td>
<td>Carbon canister air filter Check</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Replace</td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>5</td>
<td>Muffler and Spark Arrester (if equipped) Check</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>6</td>
<td>Air cleaner Air cleaner paper element Clean</td>
<td></td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Replace</td>
<td></td>
<td>O</td>
</tr>
<tr>
<td>7</td>
<td>Fuel filter Check</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Replace</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>8</td>
<td>Battery condition Check</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>9</td>
<td>Throttle cable Adjust</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>10</td>
<td>Choke cable Adjust</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>11</td>
<td>Spark plug Check</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Replace</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>12</td>
<td>Engine shroud Clean</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>13</td>
<td>Engine oil filter Replace</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>14</td>
<td>Combustion chamber Clean</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>15</td>
<td>Valve seats and clearance Clean</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>Adjust</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>16</td>
<td>Electric clutch Adjust</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

*1 *2
## GASOLINE ENGINE EMISSION RELATED MAINTENANCE INSTRUCTIONS:

1. Non-warranty maintenance, repair, or replacement of the emission control devices and systems should be performed by a qualified repair establishment or individual which has the experience and equipment to perform such work.

   See the Emissions Warranty Statement.

2. To ensure the best quality and reliability, use new KUBOTA Genuine parts or their equivalents for repair and replacement, whenever you have maintenance done.

### IMPORTANT:

- The jobs indicated by ⚩ must be done initially.
- *1 This maintenance should be done daily or more often in dusty condition than in normal conditions.
- *2 Consult your local KUBOTA Dealer for this service.
- *3 Not required unless engine performance problems are noted.
- *4 Replace if any deterioration (crack, hardening, scar, or deformation) or damage occurred.
- *5 The initial 8 hours should not be a replacement cycle.

### Table: Indication hour meter (Hr)

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Indication hour meter (Hr)</th>
<th>Ref. Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>17</td>
<td>Fuel line</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Engine valve clearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Fuse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Blade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Mower belt</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# LUBRICANTS AND FUEL

<table>
<thead>
<tr>
<th>Place</th>
<th>Capacities</th>
<th>Lubricants</th>
</tr>
</thead>
</table>
| Fuel                | 12.2 L (3.22 U.S. gals.) | - Automobile unleaded or regular gasoline  
- Unleaded gasoline 87 octane or higher |
| Engine crankcase    | 2.1 L (2.2 U.S.qts.)*1 | - Engine oil: API service  
Classification SF, SG, SH, SJ or SL  
Above 20 °C (68 °F)...SAE40  
Between 0 °C (32 °F) to 35 °C (95 °F)...SAE30  
Between -20 °C (-4 °F) to 35 °C (95 °F)...SAE10W-30 or 10W-40  
Below 0 °C (32 °F)...SAE5W-20 |

Note *1 Oil amount when the oil level is at the upper level of the oil level gauge.

**NOTE:**
- **Engine Oil:**
  - Oil used in the engine should have an American Petroleum Institute (API) service classification and proper SAE Engine Oil according to the ambient temperatures as shown above.  
  - Indicated capacity of oil is manufacture's estimate.
- **Fuel:**
  - Clean, fresh, unleaded gasoline.  
  - A minimum of 87 octane / 87AKI (90 RON).  
  - Gasoline with up to 10% ethanol (ethyl or grain alcohol) or up to 15% MTBE (methyl tertiary butyl ether) by volume is acceptable.  
  - Do not use unapproved gasoline, such as E85. Do not mix oil in gasoline or modify the engine to run on alternate fuels. This will damage the engine components and **void the engine warranty**.  
- **High Altitude:**
  - This engine may require a high altitude carburetor kit to ensure correct engine operation at altitudes above 3300 ft. (1006 meters). Operation without this kit will cause decreased performance, increased fuel consumption, and increased emissions.  
  - This engine should be operated in its original configuration below 3300 ft. (1006 meters) as damage may occur if high altitude carburetor kit is installed and operated below 3300 ft. (1006 meters).  
  - Indicated capacity of fuel is manufacture's estimate.
HOW TO RAISE THE OPERATOR'S SEAT

◆ Raise

⚠️ WARNING
To avoid serious injury:
- Fully raise the operator’s seat.
  (To the resting position)
  Do not keep the seat halfway.

1. Pull the latch lever on the seat panel rearward.

2. Raise the operator's seat to the resting position.

◆ Lower

⚠️ WARNING
To avoid serious injury:
- Do not drop the seat to close it.
- Watch your hands. Do not place your hands under the seat, when closing.

1. Lower the seat slowly to lock.
DAILY CHECK
To prevent trouble from occurring, it is important to know the condition of the machine. Check it before starting.

**WARNING**
To avoid serious injury:
- Be sure to check and service the machine on a level surface with the engine shut off, the key removed and the parking brake securely set or chock the rear wheels.

### Checking Engine Oil Level

**WARNING**
To avoid serious injury:
- Always stop the engine and remove the key before checking oil.

1. Check engine oil before starting and 5 minutes or more after the engine has stopped.
2. Wipe dipstick area clean.
3. To check the oil level, remove the dipstick, wipe it clean, replace it but do not tighten (Ref to Kawasaki manual), and draw it out again. Check to see that the oil level is between the 2 notches.
4. Add new oil to the prescribed level at the oil port if necessary.

<table>
<thead>
<tr>
<th>No.</th>
<th>Check item</th>
<th>Ref. Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking around the machine</td>
<td>Damage of machine body, tightness of all bolts, nuts and pins, etc.</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Fuel and oil leak</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Tire pressure, wear and damage</td>
<td>26 34</td>
</tr>
<tr>
<td>4</td>
<td>Engine oil level</td>
<td>32</td>
</tr>
<tr>
<td>5</td>
<td>Fuel level</td>
<td>33</td>
</tr>
<tr>
<td>6</td>
<td>Air intake screen</td>
<td>34</td>
</tr>
<tr>
<td>7</td>
<td>Air cleaner</td>
<td>39</td>
</tr>
<tr>
<td>8</td>
<td>Machine body cleaning</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Clean area around muffler and engine controls.</td>
<td>-</td>
</tr>
<tr>
<td>Mower</td>
<td>Check all hardware.</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Make sure all pins are in place</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Mower deck cleaning</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Make sure blade bolts are tight</td>
<td>49</td>
</tr>
<tr>
<td>5</td>
<td>Blades and belt wear or damage</td>
<td>49</td>
</tr>
<tr>
<td>While sitting in the operator's seat</td>
<td>Motion control lever</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Parking brake</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Other movable parts</td>
<td>35</td>
</tr>
<tr>
<td>Starting the engine</td>
<td>Color of the exhaust fumes</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Check for abnormal noise and vibration.</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Safety systems. If either of these do not operate properly, contact your local KUBOTA Dealer immediately.</td>
<td>35 36</td>
</tr>
<tr>
<td>Others</td>
<td>Check the areas where previous trouble was experienced.</td>
<td>-</td>
</tr>
</tbody>
</table>
**Checking Amount of Fuel and Refueling**

**WARNING**

To avoid serious injury:
- Handle fuel carefully. If the engine is running, do not fill the fuel tank. If engine is hot, let engine cool several minutes before adding fuel. Do not smoke while filling the fuel tank or servicing the fuel system. Fill fuel tank only to bottom of filler neck. Do not fill completely full. The empty space in the tank allows gasoline to expand, when it heats up. Never remove the fuel tank cap or add fuel when the fuel tank is hot.
- Infrequent use of the engine during a season can make fuel stale in the fuel tank of the machine. Stale fuel condition can cause engine performance troubles by varnish and plugged carburetor components.
- Seal the fuel storage container tightly and store it out of sunlight and heat to prevent fuel degradation.
- Condensation in the fuel tank may occur because of various operating or environmental conditions. To reduce condensation and avoid affecting machine operation, fill the fuel tank at the end of daily operations.

**IMPORTANT:**
- Do not use old fuel.

[Use of alcohol mixed gasoline]

Only use gasoline containing ethanol when the ethanol is 10% or less of the fuel. When using gasoline containing MTBE, the MTBE is 15% or less of the fuel mixture. The use of methanol additive is not recommended. For the best results, use unleaded fuel with a minimum of 87 octane.

**Fuel tank capacity 12.2 L (3.22 U.S.gals.)**

Check the fuel level. Take care that the fuel tank does not become empty.

| Fuel tank capacity | 12.2 L (3.22 U.S.gals.) |

**IMPORTANT:**
- Do not mix oil with gasoline.
- Tighten the fuel cap until it clicks.
- Do not use the fuel cap other than KUBOTA approved one.
- Do not permit dirt or trash or water to get into the fuel system.
- Be careful not to spill fuel during refueling. If a spill should occur, wipe it off at once, or it may cause a fire.

Use only unleaded gasoline with an octane rating index of 87 or higher may be used.

**NOTE:**
- Use fuel within approximately 30 days after purchase to avoid deterioration in fuel quality, or add fuel stabilizer to keep fuel fresh and stabilized.
- Fuel blend differs from season to season for the best seasonal engine performance. To prevent engine performance troubles such as vapor lock or hard starting, use fuel within the season in which the fuel is purchased.
■ Checking and Cleaning Air Intake Screen

**WARNING**
To avoid serious injury:
- Be sure to stop the engine and remove the key before cleaning.
- Make sure that the engine is cool to the touch before cleaning.

**IMPORTANT:**
- The air intake screen and air intake area must be clear of debris to prevent the engine from overheating.

Daily or after every 5 hours of operation, check to be sure the air intake screen and the air intake area are clean. Dirt or chaff around the air intake screen and air intake area or the engine cooling area decrease cooling performance.
1. Check that the air intake screens are clear of grass clippings and debris.
2. If screens are dirty, clean screens with a brush or cloth.
3. Remove the dust and all foreign material from the engine plate.

■ Checking Tire Pressure

**WARNING**
To avoid serious injury:
- Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment.
- Always maintain the correct tire pressure. Inflation pressure in front tires rises quickly when using compressed air. Do not inflate tires above the recommended pressure shown in the Operator’s Manual.

**IMPORTANT:**
- Do not use tires larger than specified.

■ Inflation Pressure

Though the inflation pressure is factory-set to the prescribed level, it naturally drops slowly in the course of time. Thus, check it and inflate as necessary.

<table>
<thead>
<tr>
<th>Tire sizes</th>
<th>Recommended Inflation Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front 11 x 4 - 5, 4PR Smooth</td>
<td>170 kPa (1.7 kgf/cm², 25 psi)</td>
</tr>
<tr>
<td>Rear 18 x 7.5 - 10, 4PR Turf</td>
<td>83 kPa (0.9 kgf/cm², 12 psi)</td>
</tr>
</tbody>
</table>

(1) Air intake screen
(2) Engine plate

(1) Ground
(A) "INSUFFICIENT"
(B) "NORMAL"
(C) "EXCESSIVE"
Checking Movable Parts
If any of the movable parts, such as levers and pedals, is not smoothly moved because of rust or sticky material, do not attempt to force it into motion. In the above case, remove the rust or the sticky material, and apply oil or grease on the relevant spot. Otherwise, the machine may get damaged.

EVERY 50 HOURS

Checking Engine Start System
The Engine Start System in your machine is designed to protect you while operating. Check the Engine Start System periodically - daily is best - to test function of the Engine Start System before operation.

WARNING
To avoid serious injury:
• Do not allow anyone near the machine while testing.
• If the machine does not pass one of the following tests, do not operate the machine. See your local KUBOTA Dealer.
• Sit on operator's seat for all tests except for Test 1.

IMPORTANT:
• Check the following tests before operating the machine.

Test 1 (OPERATOR NOT ON THE SEAT)
1. Securely set the parking brake.
2. Set the PTO switch to "DISENGAGE" (OFF) position.
3. Set the motion control levers to the "NEUTRAL LOCK" position.
4. Turn the key switch to "START" position.
5. The engine must not crank.

Test 2 (OPERATOR ON THE SEAT)
1. Do not set the parking brake. (release it from test 1)
2. Set the PTO switch to "DISENGAGE" (OFF) position.
3. Set the motion control levers to the "NEUTRAL LOCK" position.
4. Turn the key switch to "START" position.
5. The engine must not crank.
**Test 3 (OPERATOR ON THE SEAT)**
1. Securely set the parking brake.
2. Set the PTO switch to "DISENGAGE" (OFF) position.
3. Grasp the motion control levers and move them inward from the "NEUTRAL LOCK" position to the "NEUTRAL" position and then release the levers.
4. Turn the key switch to "START" position.
5. The engine must not crank.

**Test 4 (OPERATOR ON THE SEAT)**
1. Securely set the parking brake.
2. Set the PTO switch to "ENGAGE" (ON) position.
3. Set the motion control levers to the "NEUTRAL LOCK" position.
4. Turn the key switch to "START" position.
5. The engine must not crank.

**NOTE:**
- If the engine cranks in Test 1 through 4, consult your local KUBOTA Dealer to have the unit checked before operation.

**Test 5 (OPERATOR ON THE SEAT)**
1. Start the engine.
2. Keep the parking brake securely set.
3. Set the PTO switch to "DISENGAGE" (OFF) position.
4. Grasp the motion control levers and move them inward from "NEUTRAL LOCK" position to "NEUTRAL" position and then release the levers.
5. The engine must shut off.

**NOTE:**
- If the engine remains running in Test 5, consult your local KUBOTA Dealer to have the unit checked before operation.

---

**Checking OPC System**

The OPC (Operator Presence Control) system in your machine is designed to protect you while operating. Check the OPC system periodically - daily is best - to test function of the OPC system before operation.

**WARNING**

To avoid serious injury:
- Do not allow anyone near the machine while testing.
- If the machine does not pass one of the following tests, do not operate the machine. See your local KUBOTA Dealer.

---

![Diagram](image)

1. Parking brake lever
2. Motion control lever
3. Key switch
4. PTO switch
5. Seat switch

**Test 1 (OPERATOR ON THE SEAT)**
1. Start the engine.
2. Do not set the parking brake.
3. Set the PTO switch to "DISENGAGE" (OFF) position.
4. Stand up. (Do not get off the machine.)
5. The engine must shut off.

**Test 2 (OPERATOR ON THE SEAT)**
1. Start the engine.
2. Do not set the parking brake.
3. Set the PTO switch to "ENGAGE" (ON) position.
4. Stand up. (Do not get off the machine.)
5. The engine must shut off.

**NOTE:**
- If the engine remains running in Test 1 through 2, consult your local KUBOTA Dealer to have the unit checked before operation.
Checking Carbon Canister Air Filter

Check the carbon canister air filter every 50 hours of operation. (more often under extremely dusty or dirty conditions.)

**WARNING**

To avoid serious injury:
- Always stop the engine, set the parking brake, remove the key, and disengage PTO.

1. Remove the carbon canister air filter.

2. Check to see if the carbon canister air filter is worn out, damaged or dirty.

3. If the air filter is dirty, wash the air filter in warm water with detergent. Then rinse the air filter thoroughly until all traces of detergent are eliminated. Squeeze out excess water. (do not wring.) Allow the air filter to air dry. Do not use high pressure air to clean filter.

4. If the air filter is worn out, damaged or too dirty to wash clean, replace it with a new one.

5. Reinstall the carbon canister air filter.

**NOTE:**
- Operating in dusty condition may require more frequent maintenance than above.

Checking Muffler and Spark Arrester (if equipped)

**WARNING**

Running engines produce heat. Engine parts, especially muffler, become extremely hot. Severe thermal burns can occur on contact. Combustible debris, such as leaves, grass, brush, etc. can catch fire.

To avoid serious injury:
- Allow muffler, engine cylinder and fins to cool before touching.
- Remove accumulated debris from muffler area and cylinder area.
- It is a violation of California Public Resource Code, Section 4442, to use or operate the engine on any forest-covered, brush-covered, or grass-covered land unless the exhaust system is equipped with a spark arrester, as defined in Section 4442, maintained in effective working order. Other states or federal jurisdictions may have similar laws. Contact the original equipment manufacturer, retailer, or dealer to obtain a spark arrester designed for the exhaust system installed on this engine.
- Replacement parts must be of the same design and installed in the same position as the original parts. Other parts may not perform as well, may damage the unit, and may result in injury.

Remove accumulated debris from muffler area and cylinder area. Inspect the muffler for cracks, corrosion, or other damage. Remove the spark arrester, if equipped, and inspect for damage or carbon blockage. If damage is found, install replacement parts before operating.
EVERY 100 HOURS

Changing Engine Oil

**WARNING**

To avoid serious injury:
- Be sure to stop the engine and remove the key before changing the oil.
- Allow engine to cool down sufficiently; oil can be hot and may cause burns.

After the first 8 hours, change the engine oil.

1. Insert the hose attached with the machine to the T-type pipe fitting on the right side of the engine.
   In the case of nothing the hose, use the hydraulic hose of inner diameter 0.5 in., length about 150 mm.
   Direct the hose down, loosen the nut of the T-type pipe fitting and drain the engine oil.

**NOTE:**
- The used oil can be drained out more easily if the engine is warm.

2. Fill with the new oil up to the upper level on the dipstick.

3. To check the oil level. Remove the dipstick, wipe it clean, insert it and draw it out again. Check to see that the oil level is between the 2 marks.

**NOTE:**
- Do not overfill.
Cleaning Air Cleaner Paper Element

Every 100 hours of operation or annually replace the paper element.

Check the air cleaner daily or before starting the engine. Check for a buildup of dirt and debris around the air cleaner system. Keep this area clean. Also check for loose or damaged components. Replace all bent or damaged air cleaner components.

1. Lift up the tabs to open the air cleaner cover.

2. Remove the air cleaner paper element and the air intake hose.

3. Clean the air cleaner base as required and check condition.

4. Reinstall the air cleaner paper element into the air intake hose, and reinstall them in place.

5. Close the air cleaner cover.

NOTE:

- Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine causing premature wear and failure.
### Cleaning Engine Shroud

**WARNING**
To avoid serious injury:
- Make sure engine is cool to the touch before removing shrouds.

1. Remove the engine shroud mounting bolts and detach the shroud.
2. Check to see if the engine’s cooling fins are blocked with dust and dirt. Clean them with compressed air if required.

**WARNING**
To avoid serious injury:
- Always shield eyes and face from air deposits and objects.

### Checking Spark Plug

**Every 100 hours of operation** check the spark plug condition and gap. Annually replace the spark plug.

1. Remove the spark plug wire from spark plug.
2. Use a spark plug wrench to remove plug.

**NOTE:**
- This engine is equipped with resistor-type spark plug.

3. Inspect spark plug for cracked porcelain, pitted electrodes, or other wear and damage. Replace spark plug if necessary.

4. Check spark plug gap with gap gauge.

<table>
<thead>
<tr>
<th>Recommended spark plug</th>
<th>NGK BPR4ES</th>
</tr>
</thead>
</table>

(A) 0.75 mm (0.03 in.)
Checking Fuel Filter

**WARNING**
To avoid serious injury:
- Be sure to stop the engine and remove the key when attempting to make the following checks and changes.
- Never fail to check the fuel lines periodically. The fuel lines are subject to wear and aging. Fuel may leak out onto the running engine, causing a fire.

1. The fuel line is made of rubber and ages regardless of service period.
2. If the fuel line, clamps and fuel filter are found damaged or deteriorated, replace them.

**IMPORTANT:**
- When the fuel line is disconnected for maintenance or repair, close both ends of the fuel line with a piece of clean cloth or paper to prevent dust and dirt from entering. In addition, particular care must be taken not to admit dust and dirt into the fuel pump. Entrance of dust and dirt causes malfunction of the fuel pump.
Battery Condition

**DANGER**
To avoid the possibility of battery explosion:
For the refillable type battery, follow the instructions below.
- Do not use or charge the refillable type battery if the fluid level is below the LOWER (lower limit level) mark. Otherwise, the battery component parts may prematurely deteriorate, which may shorten the battery's service life or cause an explosion. Check the fluid level regularly and add distilled water as required so that the fluid level is between the UPPER and LOWER levels.

**DANGER**
To avoid serious injury or death:
- When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.

**WARNING**
To avoid serious injury:
- Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. WASH HANDS AFTER HANDLING.
- Never remove the battery cap while the engine is running.
- Keep electrolyte away from eyes, hands and clothes. If you are spattered with it, wash it away completely with water immediately and get medical attention.
- Keep open sparks and flames away from the battery at all times. Hydrogen gas mixed with oxygen becomes very explosive.
- Wear eye protection and rubber gloves when working around battery.

The factory-installed battery is of non-refillable type. If the battery is weak, charge the battery or replace it with new one.
**PERIODIC SERVICE**

**IMPORTANT:**
- Mishandling the battery shortens the service life and adds to maintenance costs. The original battery is maintenance free, but needs some servicing. If the battery is weak, the engine will be difficult to start and the lights will be dim. It is important to check the battery periodically.
- When exchanging an old battery for a new one, use battery of equal specification in table below.

<table>
<thead>
<tr>
<th>Battery Type</th>
<th>Volts (V)</th>
<th>Reserve Capacity (min)</th>
<th>Cold Cranking Amps</th>
<th>Normal Charging Rate(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1-300</td>
<td>12</td>
<td>45</td>
<td>300</td>
<td>6.5</td>
</tr>
</tbody>
</table>

(For non-accessible maintenance-free type batteries.) Maintenance-free, non-accessible batteries are designed to eliminate the need to add water. Yet the volume of electrolyte above plates may eventually become depleted due to abnormal conditions such as high heat or improper regulator setting. Use a voltmeter to check the state of charge. (See reference chart below to determine if charging is necessary.)

**Battery Charging**

**DANGER**
To avoid serious injury or death:
- When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.

**WARNING**
To avoid serious injury:
- When disconnecting the cable from the battery, start with the negative terminal first. When connecting the cable to the battery, start with the positive terminal first.
- Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

1. **Battery for storage**
   - When storing the machine for a long period, remove the battery from machine, adjust the electrolyte to the proper level and store in a dry place out of direct sunlight.
   - The battery self-discharges while it is stored. Recharge it once a month in hot seasons and once every 2 months in cold seasons.
### Adjusting Choke Cable

1. Move the choke knob to the OFF position.

2. Link the choke cable (1) to the choke knob (2), and loosely clamp the choke cable sheath (3) with the cable clamp bolt (A). Make sure that the carburetor choke valve is fully opened.

   Pull up the sheath (3) of the choke cable until the inner wire of choke cable has almost no slack, and tighten the cable clamp bolt (A).

   Move the choke knob to the ON position. Make sure that the carburetor choke valve is completely closed. Make sure that the choke valve turns from fully closed position to fully opened position when actuating the equipment choke knob.

---

### Adjusting Throttle Cable

1. Move the throttle lever to the "FAST" position.

2. Link the throttle cable (1) to the speed control lever (2) and loosely clamp the throttle cable sheath (3) with the cable clamp bolt (A).

   Pull up the sheath (3) of the throttle cable until the inner wire of throttle cable has almost no slack, and tighten the cable clamp bolt (A).

   Move the throttle lever to "SLOW" position. Make sure that the carburetor throttle valve is moved smoothly.
EVERY 200 HOURS

Replacing Engine Oil Filter

WARNING
To avoid serious injury:
- Engine oil is a toxic substance. Dispose of used oil properly. Contact your local authorities for approved disposal methods or possible recycling.

WARNING
To avoid serious injury:
- Be sure to stop the engine and remove the key before changing the oil and the oil filter cartridge.
- Allow engine to cool down sufficiently; oil can be hot and may cause burns.

The oil filter cartridge must be changed every 200 service hours.

Always use a genuine oil filter.

1. The drain plug is located on the starter side of the oil pan. Clean the area around the oil drain plug and the oil fill cap/dipstick.
2. Remove the drain plug and the oil fill cap/dipstick.
3. Allow the oil to drain and then reinstall the drain plug.
4. Remove the old filter and wipe off the filter adapter with a clean cloth.
5. Place a new replacement filter in a shallow pan with the open end up. Pour new oil, of the proper type, in through the threaded center hole. Stop pouring when the oil reaches the bottom of the threads. Allow a minute or 2 for the oil to be absorbed by the filter material.
6. Apply a thin film of clean oil to the rubber gasket on the new oil filter.
7. Install the new oil filter to the filter adapter. Hand tighten the filter clockwise until the rubber gasket contacts the adapter, then tighten the filter an additional 3/4 to 1 turn.
8. Fill the engine with the proper oil to the "FULL" or "F" mark on the dipstick. Always check the oil level with the dipstick before adding more oil.
9. Reinstall the oil fill cap/dipstick and tighten securely.
10. Start the engine and check for oil leaks. Recheck oil level before placing the engine into service. Stop the engine, correct any leaks, and allow a minute for the oil to drain down, then recheck the level on the dipstick.

NOTE:
- To prevent extensive engine wear or damage, always maintain the proper oil level in the crankcase. Never operate the engine with the oil level below the "ADD" or "L" mark or above the "FULL" or "F" mark on the dipstick.
Replacing Air Cleaner Paper Element

Every 200 hours of operation or annually replace the paper element.

1. Lift up the tabs to open the air cleaner cover.

2. Remove the air cleaner paper element and the air intake hose.

3. Replace a dirty, bent, or damaged element with a genuine part. Handle the new element carefully; do not use if the sealing surfaces are bent or damaged.

4. Clean the air cleaner base as required and check condition.

5. Install the air cleaner paper element into the air intake hose, and reinstall them in place.

6. Close the air cleaner cover.

NOTE:
- Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine causing premature wear and failure.
EVERY 300 HOURS

**Cleaning Combustion Chamber**
If you do not have the proper tools and/or are not mechanically proficient, consult your local KUBOTA Dealer for this service.

**Checking Engine Valve Clearance**
Consult your local KUBOTA Dealer for this service.

EVERY 500 HOURS

**Electric Clutch Adjustment**
The electric clutch serves 2 functions in the operation of the mower. In addition to starting and stopping the power flow to the cutter blades, the clutch also acts as a brake to assist in stopping blade rotation when the PTO is switched off or the operator presence control is interrupted.

When the clutch is disengaged, the air gap between the armature and rotor must be adjusted to 0.4 mm (0.015 in.) for proper operation. The air gap adjustment is made at 3 bolts on the clutch. There are 3 inspection windows, one next to each adjusting bolt. (See the figure below.)

1. Locate the inspection windows on the clutch.
2. Place a 0.4 mm (0.015 in.) feeler gauge in the slot between the rotor and the armature. (See the figure.)
3. Tighten or loosen the adjusting nut as needed to achieve the 0.4 mm (0.015 in.) air gap. (See the figure.) Perform this operation at all 3 inspection windows.

This adjustment should be done every 500 hours of operation or annually, whichever comes first. In cases where the machine is heavily used, air gap settings should be checked more often.

If the air gap is too narrow, the clutch armature may drag when disengaged, resulting in premature failure.
EVERY 1 YEAR

■ Replacing Fuel Filter
(See "Checking Fuel Filter" in "EVERY 100 HOURS" in "PERIODIC SERVICE" section.)

■ Checking Fuel Lines
(See "Checking Fuel Filter" in "EVERY 100 HOURS" in "PERIODIC SERVICE" section.)

■ Checking Muffler and Spark Arrester (if equipped)
(See "Checking Muffler and Spark Arrester (if equipped)" in "EVERY 50 HOURS" in "PERIODIC SERVICE" section.)

■ Replacing Spark Plug
(See "Checking Spark Plug" in "EVERY 100 HOURS" in "PERIODIC SERVICE" section.)

■ Checking Engine Valve Clearance
Consult your local KUBOTA Dealer for this service.

EVERY 2 YEARS

■ Replacing Carbon Canister Air Filter
(See "Checking Carbon Canister Air Filter" in "EVERY 50 HOURS" in "PERIODIC SERVICE" section.)

EVERY 4 YEARS

■ Replacing Fuel Lines
Consult your local KUBOTA Dealer for this service.

SERVICE AS REQUIRED

■ Replacing Fuses
1. Raise the operator’s seat.
2. Remove the blown fuse.
3. Place a new fuse of the same capacity in position.

<p>|</p>
<table>
<thead>
<tr>
<th>FUSE NO.</th>
<th>CAPACITY (A)</th>
<th>Protected circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>Start</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Operator control</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>PTO clutch</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Accessories</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Slow blow fuse 30</td>
<td>Check circuit against wrong battery connection</td>
</tr>
</tbody>
</table>

IMPORTANT:
- If the new fuse happens to blow out within a short time, contact your dealer for inspection and repair. Never "jump" the fuse with wire or foil, or install a larger capacity fuse than is recommended.

◆ Protected circuit
Checking and Replacing Blade

**WARNING**
To avoid serious injury:
- Be sure to stop the engine and remove the key.
- Blades may be sharp. When you handle blades, wear heavy gloves or wrap end of blade with a rag.

**NOTE:**
- Before checking or replacing the blade, wipe grass and mud off the top and inside of the mower. Especially clean up the inside of the belt cover, because otherwise the belt life will be reduced.

**Checking**
The blade cutting edges should be kept sharp at all times. Sharpen the cutting edges, if they resemble blade (B). Replace the blades if they appear similar to blade (C).

**Replacing**
1. Dismount the mower deck from the machine. (See "DISMOUNTING THE MOWER DECK" in "MOWER MOUNTING" section.) Then turn it over to expose the blades.
2. Wedge a block of wood between the blade and mower housing or use a box wrench over the pulley nut to prevent the spindle from rotating while removing the blade bolts; loosen the blade bolt as illustrated.

**IMPORTANT:**
- Use the proper metric size box or socket wrench to tighten or loosen the blade mounting bolt.

3. To sharpen the blades yourself, clamp the blade securely in a vise. Use a large mill file and file along the original bevel until sharp.
4. To check the blade for balance, place a small rod through the center hole. If the blade is not balanced, file the heavy side of the blade until balance is achieved.
5. To attach blades, be sure to install the cup washer between the blade and bolt head. Then tighten the bolt securely.

**IMPORTANT:**
- Tighten the bolts of the outer blades from 103 to 118 N-m (76 to 87 lbf-ft) of torque.
- The blade bolts have Right hand threads. Turn them counterclockwise to loosen.
- To prolong the service life of the blades, reposition them as shown in the figure below periodically.
Mower Belt Replacement

1. Remove the mower deck from the machine according to the procedure "DISMOUNTING THE MOWER DECK".
2. Remove the left and right hand shield from the mower deck.
3. Remove the tension pulley, and remove the belt.
4. To install a new belt, reverse the above procedure.

NOTE:
- Tighten the tension pulley bolt securely 77.6 to 90.2 N-m (8.0 to 9.2 kgf-m, 57.1 to 66.5 lbf-ft).
MOTION CONTROL LEVER

WARNING
To avoid serious injury:
- Park the machine on a firm and level surface.
- If it is necessary to run the engine in an enclosed area, use a gas tight exhaust pipe extension to remove the fumes.
- Always try to work in a well-ventilated area.
- Lift up and secure with jack stands or blocking the rear of the machine, do not run the machine while adjusting.
- Remove rear wheels.
- Do not adjust only one of the following adjustments; exclude "MOTION CONTROL LEVER ALIGNMENT". They are interlinked.
- If you feel you are unable to make the following adjustments correctly and safely, please contact your local KUBOTA Dealer.

IMPORTANT:
- Right and left motion control levers can be adjusted independently.

HST NEUTRAL
1. Lift-up and secure with jack stands or blocking the rear of the machine frame.
2. Remove both rear wheels.
3. Start the engine, and run at maximum speed.
4. Place the motion control lever in "NEUTRAL LOCK" position.
5. Loosen the 3 bolts of the guide plate. Adjust the guide plate position until the rear axle rotation stops.
6. Tighten the rear bolt and place the lever in "NEUTRAL LOCK" position. Check that the rear axle does not rotate.
   If the axle does not stop rotating, adjust the "HST NEUTRAL" again.
7. Adjust the other side "HST NEUTRAL" equally.
8. After adjustment, make sure to stop the engine immediately.

<table>
<thead>
<tr>
<th>Tightening torque</th>
<th>23.6 to 27.4 N-m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(2.4 to 2.8 kgf-m, 17.4 to 20.2 lbf-ft)</td>
</tr>
</tbody>
</table>

[RH]

1. Guide plate
2. Speed adjust plate
3. Bolt (front)
4. Bolt (rear)

(A) Motion control lever
9. Push the motion control lever until it contacts the speed adjust plate and reaches the end of its range of motion. Then move the speed adjust plate to 2-3 mm backward and tighten 2 front bolts securely.

10. If at full speed the machine pulls one direction or the other, it is an indication that one wheel is turning faster than the other. To adjust the condition, proceed as follows:
   (1) Park the machine on a firm and level surface.
   (2) Stop the engine.
   (3) Loosen 2 front bolts of faster side.
   (4) Move the speed adjust plate to backward.
   (5) Tighten 2 front bolts securely.

- **MAXIMUM SPEED (FORWARD)**
  Consult your local KUBOTA Dealer for this service.

- **MOTION CONTROL LEVER ALIGNMENT**
  ◆ Check the alignment
  Check the gap and space between the levers, at the maximum forward position.

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Gap: 0 to 2 mm (0 to 0.08 in.)</th>
</tr>
</thead>
</table>

If positions of the control levers are unequal, an adjustment is necessary.

- **WARNING**
  To avoid serious injury:
  - Park the machine on a firm and level surface.
  - Stop the engine, remove the key and apply the parking brake.
Aligning the control levers

1. Stop the engine and apply the parking brake.

Lever position (High or Low)
2. Remove the bolts and select the motion control lever position, high or low.
3. Tighten the bolts.

Lever alignment (Right and Left)
4. Loosen the bolts.
5. Slide both levers forward or rearward to the desired position within tab slots until levers are aligned.
6. Tighten the bolts.

MOWER DECK LEVEL

ANTI-SCALP ROLLERS

WARNING
To avoid serious injury:
- Park the machine on a firm and level surface.
- Apply the parking brake.
- Stop the engine and remove the key.
- Wait for all moving parts to stop.

IMPORTANT:
- The flattest cut can be achieved by having the anti-scalp rollers adjusted off the ground.
- Check anti-scalp roller adjustments each time the mower deck cutting height is changed.
- It is recommended that all the anti-scalp rollers be kept off the ground to minimize scuffing.

1. Check the machine tire pressure.
   Inflate tires to the correct pressure. (See “TIRES AND WHEELS” section.)
2. Start the engine.
3. Raise up the mower deck to the end of travel. (Also the top end of the lift.)
4. Turn the cutting height control dial to adjust height.
5. Lower the mower deck.
6. Adjust the height of the front side anti-scalp roller to one of 4 positions to approximately 19 mm (3/4 in.) between rollers and the ground.
   Adjust 3 rollers to the same height.
   (1) Front side anti-scalp roller  (H) 19 mm (3/4 in.)

7. Install the roller with attaching hardware.
LEVEL MOWER DECK (Side-to-Side)

**WARNING**
To avoid serious injury:
- Park the machine on a firm and level surface.
- Apply the parking brake.
- Disengage PTO (OFF).
- Stop the engine and remove the key while checking or adjusting the level of the mower deck.

**IMPORTANT:**
- Check the machine tire pressure.
  Inflate tires to the correct pressure.
  (See "TIRES AND WHEELS" section.)

**Checking level (Side-to-Side)**

**NOTE:**
- Mower deck anti-scalp rollers should not contact the ground.

1. Raise the mower deck to the end of travel. (Also the top end).
2. Turn the cutting height set dial to the 3 in. cutting height position.
3. Lower the mower deck.
4. Position the right mower blade in the Side-to-Side position.
5. Measure from outside blade tip to the level surface with a short ruler or leveling gauge.

**Adjusting level (Side-to-Side)**

1. Raise up the mower deck to the end of travel. (Also the top end).
2. Turn the cutting height set dial to the 3 in. cutting height position.
3. Place 51 mm (2 in.) height wood blocks under each side of the mower deck.
   Anti-scalp rollers must not rest on the wood block.
4. Lower the mower deck.
5. Position mower blade in the Side-to-Side position.
6. Loosen the jam nuts of the right side of the machine.
7. Adjust the cutting height fine tuning bolts to set 76 mm (3 in.) blade height.
   Front and rear side bolts must be adjusted.
8. Jam the nuts.
9. Adjust the left side equally.
10. Check the side-to-side level and if it is not level, adjustment is necessary.

**Height of the blade at the flat surface**

<table>
<thead>
<tr>
<th></th>
<th>76 mm (3 in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side-to-Side adjustment</td>
<td>Less than 3 mm (1/8 in.)</td>
</tr>
</tbody>
</table>

(1) Cutting height fine tuning bolt
(2) Jam nut
LEVEL MOWER DECK (Front-to-Rear)

**WARNING**
To avoid serious injury:
- Park the machine on a firm and level surface.
- Engage the parking brake.
- Disengage PTO.
- Stop the engine and remove the key while checking or adjusting the level of the mower deck.

**IMPORTANT:**
- Check the machine tire pressure.
  Inflate tires to the correct pressure.
  (See "TIRES AND WHEELS" section.)

◆ Checking level (Front-to-Rear)

**NOTE:**
- Mower deck anti-scalp rollers should not contact the ground.

1. Raise the mower deck to the end of travel. (Also the top end).
2. Turn the cutting height set dial to the 3 in. cutting height position.
3. Lower the mower deck.
4. Position the right mower blade in the Front-to-Rear position.
5. Measure from the right front blade tip to the level surface with a short ruler or leveling gauge.
6. Turn the blade 180° and measure from right rear blade tip to the level surface.
7. Check that the left side blade has the same dimension.
   The difference between both measurements should be less than 6 mm (1/4 in.).
   Front side must be lower than rear side.
8. If the Front-to-Rear adjustment is not within the given tolerance, adjustment is necessary.

◆ Adjusting level (Front-to-Rear)
1. Raise up the mower deck to the end of travel. (Also the top end).
2. Turn the cutting height set dial to the 3 in. cutting height position.
3. Place 51 mm (2 in.) height wood blocks under each side of the mower deck.
   Anti-scalp rollers must not rest on the wood block.
4. Lower the mower deck.
5. Loosen the jam nuts of the front side of the machine.
6. Adjust the cutting height fine tuning bolts to set 76 mm (3 in.) blade height.
   Both front side bolts must be adjusted.
7. Jam the nuts.
8. Adjust the other side equally.

**IMPORTANT:**
- The difference between both measurements should be less than 6 mm (1/4 in.).
  Front side must be lower than rear side.
9. Check the front-to-rear level and if it is not level, adjustment is necessary.
# GENERAL TORQUE SPECIFICATION

<table>
<thead>
<tr>
<th>SAE grade No.</th>
<th>American standard cap screws with UNC or UNF threads</th>
<th>Metric cap screws</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GR.5</td>
<td>GR.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/4</td>
<td>(lbf-ft)</td>
<td>8 - 9.6</td>
</tr>
<tr>
<td></td>
<td>(N-m)</td>
<td>10.7 - 12.9</td>
</tr>
<tr>
<td></td>
<td>(kgf-m)</td>
<td>1.11 - 1.33</td>
</tr>
<tr>
<td>5/16</td>
<td>(lbf-ft)</td>
<td>17 - 20.5</td>
</tr>
<tr>
<td></td>
<td>(N-m)</td>
<td>23.1 - 27.8</td>
</tr>
<tr>
<td></td>
<td>(kgf-m)</td>
<td>2.35 - 2.84</td>
</tr>
<tr>
<td>3/8</td>
<td>(lbf-ft)</td>
<td>35 - 42</td>
</tr>
<tr>
<td></td>
<td>(N-m)</td>
<td>47.5 - 57.0</td>
</tr>
<tr>
<td></td>
<td>(kgf-m)</td>
<td>4.84 - 5.82</td>
</tr>
<tr>
<td>1/2</td>
<td>(lbf-ft)</td>
<td>80 - 96</td>
</tr>
<tr>
<td></td>
<td>(N-m)</td>
<td>108.5 - 130.2</td>
</tr>
<tr>
<td></td>
<td>(kgf-m)</td>
<td>11.07 - 13.29</td>
</tr>
<tr>
<td>9/16</td>
<td>(lbf-ft)</td>
<td>110 - 132</td>
</tr>
<tr>
<td></td>
<td>(N-m)</td>
<td>149.2 - 179.0</td>
</tr>
<tr>
<td></td>
<td>(kgf-m)</td>
<td>15.22 - 18.27</td>
</tr>
<tr>
<td>5/8</td>
<td>(lbf-ft)</td>
<td>150 - 180</td>
</tr>
<tr>
<td></td>
<td>(N-m)</td>
<td>203.4 - 244.1</td>
</tr>
<tr>
<td></td>
<td>(kgf-m)</td>
<td>20.75 - 24.91</td>
</tr>
</tbody>
</table>
### TIGHTENING TORQUE CHART

<table>
<thead>
<tr>
<th>Thread size d (mm)</th>
<th>Hexa-Bolt Head size B (mm)</th>
<th>No mark</th>
<th>7T</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>lbf-ft</td>
<td>N-m</td>
</tr>
<tr>
<td>M8</td>
<td>12 or 13</td>
<td>13.0 - 15.2 (14.1 ± 1.1)</td>
<td>17.8 - 20.6 (19.2 ± 1.4)</td>
</tr>
<tr>
<td>M10</td>
<td>14 or 17</td>
<td>28.9 - 33.3 (31.1 ± 2.2)</td>
<td>39.3 - 45.1 (42.2 ± 2.9)</td>
</tr>
<tr>
<td>M12</td>
<td>17 or 19</td>
<td>46.3 - 53.5 (49.9 ± 3.6)</td>
<td>62.8 - 72.6 (67.7 ± 4.9)</td>
</tr>
<tr>
<td>M14</td>
<td>19 or 22</td>
<td>79.6 - 92.6 (86.1 ± 6.5)</td>
<td>107.9 - 125.5 (116.7 ± 8.8)</td>
</tr>
</tbody>
</table>

**NOTE:**
- Figure "7" on the top of the bolt indicates that the bolt is of special material.
- Before tightening, check the figure on the top of bolt.
When the machine will not be operated for over 2 months, clean the machine and perform the following operations before storage.

1. Repair parts as necessary.
2. Check bolts and nuts and tighten as necessary.
3. Apply grease or engine oil to parts most likely to rust.
4. Inflate the tires to a little above the standard pressure levels. (Approximately 110%)
5. Lower the mower to the ground.
6. Remove the battery from the machine, recharge it, adjust the electrolyte to the proper level, and store in a cool dry place. The battery discharges over time even while in storage. Recharge it once a month in hot seasons and once every 2 months in cold seasons.
7. Drain fuel tank, fuel lines, and carburetor, or use a fuel stabilizer, to prevent deterioration of the gasoline. If you choose to use a fuel stabilizer, follow the manufacturers recommendations, and add the correct amount for the capacity of the fuel system. Fill the fuel tank with clean, fresh gasoline. Run the engine for 2 to 3 minutes to get stabilized fuel into the carburetor.

IMPORTANT:
- Allow engine and muffler to cool down sufficiently. Then drain carburetor.
- If a spill of fuel should occur, wipe it off at once securely.
8. Store the machine where it is dry and sheltered from rain. Cover the machine with a vinyl tarp.
9. Moisture content in most grasses can damage the mower and grass catcher if these components are not properly cleaned after use. Make sure the mower and the grass catcher are clean and completely empty before storage.

REMOVING THE MOWER FROM STORAGE

1. Check the tire inflation pressure and adjust as required.
2. Install the battery. Before installing the battery, be sure it is fully charged.
3. Do daily checking. (See "DAILY CHECK" in "PERIODIC SERVICE" section.)
4. Check all fluid levels. (engine oil)
5. Start the engine. Shut the engine off and walk around the machine and make a visual inspection looking for evidence of oil or other fluids.
6. Run engine a couple of minutes before you put engine under load.
### TROUBLESHOOTING

#### ENGINE TROUBLESHOOTING

If something is wrong with the engine, refer to the table below for the cause and its corrective measure.

<table>
<thead>
<tr>
<th>Symptom (If)</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine is difficult to start or will not start.</td>
<td>• No operator on the seat.</td>
<td>• Sit on the operator's seat.</td>
</tr>
<tr>
<td></td>
<td>• Parking brake lever not in the proper position.</td>
<td>• Apply the parking brake.</td>
</tr>
<tr>
<td></td>
<td>• PTO switch not in the proper position.</td>
<td>• Make sure PTO switch is in &quot;DISENGAGED&quot; (OFF) position.</td>
</tr>
<tr>
<td></td>
<td>• Motion control levers not in the proper position.</td>
<td>• Make sure motion control levers are in &quot;NEUTRAL LOCK&quot; position.</td>
</tr>
<tr>
<td></td>
<td>• Key switch is not in the proper position.</td>
<td>• Make sure key switch is in &quot;ON&quot; position.</td>
</tr>
<tr>
<td></td>
<td>• No fuel.</td>
<td>• Replenish fuel.</td>
</tr>
<tr>
<td></td>
<td>• Improper or stale fuel. (Fuel quality is poor.)</td>
<td>• Replace fuel and the fuel filter.</td>
</tr>
<tr>
<td></td>
<td>• Water or dirt in the fuel system.</td>
<td>• Replace fuel and see your Kubota dealer.</td>
</tr>
<tr>
<td></td>
<td>• Fuel hose or fuel filter clogged or damaged.</td>
<td>• Clean or replace fuel lines, and see your Kubota dealer.</td>
</tr>
<tr>
<td></td>
<td>• Air cleaner is clogged.</td>
<td>• Clean or replace the air cleaner.</td>
</tr>
<tr>
<td></td>
<td>• Spark plug damaged.</td>
<td>• Adjust the spark plug gap or replace the spark plug.</td>
</tr>
<tr>
<td></td>
<td>• Fuse is blown.</td>
<td>• Replace the fuse.</td>
</tr>
<tr>
<td></td>
<td>• Engine oil viscosity is wrong.</td>
<td>• Use oils of different viscosities, depending on ambient temperature.</td>
</tr>
<tr>
<td></td>
<td>• Battery becomes weak and the engine does not turn over quick enough.</td>
<td>• Clean battery cables and terminals.</td>
</tr>
<tr>
<td></td>
<td>• Over choking or choke is adjusted incorrectly.</td>
<td>• Charge the battery.</td>
</tr>
<tr>
<td></td>
<td>• Fuel valve is closed.</td>
<td>• In cold weather, always remove the battery from the engine, charge and store it indoors. Install it on the machine only when the machine is going to be used.</td>
</tr>
<tr>
<td>Insufficient engine power.</td>
<td>• Insufficient or dirty fuel.</td>
<td>• Check and see your Kubota dealer.</td>
</tr>
<tr>
<td></td>
<td>• Fuel filter is clogged.</td>
<td>• Replace the fuel filter.</td>
</tr>
<tr>
<td></td>
<td>• Air cleaner is clogged.</td>
<td>• Clean or replace the air cleaner.</td>
</tr>
<tr>
<td></td>
<td>• Spark plug damaged.</td>
<td>• Adjust the spark plug gap or replace it.</td>
</tr>
</tbody>
</table>
### Symptom (If) | Cause | Remedy
--- | --- | ---
**Engine stops suddenly.** | ● Insufficient fuel. | ● Refuel.<br>● Check the fuel valve position.<br>● Check the carburetor fuel valve position.

**Rough engine running.**<br>● Spark plug damaged. | ● Adjust the spark plug gap or replace it.<br>● Spark plug wire damaged. | ● See your Kubota dealer.<br>● Carburetion problems. | ● See your Kubota dealer.<br>● Ignition coil damaged. | ● See your Kubota dealer.<br>● Choke is adjusted incorrectly. | ● See your Kubota dealer.<br>● Fuel hose or fuel filter clogged or damaged. | ● Clean or replace fuel lines, and see your Kubota dealer.<br>● Improper or stale fuel.<br>(Fuel quality is poor.) | ● Replace fuel and the fuel filter.<br>● Air cleaner is clogged. | ● Clean or replace the air cleaner.

**Exhaust fumes are colored.**<br>(Black, Dark or Gray)<br>● Overload. | ● Reduce load.<br>● Low grade fuel is used. | ● Use specified fuel.<br>● Fuel filter is clogged. | ● Replace the fuel filter.<br>● Air cleaner is clogged. | ● Clean or replace the air cleaner paper element.<br>● Choke is not fully opened. | ● Check the choke position.

**Exhaust fumes are colored.**<br>(White or Blue)<br>● Excessive engine oil. | ● Reduce to the specified oil level.<br>● Piston ring is worn or stuck. | ● See your Kubota dealer.

**Engine overheats.**<br>● Engine is overloaded. | ● Lower speed or reduce load.<br>● Engine oil is insufficient. | ● Replenish engine oil.<br>● Engine air intake screen and cooling fins are dirty. | ● Clean the air intake screen and cooling fins.<br>● Air cleaner paper element is plugged. | ● Clean or replace the air cleaner paper element.<br>● Engine speed is too low. | ● Operate at the "FAST" speed.<br>● Operating ground speed is too fast. | ● Operate the machine at the slower ground speed.

**Engine knocks.**<br>● Stale or low octane fuel. | ● Use specified fuel.<br>● Engine overloaded. | ● Lower ground speed or reduce load.<br>● Engine speed is too low. | ● Operate at the "FAST" speed.

**Engine will not idle.**<br>● Spark plug damaged. | ● Adjust the spark plug gap or replace it.<br>● Faulty spark plug. | ● Replace the spark plug.<br>● Carburetion problem. | ● See your Kubota dealer.

If you have any questions, contact your local KUBOTA Dealer.
### BATTERY TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Symptom (If)</th>
<th>Cause</th>
<th>Remedy</th>
<th>Preventive measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter does not function.</td>
<td>● Battery overused until lights are dim.</td>
<td>● Charge battery sufficiently.</td>
<td>● Charge the battery properly.</td>
</tr>
<tr>
<td></td>
<td>● Battery has not been recharged.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Poor terminal connection.</td>
<td>● Clean the terminal and tighten securely.</td>
<td>● Keep the terminal clean and tight. Apply grease and treat with anti-corrosives.</td>
</tr>
<tr>
<td></td>
<td>● Battery life expired.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From beginning starter does not function, and lights soon become dim.</td>
<td>● Insufficient charging.</td>
<td>● Charge battery sufficiently.</td>
<td>● Battery must be serviced properly before initial use.</td>
</tr>
<tr>
<td>Recharging is impossible.</td>
<td>● Battery life expired.</td>
<td>● Replace battery.</td>
<td></td>
</tr>
<tr>
<td>Terminals are severely corroded and heat up.</td>
<td>● Poor terminal connection.</td>
<td>● Clean the terminal and tighten securely.</td>
<td>● Keep the terminal clean and tight. Apply grease and treat with anti-corrosives.</td>
</tr>
<tr>
<td>Battery electrolyte level drops rapidly.</td>
<td>● There is a crack or pin holes in the electrolytic cells.</td>
<td>● Replace battery.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Charging system trouble.</td>
<td>● Contact your local KUBOTA Dealer.</td>
<td></td>
</tr>
</tbody>
</table>

If you have any questions, contact your local KUBOTA Dealer.

### MACHINE TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Symptom (If)</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine operation is not smooth.</td>
<td>● Hydrostatic transaxle fluid is insufficient.</td>
<td>● Contact your local KUBOTA Dealer.</td>
</tr>
<tr>
<td></td>
<td>● Filter is clogged.</td>
<td>● Contact your local KUBOTA Dealer.</td>
</tr>
<tr>
<td>Machine does not move while engine is running.</td>
<td>● Parking brake is on.</td>
<td>● Release the parking brake.</td>
</tr>
<tr>
<td></td>
<td>● HST bypass engaged.</td>
<td>● Disengage HST bypass.</td>
</tr>
<tr>
<td>Machine moves when motion control levers are in &quot;NEUTRAL LOCK&quot; position. (Engine is operated.)</td>
<td>● Hydrostatic lever linkage is not correctly adjusted.</td>
<td>● Ask your dealer for hydrostatic lever linkage adjustment.</td>
</tr>
<tr>
<td></td>
<td>● Control linkage pivots are sticking.</td>
<td>● Full up and lubricate linkage.</td>
</tr>
</tbody>
</table>

If you have any questions, contact your local KUBOTA Dealer.
## MOWER TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Symptom (If)</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blade does not rotate</td>
<td>● PTO system is not normal:</td>
<td>● See your Kubota Dealer.</td>
</tr>
<tr>
<td></td>
<td>PTO system malfunctioning.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● PTO system is normal:</td>
<td>● Replace.</td>
</tr>
<tr>
<td></td>
<td>Broken mower belt.</td>
<td></td>
</tr>
<tr>
<td>Mower belt slipping.</td>
<td>● Weaken tension spring.</td>
<td>● Replace.</td>
</tr>
<tr>
<td></td>
<td>● Worn mower belt.</td>
<td>● Replace.</td>
</tr>
<tr>
<td></td>
<td>● Mower plugged.</td>
<td>● Unplug and clean mower deck.</td>
</tr>
<tr>
<td></td>
<td>● Debris in pulleys.</td>
<td>● Clean.</td>
</tr>
<tr>
<td>Discharge chute</td>
<td>Grass too wet.</td>
<td>● Wait for grass to dry.</td>
</tr>
<tr>
<td>plugged</td>
<td>Grass too long.</td>
<td>● Raise cutting height and cut grass twice.</td>
</tr>
<tr>
<td></td>
<td>Cutting too low.</td>
<td>● Raise cutting height.</td>
</tr>
<tr>
<td></td>
<td>Engine rpm too low.</td>
<td>● Mow at full throttle.</td>
</tr>
<tr>
<td></td>
<td>Ground speed too fast.</td>
<td>● Slow down.</td>
</tr>
<tr>
<td>Streaking of grass</td>
<td>Ground speed too fast.</td>
<td>● Slow down.</td>
</tr>
<tr>
<td>uncut.</td>
<td>Engine rpm too low.</td>
<td>● Mow at full throttle, check and reset</td>
</tr>
<tr>
<td></td>
<td>Grass too long.</td>
<td>engine rpm.</td>
</tr>
<tr>
<td></td>
<td>Blades dull or damaged.</td>
<td>● Replace blades or have blades</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sharpened.</td>
</tr>
<tr>
<td></td>
<td>Debris in mower deck.</td>
<td>● Clean mower deck.</td>
</tr>
<tr>
<td>Uneven cut.</td>
<td>Mower deck not level.</td>
<td>● Level mower deck.</td>
</tr>
<tr>
<td></td>
<td>Ground speed too fast.</td>
<td>● Slow down.</td>
</tr>
<tr>
<td></td>
<td>Blades dull.</td>
<td>● Have blades sharpened.</td>
</tr>
<tr>
<td></td>
<td>Blades worn or damaged.</td>
<td>● Replace blades.</td>
</tr>
<tr>
<td></td>
<td>Low tire inflation.</td>
<td>● Add air to correct pressure.</td>
</tr>
<tr>
<td></td>
<td>Anti-scalp rollers not adjusted correctly.</td>
<td>● Adjust anti-scalp rollers.</td>
</tr>
<tr>
<td></td>
<td>Wheels pressure not adjusted correctly.</td>
<td>● Set both tire pressure to the correct</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pressure. (See &quot;TIRES&quot; in &quot;TIRES AND</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WHEELS&quot; section.)</td>
</tr>
<tr>
<td></td>
<td>Turning speed too fast.</td>
<td>● Reduce speed on turns.</td>
</tr>
<tr>
<td></td>
<td>Ridges in terrain.</td>
<td>● Change mowing pattern.</td>
</tr>
<tr>
<td></td>
<td>Rough or uneven terrain.</td>
<td>● Adjust wheels pressure and anti-scalp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rollers.</td>
</tr>
<tr>
<td></td>
<td>Anti-scalp rollers not adjusted correctly.</td>
<td>● Adjust wheels pressure and anti-scalp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rollers.</td>
</tr>
<tr>
<td></td>
<td>Bent blade(s).</td>
<td>● Replace blade(s).</td>
</tr>
<tr>
<td>Symptom (If)</td>
<td>Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Excessive vibration.</td>
<td>● Debris on mower deck or in pulleys.</td>
<td>● Clean mower deck and pulleys.</td>
</tr>
<tr>
<td></td>
<td>● Damaged mower belt.</td>
<td>● Replace mower belt.</td>
</tr>
<tr>
<td></td>
<td>● Damaged pulleys.</td>
<td>● Replace pulleys.</td>
</tr>
<tr>
<td></td>
<td>● Pulleys out of alignment.</td>
<td>● Check pulleys.</td>
</tr>
<tr>
<td></td>
<td>● Blades out of balance.</td>
<td>● Have blades balanced.</td>
</tr>
<tr>
<td>Mower loads down machine.</td>
<td>● Engine rpm too low.</td>
<td>● Mow at full throttle, check and reset engine rpm.</td>
</tr>
<tr>
<td></td>
<td>● Ground speed too fast.</td>
<td>● Slow down.</td>
</tr>
<tr>
<td></td>
<td>● Debris wrapped around mower spindles.</td>
<td>● Clean mower.</td>
</tr>
<tr>
<td></td>
<td>● Front of deck too low.</td>
<td>● Adjust mower deck.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(See &quot;MOWER DECK LEVEL&quot; in &quot;ADJUSTMENT&quot; section.)</td>
</tr>
</tbody>
</table>

If you have any questions, contact your local KUBOTA Dealer.
INDEX

Air Cleaner Paper Element............................. 39
Air Cleaner Paper Element............................. 46
Air Intake Screen............................................ 34
Amount of Fuel and Refueling........................ 33
ANTI-SCALP ROLLERS ................................ 53
Battery Condition............................................ 42
Blade .............................................................. 49
Carbon Canister Air Filter............................... 37
Carbon Canister Air Filter............................... 48
Choke Cable................................................... 44
Choke Knob.................................................... 12
Combustion Chamber ...................................... 47
Electric Clutch Adjustment ............................... 47
Engine Break-in.............................................. 16
Engine Oil....................................................... 38
Engine Oil Filter ............................................ 45
Engine Oil Level ............................................. 32
Engine Shroud................................................ 40
Engine Start System....................................... 35
Engine Valve Clearance................................. 47
Engine Valve Clearance................................. 48
Fuel Filter ....................................................... 41
Fuel Filter ....................................................... 48
Fuel Gauge...................................................... 13
Fuel Lines....................................................... 48
Fuses.............................................................. 48
Hour Meter ..................................................... 13
HST NEUTRAL .............................................. 51
Hydrostatic Transaxle Bypass Rods .............. 22
Immediately Stop the Engine if...................... 13
Inflation Pressure ........................................... 26
Inflation Pressure ........................................... 34
Key Switch ................................................... 12
LEVEL MOWER DECK (Front-to-Rear) ............ 55
LEVEL MOWER DECK (Side-to-Side) .............. 54
Light Switch (if equipped) .................... 17
Lubricating Oil for New Machines................. 16
MAXIMUM SPEED (FORWARD) .................. 52
Motion Control Lever ...................................... 19
MOTION CONTROL LEVER ALIGNMENT.... 52
Movable Parts .............................................. 35
Mower Belt Replacement ............................... 50
Mower Lift Pedal............................................ 18
Muffler and Spark Arrester (if equipped) ...... 37
Muffler and Spark Arrester (if equipped) ...... 48
OPC System................................................... 36
Operator’s Seat ............................................ 17
Parking Brake Lever...................................... 18
PTO Switch ..................................................... 24
Remove and Install Front Caster Wheels ...... 27
Seat Belt ....................................................... 17
Spark Plug ..................................................... 40
Spark Plug ..................................................... 48
Starting ........................................................ 25
Throttle Cable ................................................ 44
Throttle Lever .............................................. 12
Throttle Lever .............................................. 18
Tire Pressure ................................................... 34
Warm-up and Transmission Oil in the Low
Temperature Range ........................................ 14