OPERATOR'S MANUAL

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KUBOTA TRACTOR
MODELS BX23S LA340 BT603

KUBOTA Corporation

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<td>2WD</td>
<td>2-Wheel Drive</td>
</tr>
<tr>
<td>4WD</td>
<td>4-Wheel Drive</td>
</tr>
<tr>
<td>API</td>
<td>American Petroleum Institute</td>
</tr>
<tr>
<td>ASABE</td>
<td>American Society of Agricultural and Biological Engineers, USA</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society of Testing and Materials, USA</td>
</tr>
<tr>
<td>DIN</td>
<td>Deutsches Institut für Normung, GERMANY</td>
</tr>
<tr>
<td>DT</td>
<td>Dual Traction [4WD]</td>
</tr>
<tr>
<td>fpm</td>
<td>Feet Per Minute</td>
</tr>
<tr>
<td>Hi-Lo</td>
<td>High Speed-Low Speed</td>
</tr>
<tr>
<td>HST</td>
<td>Hydrostatic Transmission</td>
</tr>
<tr>
<td>m/s</td>
<td>Meters Per Second</td>
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<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>r/s</td>
<td>Revolutions Per Second</td>
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<tr>
<td>SAE</td>
<td>Society of Automotive Engineers, USA</td>
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<tr>
<td>SMV</td>
<td>Slow Moving Vehicle</td>
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</table>

**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.
## UNIVERSAL SYMBOLS

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

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<td>Diesel Fuel</td>
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<td>Empty</td>
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<tr>
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<td>Engine-Run</td>
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<tr>
<td><img src="image" alt="Loader Lock Lever Unlock Position" /></td>
<td>Loader Lock Lever Unlock Position</td>
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FOREWORD

You are now the proud owner of a KUBOTA Tractor. This tractor is a product of KUBOTA's quality engineering and manufacturing. It is made of the excellent materials and under rigid quality control systems. It will give you long, satisfactory service. To obtain the best use of your tractor, please read this manual carefully. It will help you become familiar with the operation of the tractor and contains many helpful hints about tractor maintenance. It is KUBOTA's policy to utilize, as quick 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.
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SAFE OPERATION

PRECAUTIONS OF THE TRACTOR

Careful operation is your best insurance against an accident. Read and understand this manual carefully before operating the tractor. All operators, no matter how much they have experience, should read this and other related manuals before operating the tractor or any implement attached to it. It is the owner’s obligation to instruct all operators in safe operation.

1. Precautions before operating the tractor

Know your equipment and its limitations. Read this entire manual before starting and operating the tractor.

1.1 General precautions

• Pay special attention to the safety labels on the tractor.
• Do not operate the tractor or any implement attached to the tractor while under the influence of alcohol, medication, controlled substances, or while you are fatigued.
• Carefully check the vicinity of the tractor before operating it or any implement attached to it. Do not allow any bystander around or near the tractor during operating it.
• Before allowing other people to use your tractor, explain them how to operate it and have them read this manual before operating it.
• Never wear loose, torn, or bulky clothing around the tractor. Loose, torn, or bulky clothing may catch on moving parts or controls, leading to the risk of an accident. Use additional safety items: hard hat, safety boots or shoes, eye and hearing protection, gloves, and so on, as appropriate or required.
• Do not allow passengers to ride on any part of the tractor at anytime. The operator must remain in the operator’s seat during operating the tractor.
• Check the brakes, clutch, linkage pins, and other mechanical parts for improper adjustment and wear. Replace worn or damaged parts promptly. Check the tightness of all nuts and bolts regularly. For further details, see 4. Checking the wheel bolt torque on page 124.
• Keep your tractor clean. Buildups of dirt, grease, and trash may contribute to fires and lead to personal injury.
• Use only implements meeting the specifications listed under IMPLEMENT LIMITATION TABLES on page 40, or implements approved by KUBOTA.
• Use proper weights on the front or rear of the tractor to reduce the risk of upsets. When using the front loader, put an implement or ballast on the 3-point hitch to improve stability. Follow the safe operating procedures specified in the implement or attachment manual.
• Do not modify the tractor. Unauthorized modification may affect the function of the tractor, which may result in personal injury.

1.2 Precautions for CAB and ROPS

KUBOTA recommends the use of a CAB or roll-over-protective-structures (ROPS), and seat belt in almost all applications. Combination of a CAB or ROPS and seat belt will reduce the risk of serious injury or death if the tractor should be upset.
• Check for overhead clearance which may interfere with a CAB or ROPS.
• Set the parking brake and stop the engine. Remove any obstructions which may prevent raising or folding the ROPS. Do not allow any bystander. Always perform functions of CAB or ROPS from a stable position at the rear of the tractor. Hold the top of the ROPS securely when raising or folding it. Make sure that all pins are installed and locked.
• If the CAB or ROPS is loosened or removed for any reason, make sure that all parts are reinstalled correctly before operating the tractor.
• Never modify or repair any structural member of a CAB or ROPS because welding, bending, drilling, grinding, or cutting it may weaken the structure.
• If any structural member of the CAB or ROPS is damaged, replace the entire structure at your local KUBOTA Dealer.
• If the tractor is equipped with a foldable ROPS, you may fold down it temporarily only when absolutely necessary to fold down it for areas with constraints on height. There is no protection of operator provided by the ROPS in the folded position. For operator safety, you should place the ROPS in the upright and locked position and fasten the seat belt for all other operations.
• Always use the seat belt if the tractor is equipped with a CAB or ROPS. Do not use the seat belt if a foldable ROPS is down or there is no ROPS. Check the seat belt regularly and replace if frayed or damaged.
2. Precautions for operating the tractor

Operator safety is a priority. Safe operation, specifically with respect to overturning hazards, entails understanding the equipment and environmental conditions at the time of use. Some prohibited uses which can affect overturning hazards include traveling and turning with implements and loads carried too high, and so on. This manual sets forth some of the obvious risks, but the list of risks is not exhaustive, and the list of risks cannot be exhaustive. It is the operator's responsibility to be alert for any equipment or environmental condition that could compromise safe operation.

2.1 Precautions for starting to operate the tractor

- Always sit in the operator's seat when starting the engine or operating the levers or controls. Adjust the operator's seat referring to 1. Operator's seat on page 48. Never start the engine while you are standing on the ground.
- Before starting the engine, make sure that all levers including auxiliary control levers are in their neutral positions, that the parking brake is engaged, and that the power take-off (PTO) is disengaged or off. Fasten the seat belt if the tractor is equipped with a CAB, a fixed ROPS, or a foldable ROPS in the upright and locked position.
- Do not start the engine by shorting across starter terminals or bypassing the safety start switch. The tractor may start in gear and move if normal starting circuitry is bypassed.
- Do not operate or idle the engine in a non-ventilated area. Carbon monoxide gas is colorless, odorless, and deadly.
- Check that the operator-presence-control-system (OPC) are functioning correctly before each time you use the tractor. Test safety systems. See 2. Checking the engine start system on page 123 and 3. Checking the OPC (operator presence control) system on page 124. Do not operate unless they are functioning correctly.

2.2 Precautions for working the tractor

- Pull only from the hitch. Never hitch to the axle housing or any other point except the hitch. Hitching to the axle housing or any other point except the hitch will increase the risk of serious personal injury or death due to a tractor upset.
- Keep all shields and guards in place. Replace any shield or guard that are missing or damaged.
- Avoid sudden starts. To avoid upsets, slow down when turning, on uneven ground, and before stopping.
- The tractor cannot turn with the differential locked. Do not turn with the differential locked as it could be dangerous.
- Do not operate the tractor near ditches, holes, embankments, or other ground surface features which may collapse under the weight of the tractor. The risk of tractor upset is even higher when the ground is loose or wet. Tall grass can hide obstacles, so walk the area first to be sure.
- Watch where you are going at all times. Watch for and avoid obstacles. Be alert at row ends, near trees, and other obstructions.
- When working in groups, always let the others know what you are going to perform before you perform it.
- Never try to get on or off a moving tractor.
- Always sit in the operator's seat when you are operating levers or controls.
- Do not stand between the tractor and the implement or trailed vehicle unless parking brake is applied.
- Do not operate or tow the tractor at speeds exceeding specific travel speed.
2.3 Safety for children

Tragedy can occur if the operator is not alert to the presence of children. Children generally are attracted to machines and their work.

- Never assume that children will remain where you last saw them.
- Keep children out of the work area and under the watchful eye of another responsible adult.
- Be alert and shut the tractor down if children enter the work area.
- Never carry children on the tractor. There is no safe place for them to ride. They may fall off and be run over or interfere with your control of the tractor.
- Never allow children to operate the tractor even under adult supervision.
- Never allow children to play on the tractor or on the implement.
- Use extra caution when the tractor is backing up. Before the tractor starts to move, look down and behind to make sure that the working area is clear.

2.4 Precautions for operating the tractor 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.

- To avoid upsets of the tractor, always back it up steep slopes. If you cannot back the tractor up on the slope or if you feel uneasy to back it up on the slope, do not operate the tractor on the slope. Stay off the slopes which is too steep for safe operation.
- Driving forward out of a ditch, mired condition, or up a steep slope increases the risk of the tractor to be upset backward. Always back the tractor out of a ditch, mired condition, or steep slope. The 4-wheel drive models require extra caution because their increased traction can give the operator false confidence in the ability of the tractor to climb the slopes.
- Keep all movement of the tractor on slopes slow and gradual. Do not change the speed or direction of the tractor suddenly. Do not apply brake suddenly. Do not move the steering wheel suddenly.
- Avoid changing the gears speed when the tractor is climbing or going down a slope. Changing the gears to neutral on a slope could cause loss of control.
- You should pay special attention to the weight and location of implements and loads because they will affect the stability of the tractor.
- To improve stability of the tractor on slope, follow recommendations for proper ballasting as shown in BALLAST on page 91.

- When driving down a slope, make sure that 4-wheel drive is engaged to increase traction if equipped.

2.5 Precautions for driving the tractor on the road

- Check the front wheel engagement. The braking characteristics are different between 2-wheel drive and 4-wheel drive. Know the difference and use carefully.
- Always slow the tractor down before turning. Turning at high speed may tip the tractor over.
- Make sure that the slow-moving-vehicle (SMV) sign is clean and visible. Use the hazard lights and turn signals as required.
- On public roads, use the SMV emblem and hazard lights, if required by local traffic and safety regulations.

- Check all local traffic and safety regulations.
- Turn the headlights on. Dim the headlights when meeting another vehicle.
- Drive at speeds that allow you to maintain the control at all times.
- Do not apply the differential lock while traveling at road speeds. The tractor may run out of control.
- Avoid sudden motions of the steering wheel because they can lead to a dangerous loss of stability. The risk is especially great when the tractor is traveling at road speeds.
- Keep the ROPS in the up position and wear the seat belt when driving the tractor on the road. Otherwise, you will not be protected in the event of a tractor roll-over.
- Do not operate an implement while the tractor is on the road. Lock the 3-point hitch in the raised position.
- When towing other equipment, use a safety chain and place an SMV emblem on the equipment as well.
3. Precautions for parking the tractor

- Disengage the PTO, lower all implements to the ground, place all control levers in their neutral positions, set the parking brake, stop the engine, remove the key from the ignition, and lock the cab door if equipped. Leaving the transmission in gear with the engine stopped will not prevent the tractor from rolling.

4. Precautions for operating the PTO

- Wait until all moving components have completely stopped before getting off the tractor, connecting, disconnecting, adjusting, cleaning, or servicing any PTO driven equipment.
- Keep the PTO-shaft-cover in place at all times. Replace the PTO-shaft-cap when the shaft is not in use.
- Before installing or using the PTO-driven equipment, read the manufacturer’s manual and review the safety labels attached to the equipment.
- When operating the stationary PTO-driven equipment, always apply the parking brake of tractor and place the chocks behind and in front of...
the rear wheels. Stay clear of all rotating parts. Never step over rotating parts.

5. Precautions for using 3-point hitch

- Use the 3-point hitch only with equipment designed for 3-point hitch usage.
- When using an implement mounted to the 3-point hitch, be sure to install the proper counterbalance-weight on the front of the tractor.
- When transporting the loads on the road, set the implement-lowering-speed-knob in the lock position to hold the implement in the raised position.

(1) 3-point hitch lowering speed knob
(A) Fast
(B) Slow
(C) Lock

- To avoid injury from separation, do not extend the lift rod beyond the groove on the threaded rod.

6. Precautions for servicing the tractor

Before servicing the tractor, follow the following procedure.
1. Park the tractor on a firm, flat, and level surface.
2. Set the parking brake.
3. Lower all implements to the ground.
4. Place the gear-shift-lever in the neutral position.
5. Stop the engine.
6. Remove the starter key.
   - Allow the tractor to cool off before working on or near the engine, muffler, radiator, and so on.
   - Do not remove the radiator cap while coolant is hot. When coolant is cool, slowly rotate the radiator cap to the first stop and allow sufficient time for excess pressure to escape before removing the radiator cap completely. If the tractor equips a coolant-recovery-tank, add coolant or water to the coolant-recovery-tank. Do not add coolant to the radiator. See 5. Checking the coolant level on page 121.
   - Always stop the engine before refueling. Avoid spills and overfilling.
   - Do not smoke when working around the battery or when the tractor is refueling. Keep all sparks and flames away from the battery and fuel tank. The battery presents an explosive hazard, because it gives off hydrogen and oxygen especially when you are recharging it.
   - Before jump starting a dead battery, read and follow all of the instructions. See JUMP STARTING THE ENGINE on page 60.
   - Keep first-aid-kit and fire extinguisher handy at all times.
   - Disconnect the ground cable of battery before working on or near electric components.
   - To avoid the possibility of battery explosion, do not use or charge the refillable type battery if the fluid level is below the lower (lower limit level) mark. Check the fluid level regularly and add distilled water as required so that the fluid level is between the upper and lower levels.
   - To avoid sparks from an accidental short circuit, always disconnect the ground cable (-) of battery first and reconnect it last.

(1) Groove

(1) Battery

- Do not mount a tire on a rim. A qualified person should mount a tire on a rim with the proper equipment.
- Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure shown in 1. Inflation pressure of tires on page 89.
SAFE OPERATION

- Securely support the tractor when either changing wheels or adjusting the width of wheel tread.
- Make sure that the wheel bolts have been tightened to the specified torque. See WHEEL TREAD on page 89.
- Do not work under any hydraulically supported devices. They can settle, suddenly leak down, or be accidentally lowered. If it is necessary to work under the tractor or any machine elements for servicing or adjustment, securely support them with stands or suitable blocking beforehand.
- Escaping hydraulic fluid under pressure obtains sufficient force to penetrate skin, so escaping hydraulic fluid under pressure can cause serious personal injury. Before disconnecting the hydraulic lines, be sure to release all residual pressure. Before applying pressure to the hydraulic system, make sure that all connections are tight and that all lines, pipes, and hoses are free of damage.
- Hydraulic fluid escaping from pinholes may be invisible. Do not use hands to search for suspected leaks. Use a piece of cardboard or wood to search for suspected leaks. You should use safety goggles or other eye protection. If injured by escaping fluid, see a medical doctor at once. Hydraulic fluid will produce gangrene or severe allergic reaction.

PRECAUTIONS OF THE LOADER

You can avoid most accidents of the loader equipment by simple safety precautions. Safety precautions of the loader, if you follow at all times, will help you operate your loader safely.

1. Precautions before operating the loader

- Read and understand all instructions and precautions in both the tractor and the loader operator's manuals before using the loader. Lack of knowledge can lead to accidents.
- It is the owner's responsibility to make sure that anyone who will operate the loader reads this manual first and becomes familiar with the safe operation of the loader.
- For your safety, KUBOTA strongly recommend using a ROPS (roll-overprotective-structures) with a seat belt in almost all applications. If your tractor equips a foldable ROPS, fold it down only when absolutely necessary and raise it up and lock it again as soon as possible. Do not wear the seat belt when a foldable ROPS is down or a fixed ROPS is removed. If you get any questions, consult your local KUBOTA dealer.
- Always use the seat belt when the tractor is equipped with a ROPS. Never use the seat belt when the tractor is not equipped with a ROPS.
- Visually check for hydraulic leaks and broken, missing, or malfunctioning parts. Perform necessary repairs before operating the loader.
- Waste products such as used oil, fuel, hydraulic fluid, and batteries, can harm the environment, people, pets, and wildlife. Please dispose properly. See your local recycling center or KUBOTA Dealer to learn how to recycle or get rid of waste products.
• Replace damaged or illegible safety labels. See 2. Safety labels of the loader on page 20 for required labels.
• When the front loader is mounted on the tractor, enter and exit the operator’s seat only from left side of the tractor.
• Engage the loader-control-valve-lock to prevent accidental actuation when the implement is not in use or during transport. Do not utilize the loader-control-valve-lock for maintenance or repair of the machine.
• Assemble, remove, and reinstall the loader only as directed in this manual. Otherwise, serious personal injury or death may result.
• Follow the following precautions when attaching the implements:
  – Make sure that both handles of the boom LH and RH contact the ear plates at the points (A) and are all the way down.
  – Make sure that both lock pins of the boom LH and RH protrude through the pin slots.
  – Use of a non-KUBOTA attachment that does not comply with ISO 24410 or the improper positioning of handle(s) or non-protrusion of pin(s) may result in detachment of the attachment or deformation, causing loss of performance, personal injury, or death.

2. Precautions for operating the loader

• Operate the loader only when properly seated at the controls. Do not operate the loader from the ground.
• Move and turn the tractor at low speeds.

• Never allow anyone to get under the bucket of the loader or reach through the boom when the bucket is raised.
• Keep children, others, and livestock away when operating the loader and the tractor.
• Do not walk or work under a raised bucket of the loader or attachment unless it is securely blocked and held in position.
• For the stability of the tractor and operator’s safety, add rear ballast to the 3-point hitch and to the rear wheels when using the loader.
• To increase stability of the application, adjust the rear wheels to the widest setting that is suitable for your application.
• Exercise extra caution when operating the loader with a raised bucket or attachment.
• Do not lift or carry any person on the loader, in the bucket, or other attachment.
• Avoid loose fill, rocks, and holes. Loose fill, rocks, and holes can be dangerous for operation or movement of the loader.
• Avoid overhead wires and obstacles when the loader is raised. Contacting the electric lines can cause electrocution.
• Gradually stop the loader boom when lowering or lifting.
• Use caution when handling loose or shiftable loads.
• When using the loaders for handling large, heavy, or shiftable objects, using proper handling attachments with them is recommended.
• Handling large, heavy objects can be extremely dangerous due to the following reasons:
  – Danger of rolling the tractor over
  – Danger of upending the tractor
  – Danger of the object rolling or sliding down the boom of the loader onto the operator
• If you must handle the large, heavy objects, protect yourself by the following preventive measures:
  – Never lift the load higher than necessary to clear the ground.
  – Add the rear ballast to the tractor to compensate for the load, or use the rear implement.
  – Never lift large objects with the equipment that may permit the large objects to roll back onto the operator.
  – Move slowly and carefully, avoiding rough terrain.
• Never lift or pull a load from any point on the loader or any attachments with a chain, rope, or cable. Otherwise, rollover or serious damage to the loader may occur.
• Be extra careful when operating the tractor on a slope. Always operate the tractor up and down, and never across the slope.
  Do not operate the tractor on steep slopes or unstable surfaces.
SAFE OPERATION

3. Precautions after operating the loader

- When loader work is complete and parking or storing, follow the following procedures before leaving the operator's seat of the tractor.
  1. Choose flat, hard ground.
  2. Lower the boom of the loader to the ground.
  3. Stop the engine.
  4. Set the brakes.
  5. Remove the starter key.
- Make sure that the detached loader is on stands and on a hard, level surface.
- Before disconnecting the hydraulic lines, relieve all hydraulic pressure by moving the controls.
- Do not remove the loader from the tractor without an approved bucket attached.

4. Precautions for servicing the loader

- Always wear the safety goggles when servicing or repairing the machine.
- Do not modify the loader. Unauthorized modification may affect the function of the loader, which may result in personal injury.
- Do not use the loader as a work platform or a jack to support the tractor for servicing or maintenance. Securely support the tractor or any machine elements with stands or suitable blocking before working underneath.
- For your safety, do not work under any hydraulically supported devices. Hydraulically supported devices can settle, suddenly leak down, or be accidentally lowered.
- Escaping the hydraulic oil under pressure can obtain sufficient force to penetrate the skin, causing serious personal injury. Do not use hands to search for suspected leaks. If injured by escaping fluid, obtain medical treatment immediately.
- Do not tamper with the setting of the relief valve. The relief valve is pre-set at the factory. Changing the setting of the relief valve can cause overloading of the loader and tractor which may result in serious personal injury.
- When servicing or replacing the pins in cylinder ends, bucket, and so on, always use a brass drift and hammer. Otherwise injury from flying metal fragments could result.

PRECAUTIONS OF THE BACKHOE

Most accidents of the backhoe equipment can be avoided by simple safety precautions.
Safety precautions of the backhoe, if you follow at all times, will help you operate your backhoe safely.

1. Precautions before operating the backhoe

- Read and understand all precautions in this manual before service or operation. Allow only trained personnel to operate or service the backhoe.
- It is the owner’s responsibility to make sure that anyone who will operate the backhoe reads this manual first and becomes familiar with the safe-operation of the backhoe.
- For safe operation of the backhoe, check the mounting-bolts for tightness and check that the mount levers are in the right position before operation the backhoe.
- Never operate the tractor with the backhoe attached and the loader removed.
- Check for buried material such as electrical lines, telephone lines, gas lines, and water lines. When in doubt about buried material, contact local utility companies for their buried location prior to operating the backhoe.
- Replace any safety decal that becomes damaged, lost, or illegible. Also renew all decals when repainting.

2. Precautions for operating the backhoe

- Do not allow anyone other than the operator on the unit of the backhoe while in operation or transport.
- Keep all person and animals away from swing area of backhoe.
- Pay attention to the backhoe when operating it on slopes to avoid tipping-over of the machine. Travel at a speed compatible with safe operation, especially when operating the machine on uneven terrain, crossing ditches, or while turning.
- Operate the backhoe from the backhoe operator's seat only.
- When using the backhoe on slopes, one stabilizer may be lower than the other. Pay extreme attention to the backhoe during excavation because the risk of tipping-over of the machine will increase.
- To reduce the risk of tipping-over of the machine on a slope, place the spoil to the high side of the excavation.
- Do not dig under the stabilizer or the tractor, especially in soft or sandy condition. Take extra precaution in wet or thawing ground.
The machine can become unstable in wet or thawing conditions and these conditions may collapse under the weight of the machine and may cause tipping-over of the machine.

- Never operate the machine or any equipment while under the influence of alcohol or other drugs, or while fatigued.
- When leaving the machine unattended, be sure to lower the backhoe to the ground. Set the parking brake, then shut the engine off and remove the key.

3. Precautions of the backhoe while driving the tractor on the road

- Raise and center the boom, close the dipperstick, curl the bucket, and lock the boom before transporting the machine.
- Check the local codes or regulations that may apply to tractor, loader, and backhoe operation on public streets or highways, before transporting or traveling of the machine. Use the slow-moving-vehicle (SMV) emblem and warning flashers as required.

4. Precautions for servicing the backhoe

- Before disconnecting the hydraulic lines, relieve all hydraulic pressure by moving the controls.
- Always use personal protection device such as safety goggles and ear protection when servicing or repairing the machine.
- Lower the backhoe to the ground and shut the engine off before servicing of the backhoe.
- When servicing or repairing pins in cylinder ends, bucket, and so on, always use a brass drift and hammer. Failure to service or repair pins using a brass drift and hammer could result in injury from flying metal fragments.
- To avoid serious personal injury, keep clear of working area of the backhoe.
- When servicing or checking the backhoe underneath, do not get under the machine while it is being held with only the bucket, backhoe, or stabilizers. Securely support the machine with jack stands.
- For your safety, do not work under any hydraulically supported machine elements. Hydraulically supported machine elements can settle, suddenly leak down, or be accidentally lowered.
- Escaping hydraulic fluid under pressure can obtain sufficient force to penetrate the skin, which cause serious personal injury. Before applying pressure to the hydraulic system, be sure that all connections are tight and that all lines, the pipes and the hoses are not damaged. Hydraulic fluid escaping from a very small hole can be almost invisible. Do not use hands to search for suspected leaks. Use a piece of cardboard or wood.
- If injured by escaping fluid, see a doctor at once. Serious infection or allergic reaction will develop if proper medical treatment is not administered immediately.
- Do not tamper with any setting of the pressure of the control valve and the relief valve of the backhoe. The pressure of the relief valve is preset at the factory. Changing the setting of the pressure of the relief valve can cause overloading of the backhoe and the tractor, and serious personal injury or death may result.
- Do not modify the backhoe for any reason. Modifying the backhoe can cause an unstable condition of combination of the tractor, the loader, and the backhoe, and serious personal injury or death may result.
SAFETY LABELS

1. Safety labels of the tractor

(1) Part No. K2871-6548-1

WARNING
TO AVOID PERSONAL INJURY OR DEATH:
1. Read and understand the operator’s manual before operation.
2. Before starting the engine, make sure that everyone is at a safe distance from the tractor and that the PTO is OFF.
3. Do not allow passengers on the tractor at any time.
4. Before allowing other people to use the tractor, have them read the operator’s manual.
5. Check the tightness of all nuts and bolts regularly.
6. Keep all shields in place and stay away from all moving parts.
7. Slow down for turns or rough roads.

(2) Part No. K1272-6585-2

Diesel fuel only
No fire

ULTRA LOW SULFUR
DIESEL FUEL ONLY

(3) Part No. K2591-6557-2

WARNING
TO AVOID PERSONAL INJURY OR DEATH FROM ROLL-OVER:
1. Keep Roll-Over Protective Structures (ROPS) in the upright and locked position.
2. Fasten SEAT BELT before operating.

THERE IS NO OPERATOR PROTECTION WHEN THE ROPS IS IN THE FOLDED POSITION.
1. Check the operating area and fold the ROPS only when absolutely necessary.
2. Do not wear SEAT BELT if ROPS is folded.
3. Raise and lock ROPS as soon as vertical clearance allows.
4. Read ROPS related instructions and warnings.
(1) Part No. K2581-6554-1

WARNING
TO AVOID PERSONAL INJURY OR DEATH:
1. Keep PTO shield in place at all times.
2. Do not operate the PTO speeds faster than the speed recommended
by the implement manufacturer.
3. For trailing PTO-driven implements, set hitch at towing position.
   (see operator's manual)

(2) Part No. K2581-6555-1

WARNING
DO NOT EXTEND LIFT ROB BEYOND THE GROOVE ON THE THREADED ROD.

(3) Part No. K2871-6556-1

WARNING
TO AVOID PERSONAL INJURY OR DEATH:
1. Attach pulled or towed loads to the hitch only.
2. Use the 3-point hitch only with equipment designed for
3-point hitch usage.

(4) Part No. K2871-6552-2

WARNING
TO AVOID PERSONAL INJURY OR DEATH: KEEP HANDS AWAY
FROM PINCH POINTS OF LIFT ARMS.

(5) Part No. K2651-6568-1

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

(6) Part No. K2871-6558-1

WARNING
TO AVOID PERSONAL INJURY OR DEATH:
1. Read and understand the operator's manual
   before operation.
2. On public roads use SMV-embian and hazard
   lights, if required by local traffic
   and safety regulations.
3. Pull only from the hitch.
4. Before dismounting lower the implement
to the ground, set the parking brake,
   stop the engine and remove the key.
5. Securely support tractor and implements
   before working underneath.
SAFE OPERATION

(1) Part No. K2871-6541-1

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 transaxle and PTO off. Never start engine while standing on the ground.

(3) Part No. K2581-6543-1
Stay clear of engine fan and fanbelt.

(2) Part No. K2581-6547-1
Stay clear of engine fan and fanbelt.
SAFE OPERATION

(1) Part No. K7591-6114-2

![Battery Information]

SAFE OPERATION

(2) Part No. K2871-6564-1

![Warning]

TO AVOID PERSONAL INJURY OR DEATH WHEN RAISING OR FOLDING ROPS:
1. Set parking brake and shutoff engine.
2. Remove any obstruction that may prevent engaging or folding of the ROPS.
3. Do not allow any bystanders.
4. Always perform task from a stable position at the rear of the structure.
5. Hold the top of the ROPS securely when raising or folding.
6. Make sure all pins are installed and locked.

(3) Part No. K2871-6542-1

Do not touch hot surface like muffler, etc.

![Warning]

BX23S, LA340, BT603
2. Safety labels of the loader

(1) Part No. 7J061-5645-1

**WARNING**

**TO AVOID PERSONAL INJURY:**
2. Operate the loader from tractor seat only.
3. Keep children, others and livestock away when operating loader and tractor.
4. Avoid holes, loose ground, and rocks which may cause tractor / loader to tip.
5. Make sure approved bucket is attached before removing loader from tractor.
6. When parking or storing, choose flat and hard ground. Lower the bucket to the ground, set brakes and remove key before leaving tractor.
7. Before disconnecting hydraulic lines, relieve all hydraulic pressure.

(2) Part No. 7J246-5641-1

**DANGER**

**TO AVOID SERIOUS INJURY OR DEATH CAUSED BY ROLLOVERS:**
1. ROPS and a fastened seat belt are strongly recommended in almost all applications. Foldable ROPS should be in upright and locked position if used.
2. Adjust rear wheels to the widest setting that is suitable for the work.
3. Add recommended wheel ballast and rear weight for stability.
4. Do not drive on steep slopes or unstable surfaces.
5. Carry loader arms at low position during transport. Move and turn tractor at slow speed.

(3) Part No. 7J246-5643-1

**DANGER**

**TO AVOID SERIOUS INJURY OR DEATH CAUSED BY FALLING LOADS:**
1. Load on level bucket or fork can fall or roll back onto operator causing serious injury or death.
2. Use approved clamping and / or guard attachments for handling large loads or unstable loads such as bales, posts, sheaths of plywood etc.
3. Carry loads as low as possible.

(4) Part No. 7J246-5642-1

**DANGER**

**TO AVOID SERIOUS INJURY OR DEATH CAUSED BY CONTACT WITH ELECTRIC LINES:**
1. Check overhead clearance.

(5) Part No. 7J246-5644-2

**WARNING**

**TO AVOID INJURY FROM FALLS OR BEING CRUSHED:**
1. Do not stand or work under raised loader or bucket.
2. Do not use loader as jack for servicing.
3. Do not use loader as a work platform.
4. Never connect chain, cable or rope to loader bucket while operating loader.

(6) Part No. 7J061-5649-1

**WARNING**

**TO AVOID INJURY FROM CRUSHING:**
1. Do not utilize the valve lock for machine maintenance or repair.
2. The valve lock is to prevent accidental actuation when implement is not in use or during transport.

LH inside

1JDJD00004A01

1JDJD00005A01

1JDJD00002A01
(1) Part No. 7J626-3648-3

**DANGER**

**TO AVOID PERSONAL INJURY OR DEATH**

1. Make sure both handles (LH, RH) contact the ear plates at the points and are all the way down.

2. Make sure both lock pins (LH, RH) protrude through the pin slots.


<table>
<thead>
<tr>
<th>HANDLE</th>
<th>EAR PLATE</th>
<th>LOCK PIN</th>
<th>PIN SLOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>

Use of a non-Kubota attachments that does not comply with ISO 24410 or the improper positioning of handle(s) or non-protrusion of pin(s) may result in detachment of the attachment or deformation, causing loss of performance, personal injury or death.

For information, contact your Kubota Dealer.

(2) Part No. 7J048-3923-6

**DANGER**

**PALLET FORK RATED CAPACITY**

- LAK3, LAK4, LAK4I: 600 LBS.
- LAK4I: 200 LBS.
- LAK4I: 200 LBS.

**TO AVOID PERSONAL INJURY OR DEATH CAUSED BY ROLLOVER**

- Do not exceed rated load listed above.
- Use rear implement and tire ballast recommended in loader operator’s manual.
- Operate tractor slowly taking special care when turning.

(3) Part No. 7J246-5643-1

**DANGER**

**TO AVOID SERIOUS INJURY OR DEATH CAUSED BY FALLING LOADS:**

1. Load on raised bucket or fork can fall or roll back onto operator causing serious injury or death.

2. Use approved damping and / or guard attachments for handling large, loose or shiftable loads such as bales, posts, sheets of plywood etc.

3. Carry loads as low as possible.

---

1AIABELAP044A

1AIABELAP0380

1AIABELAP075A

1JDJD00006A01

1JDJD00003A01

1JDJD00007A01

[BX2415 Pallet Fork]
3. Safety labels of the backhoe

(1) Part No. 75597-7528-1

![Warning label 1](1HNAACAP008E)

**WARNING**

TO AVOID PERSONAL INJURY:
WHEN MOUNTING AND DISMOUNTING THE BACKHOE.
1. When starting the engine, always sit in the operator's seat.
2. When getting off the tractor, make sure that PTO lever is off and range gear shift lever is in neutral. Then set the parking brake.
3. Keep hands, feet and body from between tractor and backhoe. Never allow any part of body under the machine.

(2) Part No. 75595-7517-2

![Warning label 2](1HNAACAP011E)

**WARNING**

TO AVOID PERSONAL INJURY:
STAY CLEAR OF OPERATING AREA OF THE BACKHOE.

(3) Part No. 75595-7524-2

![Warning label 3](1HNAACAP012E)

**WARNING**

TO AVOID PERSONAL INJURY:
KEEP BOTH FEET ON FOOT PLATFORM AND AWAY FROM STABILIZER.

(4) Part No. 7K501-7529-1

![Warning label 4](1AJAAAEAP028A)

**WARNING**

TO AVOID PERSONAL INJURY:
Set the swing lock pin, and lower the boom to the ground when leaving the operator's seat.

(5) Part No. 75597-7517-3

![Warning label 5](1HNAACAP010E)

**DANGER**

TO AVOID SERIOUS CRUSHING INJURY OR DEATH:
MAKE SURE BOOM SWING LOCK PIN IS INSTALLED FROM OPERATORS SEAT BEFORE ENTERING THIS AREA.

![Diagram](1PSQW00010A01)

![Diagram](1PSQW00011A01)

![Diagram](1PSQW00009A01)
[BX6316 MECHANICAL THUMB] (Option for BT603)

(1) Part No. 7K523-8452-1 (Both sides)

**WARNING**

TO AVOID INJURY FROM CRUSHING:
Keep all body parts (Head, Arms, Hands, Legs, and Feet) out of the operating area of the Thumb and Backhoe Bucket.
4. Care for safety labels

- Keep the safety labels clean and free from obstructing material.
- Clean the safety labels with soap and water, and dry the safety labels with a soft cloth.
- Replace damaged or missing safety labels with new safety labels from your local KUBOTA Dealer.
- If a component with safety label(s) attached is replaced with new component, make sure that new safety label(s) is (are) attached in the same location(s) as the replaced component.
- Attach new safety labels by applying on a clean, dry surface and pressing any bubbles to outside edge.
DEALER SERVICE

Your dealer is knowledgeable of your new tractor, loader, and backhoe and desires to help you get the most value from them. After reading this manual thoroughly, you will find that you can perform some of the regular maintenance yourself. However, when your tractor, loader, and backhoe need parts or major service, be sure to see your KUBOTA Dealer.

For service, contact the KUBOTA Dealership from which you purchased your tractor or your local KUBOTA Dealer. When in need of parts, be prepared to give the your dealer the serial number of the tractor, the engine, the loader, and the backhoe. Locate the serial numbers now and record them in the space provided.

- Concerning the tractor and loader, the reference to left hand and right hand used in this manual refers to the position when you are standing at the rear of the unit and facing forward.
- Concerning the backhoe, the reference to left hand and right hand used in this manual refers to the position when you are seating at the operator’s seat at the backhoe position and facing rearward of the tractor.

<table>
<thead>
<tr>
<th>Type</th>
<th>Serial No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractor</td>
<td>BX23S</td>
</tr>
<tr>
<td>ROPS</td>
<td></td>
</tr>
<tr>
<td>Engine</td>
<td>D902</td>
</tr>
<tr>
<td>Loader</td>
<td>LA340 and LA340S</td>
</tr>
<tr>
<td>Backhoe</td>
<td>BT603</td>
</tr>
<tr>
<td>Date of Purchase</td>
<td></td>
</tr>
<tr>
<td>Name of Dealer</td>
<td></td>
</tr>
</tbody>
</table>

(To be filled in by purchaser)
Loader

NOTE:
• The loader serial number label (5) is attached to the inside of the boom.

Backhoe

1. Warranty of the tractor

This tractor 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 tractor has not been used according to the instruction given in the operator's manual even if it is within the warranty period.

2. Scrapping the tractor and its procedure

To put the tractor out of service, correctly follow the local rules and regulations of the country or territory where you scrap it. If you question the tractor, consult your local KUBOTA Dealer.
## SPECIFICATIONS OF THE TRACTOR

### SPECIFICATION TABLE OF THE TRACTOR

<table>
<thead>
<tr>
<th>Model</th>
<th>BX23S</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>PTO power*1</th>
<th>13.2 kW (17.7 HP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maker</td>
<td>KUBOTA</td>
</tr>
<tr>
<td>Model</td>
<td>D902</td>
</tr>
<tr>
<td>Type</td>
<td>Liquid-cooled, 4-cycle diesel</td>
</tr>
<tr>
<td>Number of cylinders</td>
<td>3</td>
</tr>
<tr>
<td>Bore and stroke</td>
<td>72 mm x 73.6 mm (2.83 in. x 2.90 in.)</td>
</tr>
<tr>
<td>Total displacement</td>
<td>898 cm³ (54.8 cu. in.)</td>
</tr>
<tr>
<td>Engine gross power*2</td>
<td>17.1 kW (23.0 HP)</td>
</tr>
<tr>
<td>Rated revolution</td>
<td>3200 rpm</td>
</tr>
<tr>
<td>Low idling revolution</td>
<td>1350 rpm to 1550 rpm</td>
</tr>
<tr>
<td>Maximum torque</td>
<td>56.1 N·m (41.4 lbf·ft)</td>
</tr>
<tr>
<td>Battery</td>
<td>12 V, CCA: 560 A, RC: 86 min</td>
</tr>
</tbody>
</table>

### Capacities

<table>
<thead>
<tr>
<th>Fuel tank</th>
<th>25 L (6.6 U.S.gals.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine crankcase (with filter)</td>
<td>3.3 L (3.4 U.S.qts.)</td>
</tr>
<tr>
<td>Engine coolant</td>
<td>3.1 L (3.3 U.S.qts.)</td>
</tr>
<tr>
<td>Recovery tank</td>
<td>0.4 L (0.4 U.S.qts.)</td>
</tr>
<tr>
<td>Transmission case</td>
<td>11.3 L (2.98 U.S.gals.)</td>
</tr>
</tbody>
</table>

### Overall length (without 3P)

| 2210 mm (87.0 in.) w / Front guard |

### Overall length (with 3P)

| 2515 mm (99.0 in.) w / Front guard |

### Overall width

| 1145 mm (45.1 in.) |

### Overall height (with ROPS)

| 2190 mm (86.2 in.) |
| Top of seat 1255 mm (49.4 in.) |

### Wheel base

| 1400 mm (55.1 in.) |

(Continued)
### SPECIFICATIONS OF THE TRACTOR

<table>
<thead>
<tr>
<th>Model</th>
<th>BX23S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td>Min. ground clearance</td>
<td>148 mm (5.83 in.)</td>
</tr>
<tr>
<td>Tread</td>
<td>Front: 930 mm (36.6 in.)</td>
</tr>
<tr>
<td></td>
<td>Rear: 820 mm (32.2 in.)</td>
</tr>
<tr>
<td>Weight (with ROPS)</td>
<td>725 kg (1600 lbs.)</td>
</tr>
<tr>
<td><strong>Traveling system</strong></td>
<td></td>
</tr>
<tr>
<td>Tire</td>
<td>Front: 18 x 8.50-10 (Turf, Bar, Ind.)</td>
</tr>
<tr>
<td></td>
<td>Rear: 26 x 12.00-12 (Turf, Bar, Ind.)</td>
</tr>
<tr>
<td>Steering</td>
<td>Hydrostatic type power steering</td>
</tr>
<tr>
<td>Transmission</td>
<td>Main: Hydrostatic transmission, High-Low gear shift (2 forward, 2 reverse)</td>
</tr>
<tr>
<td>Brake</td>
<td>Wet disk type</td>
</tr>
<tr>
<td>Min. turning radius</td>
<td>2.3 m (7.5 feet)</td>
</tr>
<tr>
<td><strong>Hydraulic unit</strong></td>
<td></td>
</tr>
<tr>
<td>Hydraulic control system</td>
<td>Directional control, auto-return lever system</td>
</tr>
<tr>
<td>Pump capacity</td>
<td>23.5 L/min. (6.2 gals/min.)</td>
</tr>
<tr>
<td>System pressure</td>
<td>12.3 MPa to 12.8 MPa (126 kgf/cm² to 130 kgf/cm²) [1790 psi to 1850 psi]</td>
</tr>
<tr>
<td>Three point hitch</td>
<td>SAE Category 1 (Optional)</td>
</tr>
<tr>
<td>Max. lift force³</td>
<td>At lift points: 5390 N (1210 lbs.)</td>
</tr>
<tr>
<td></td>
<td>24 in. behind lift points: 3040 N (680 lbs.)</td>
</tr>
<tr>
<td>Remote control valve coupler (rear: Option)</td>
<td>System: 2 valves</td>
</tr>
<tr>
<td></td>
<td>Coupler: ISO 7241-1 series A</td>
</tr>
<tr>
<td>Remote control valve coupler (front: Option)</td>
<td>System: 2 valves</td>
</tr>
<tr>
<td></td>
<td>Coupler (fitting): ISO 7241-1 series B</td>
</tr>
<tr>
<td><strong>PTO</strong></td>
<td></td>
</tr>
<tr>
<td>Rear PTO</td>
<td>SAE 1-3/8, 6 splines</td>
</tr>
<tr>
<td>Revolution</td>
<td>STD (2500 rpm)</td>
</tr>
<tr>
<td>Mid PTO</td>
<td>USA No.5 (KUBOTA 10-tooth) involute spline</td>
</tr>
<tr>
<td>Revolution</td>
<td>STD (2500 rpm)</td>
</tr>
</tbody>
</table>

The company reserves the right to change the specifications without notice.

*¹ Manufacturer's estimate
*² SAE J1995
*³ See and check IMPLEMENT LIMITATION TABLES on page 40.
## TRAVELING SPEEDS TABLE

<table>
<thead>
<tr>
<th>Speed control pedal</th>
<th>Range gear shift lever</th>
<th>BX23S</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>0 km/h to 6.5 km/h</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>0 km/h to 13.5 km/h</td>
</tr>
<tr>
<td>Forward</td>
<td>Low</td>
<td>0 km/h to 5.0 km/h</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>0 km/h to 10.5 km/h</td>
</tr>
<tr>
<td>Reverse</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td></td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>

The company reserves the right to change the specifications without notice.
# SPECIFICATIONS OF THE LOADER

## LOADER SPECIFICATIONS TABLE

<table>
<thead>
<tr>
<th>Loader model</th>
<th>LA340 and LA340S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractor model</td>
<td>BX23S</td>
</tr>
<tr>
<td><strong>Boom cylinder</strong></td>
<td></td>
</tr>
<tr>
<td>Bore</td>
<td>40 mm (1.57 in.)</td>
</tr>
<tr>
<td>Stroke</td>
<td>326 mm (12.8 in.)</td>
</tr>
<tr>
<td><strong>Bucket cylinder</strong></td>
<td></td>
</tr>
<tr>
<td>Bore</td>
<td>65 mm (2.56 in.)</td>
</tr>
<tr>
<td>Stroke</td>
<td>196 mm (7.7 in.)</td>
</tr>
<tr>
<td>Control valve</td>
<td>One detent float position, single bucket dump, power beyond circuit</td>
</tr>
<tr>
<td>Rated flow</td>
<td>14 L/min (3.7 GPM)</td>
</tr>
<tr>
<td>Maximum pressure</td>
<td>12.8 MPa (130 kg/cm²) [1850 psi]</td>
</tr>
<tr>
<td>Net weight (approximate)</td>
<td>217 kg (478 lbs.)</td>
</tr>
</tbody>
</table>

*1 Include the quick bucket 48 in.

## BUCKET SPECIFICATIONS TABLE

<table>
<thead>
<tr>
<th>Loader model</th>
<th>LA340</th>
<th>LA340S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Square 48 in.</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Rigid</td>
<td>Quick hitch</td>
</tr>
<tr>
<td>Width</td>
<td>1219 mm (48.0 in.)</td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>491 mm (19.3 in.)</td>
<td>470 mm (18.5 in.)</td>
</tr>
<tr>
<td>Height (M)</td>
<td>465 mm (18.3 in.)</td>
<td>523 mm (20.6 in.)</td>
</tr>
<tr>
<td>Length (N)</td>
<td>538 mm (21.2 in.)</td>
<td>586 mm (23.1 in.)</td>
</tr>
<tr>
<td>Capacity</td>
<td>Struck 0.14 m³ (4.9 cu.ft.)</td>
<td>0.13 m³ (4.6 cu.ft.)</td>
</tr>
<tr>
<td></td>
<td>Heaped 0.17 m³ (6.0 cu.ft.)</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>60 kg (132 lbs.)</td>
<td>56 kg (123 lbs.)</td>
</tr>
</tbody>
</table>
# DIMENSIONAL SPECIFICATIONS OF THE LOADER

<table>
<thead>
<tr>
<th>Tractor model</th>
<th>Loader model</th>
<th>LA340</th>
<th>LA340S</th>
</tr>
</thead>
<tbody>
<tr>
<td>BX23S</td>
<td>A Max. lift height (to bucket pivot pin)</td>
<td>1804 mm (71.0 in.)</td>
<td>1664 mm (65.5 in.)</td>
</tr>
<tr>
<td></td>
<td>B Max. lift height under level bucket</td>
<td>1662 mm (65.4 in.)</td>
<td>1664 mm (65.5 in.)</td>
</tr>
<tr>
<td></td>
<td>C Clearance with bucket dumped</td>
<td>1323 mm (52.1 in.)</td>
<td>1288 mm (50.7 in.)</td>
</tr>
<tr>
<td></td>
<td>D Reach at max. lift height (dumping reach)</td>
<td>646 mm (25.4 in.)</td>
<td>677 mm (26.5 in.)</td>
</tr>
<tr>
<td></td>
<td>E Max. dump angle</td>
<td>45 deg.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F Reach with bucket on ground</td>
<td>1392 mm (54.8 in.)</td>
<td>1438 mm (56.6 in.)</td>
</tr>
<tr>
<td></td>
<td>G Bucket roll-back angle</td>
<td>29 deg.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>H Digging depth</td>
<td>125 mm (4.9 in.)</td>
<td>122 mm (4.8 in.)</td>
</tr>
<tr>
<td></td>
<td>J Overall height in carrying position</td>
<td>990 mm (39.0 in.)</td>
<td></td>
</tr>
</tbody>
</table>

![Diagram of loader and specifications](1JDJD00009A01)
## OPERATIONAL SPECIFICATIONS OF THE LOADER

<table>
<thead>
<tr>
<th></th>
<th>Loader model</th>
<th>LA340</th>
<th>LA340S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tractor model</strong></td>
<td>BX23S</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>U</strong> Lift capacity (bucket pivot pin, max. height)</td>
<td>335 kg (739 lbs.)</td>
<td>278 kg (613 lbs.)</td>
<td></td>
</tr>
<tr>
<td><strong>V</strong> Lift capacity (500 mm forward, max. height)</td>
<td>231 kg (509 lbs.)</td>
<td>192 kg (423 lbs.)</td>
<td></td>
</tr>
<tr>
<td><strong>W</strong> Lift capacity (bucket pivot pin, 1500 mm height)</td>
<td>372 kg (820 lbs.)</td>
<td>317 kg (699 lbs.)</td>
<td></td>
</tr>
<tr>
<td><strong>X</strong> Lift capacity (500 mm forward, 1500 mm height)</td>
<td>268 kg (591 lbs.)</td>
<td>229 kg (505 lbs.)</td>
<td></td>
</tr>
<tr>
<td><strong>Y</strong> Breakout force (bucket pivot pin)</td>
<td>6258 N (1407 lbs.)</td>
<td>5719 N (1286 lbs.)</td>
<td></td>
</tr>
<tr>
<td><strong>Z</strong> Breakout force (500 mm forward)</td>
<td>4389 N (987 lbs.)</td>
<td>4008 N (901 lbs.)</td>
<td></td>
</tr>
<tr>
<td><strong>VV</strong> Bucket roll-back force at max. height</td>
<td>4731 N (1064 lbs.)</td>
<td>4431 N (996 lbs.)</td>
<td></td>
</tr>
<tr>
<td><strong>XX</strong> Bucket roll-back force at 1500 mm height</td>
<td>5557 N (1249 lbs.)</td>
<td>5264 N (1183 lbs.)</td>
<td></td>
</tr>
<tr>
<td><strong>ZZ</strong> Bucket roll-back force at ground level</td>
<td>5456 N (1227 lbs.)</td>
<td>5195 N (1168 lbs.)</td>
<td></td>
</tr>
<tr>
<td><strong>Raising time</strong></td>
<td>3.3 sec.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lowering time</strong></td>
<td>2.5 sec.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bucket dumping time</strong></td>
<td>2.7 sec.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bucket rollback time</strong></td>
<td>2.3 sec.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

![Diagram](1JDJD00009A01)
SPECIFICATIONS OF THE LOADER

LA340

(B) Height (mm)

(C) Lift capacity (kg)

(D) At pivot pin

(E) 500 mm forward of pivot pin

LA340S

(B) Rollback force (kn)

(E) Height (mm)

(C) Lift capacity (kg)

(D) At pivot pin

(E) 500 mm forward of pivot pin
LOADER TERMINOLOGY

(1) Loader control lever
(2) Side frame
(3) Mounting hook
(4) Main frame
(5) Boom cylinder
(6) Boom
(7) Bucket cylinder
(8) Bucket
(9) Lock lever
# SPECIFICATIONS OF THE BACKHOE

## BACKHOE SPECIFICATIONS

### 1. Dimensions of the backhoe

<table>
<thead>
<tr>
<th>Model</th>
<th>BT603</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Transport height</td>
<td>1719 mm (67.7 in.)</td>
</tr>
<tr>
<td>(B) Stabilizer spread-transport</td>
<td>1296 mm (51.0 in.)</td>
</tr>
<tr>
<td>(C) Ground clearance</td>
<td>240 mm (9.4 in.)</td>
</tr>
<tr>
<td>(E) Overall width</td>
<td>1128 mm (44.4 in.)</td>
</tr>
<tr>
<td>(F) Maximum digging depth</td>
<td>1889 mm (74.4 in.)</td>
</tr>
<tr>
<td>(G) Digging depth, 2 ft. flat bottom</td>
<td>1842 mm (72.5 in.)</td>
</tr>
<tr>
<td>(H) Digging depth, 8 ft. flat bottom</td>
<td>1059 mm (41.7 in.)</td>
</tr>
<tr>
<td>(J) Operating height, fully raised</td>
<td>2539 mm (100 in.)</td>
</tr>
<tr>
<td>(K) Loading height</td>
<td>1533 mm (60.4 in.)</td>
</tr>
<tr>
<td>(L) Loading reach</td>
<td>1016 mm (40.0 in.)</td>
</tr>
<tr>
<td>(M) Reach from swing pivot</td>
<td>2612 mm (102.8 in.)</td>
</tr>
<tr>
<td>(N) Swing pivot to rear axle center line</td>
<td>726 mm (28.6 in.)</td>
</tr>
<tr>
<td>(P) Bucket rotation</td>
<td>180 deg.</td>
</tr>
<tr>
<td>(R) Stabilizer spread-operating</td>
<td>1862 mm (73.3 in.)</td>
</tr>
<tr>
<td>(A3) Angle of departure per SAE J1234</td>
<td>20.1 deg.</td>
</tr>
<tr>
<td>(U) Leveling angle</td>
<td>11 deg.</td>
</tr>
</tbody>
</table>

### NOTE:
- The specifications are taken with KUBOTA BX23S tractor. (Tire size: Front 18X8.5-10, Rear 26X12.00-12)
SPECIFICATIONS OF THE BACKHOE

BACKHOE SPECIFICATIONS

(L) (A)

(B) (E)

(R)

1PSQW00016A01
# BACKHOE SPECIFICATIONS

## SPECIFICATIONS OF THE BACKHOE

## 2. Specifications table of the backhoe

### Digging force (Per SAE J49)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>With bucket cylinder</td>
<td>8610 N (1936 lbs.)</td>
<td></td>
</tr>
<tr>
<td>With dipperstick cylinder</td>
<td>5209 N (1171 lbs.)</td>
<td></td>
</tr>
</tbody>
</table>

### Cycle Time (seconds)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Boom cylinder, extend</td>
<td>4.5 sec.</td>
<td></td>
</tr>
<tr>
<td>Boom cylinder, retract</td>
<td>3.7 sec.</td>
<td></td>
</tr>
<tr>
<td>Swing cylinder, from 90 degrees to center</td>
<td>1.5 sec.</td>
<td></td>
</tr>
<tr>
<td>Dipperstick cylinder, extend</td>
<td>4.1 sec.</td>
<td></td>
</tr>
<tr>
<td>Dipperstick cylinder, retract</td>
<td>3.4 sec.</td>
<td></td>
</tr>
<tr>
<td>Bucket cylinder, extend</td>
<td>3.1 sec.</td>
<td></td>
</tr>
<tr>
<td>Bucket cylinder, retract</td>
<td>2.4 sec.</td>
<td></td>
</tr>
<tr>
<td>Stabilizer cylinder, max. height to ground</td>
<td>2.9 sec.</td>
<td></td>
</tr>
<tr>
<td>Stabilizer cylinder, ground to max. height</td>
<td>2.3 sec.</td>
<td></td>
</tr>
</tbody>
</table>

### Hydraulic cylinders

<table>
<thead>
<tr>
<th></th>
<th>Boom</th>
<th>Dipperstick</th>
<th>Bucket</th>
<th>Stabilizer</th>
<th>Swing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rod diameter</td>
<td>3.0 cm (1.18 in.)</td>
<td>2.5 cm (0.98 in.)</td>
<td>2.5 cm (0.98 in.)</td>
<td>2.5 cm (0.98 in.)</td>
<td>3.0 cm (1.18 in.)</td>
</tr>
<tr>
<td>Cylinder bore</td>
<td>6.5 cm (2.56 in.)</td>
<td>6.0 cm (2.36 in.)</td>
<td>5.0 cm (1.97 in.)</td>
<td>6.0 cm (2.36 in.)</td>
<td>6.0 cm (2.36 in.)</td>
</tr>
</tbody>
</table>

### Bucket Sizes

<table>
<thead>
<tr>
<th></th>
<th>Width</th>
<th>SAE truck capacity</th>
<th>SAE heaped capacity</th>
<th>Number of teeth</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trenching 8 in.</td>
<td>20.3 cm (8 in.)</td>
<td>0.009 m³ (0.317 cu.ft.)</td>
<td>0.011 m³ (0.368 cu.ft.)</td>
<td>2</td>
<td>10 kg (22 lbs)</td>
</tr>
<tr>
<td>Trenching 12 in.</td>
<td>30.5 cm (12 in.)</td>
<td>0.014 m³ (0.494 cu.ft.)</td>
<td>0.020 m³ (0.706 cu.ft.)</td>
<td>3</td>
<td>13 kg (29 lbs)</td>
</tr>
<tr>
<td>Trenching 16 in.</td>
<td>40.6 cm (16 in.)</td>
<td>0.020 m³ (0.706 cu.ft.)</td>
<td>0.029 m³ (1.024 cu.ft.)</td>
<td>3</td>
<td>16 kg (35 lbs)</td>
</tr>
</tbody>
</table>
3. Lift capacity of the backhoe (per SAE J31)

The lift capacities shown are 87% of maximum lift force, according to SAE definition.

<table>
<thead>
<tr>
<th>Option</th>
<th>Lift Capacity (kg)</th>
<th>Lift Capacity (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>192 kg</td>
<td>423 lbs</td>
</tr>
<tr>
<td>B</td>
<td>212 kg</td>
<td>467 lbs</td>
</tr>
<tr>
<td>C</td>
<td>215 kg</td>
<td>474 lbs</td>
</tr>
<tr>
<td>D</td>
<td>209 kg</td>
<td>461 lbs</td>
</tr>
<tr>
<td>E</td>
<td>203 kg</td>
<td>448 lbs</td>
</tr>
<tr>
<td>F</td>
<td>201 kg</td>
<td>443 lbs</td>
</tr>
<tr>
<td>G</td>
<td>214 kg</td>
<td>472 lbs</td>
</tr>
<tr>
<td>H</td>
<td>262 kg</td>
<td>578 lbs</td>
</tr>
</tbody>
</table>
BACKHOE TERMINOLOGY SPECIFICATIONS OF THE BACKHOE

BACKHOE TERMINOLOGY

(1) Backhoe bucket
(2) Bucket teeth
(3) Bucket link
(4) Bucket cylinder
(5) Dipperstick
(6) Dipperstick cylinder
(7) Boom
(8) Boom cylinder
(9) Swing frame
(10) Main frame
(11) Swing cylinder
(12) Stabilizer
(13) Stabilizer pad
(14) Stabilizer cylinder
(15) Joystick control
(16) Stabilizer control
(17) Swing lock pin
(18) Boom lock pin
(19) Boom and swing lock lever
IMPLEMENT LIMITATIONS

IMPLEMENT LIMITATION TABLES

IMPORTANT:
The KUBOTA Tractor has been thoroughly tested for proper performance with implements sold or approved by KUBOTA. Do not use the following implements:

- Implements which are not sold or approved by KUBOTA
- Implements which exceed the maximum specifications listed in the following table
- Implements which are otherwise unfit for use with the KUBOTA Tractor

These implements may result in malfunctions or failures of the tractor, damage to other property, and injury to the operator or others.

NOTE:
Any malfunctions or failures of the tractor resulting from use with improper implements are not covered by the warranty.

<table>
<thead>
<tr>
<th>Model</th>
<th>BX23S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tread (max. width)</td>
<td></td>
</tr>
<tr>
<td>Front</td>
<td>930 mm (36.6 in.)</td>
</tr>
<tr>
<td>Rear</td>
<td>820 mm (32.2 in.)</td>
</tr>
<tr>
<td>Lower link end max. lifting weight $W_0$</td>
<td>550 kg (1210 lbs.)</td>
</tr>
</tbody>
</table>

Actual figures

- Implement weight $W_1$ and / or size: As in "Implement weight list"
- Max. hitch load $W_2$: 250 kg (550 lbs.)
- Trailer loading weight $W_3$ (Max. capacity): 800 kg (1765 lbs.)
- Total weight $W_4$: 1100 kg (2425 lbs.)

1BXM00101A01

Lower link end max. lifting weight $W_0$
The max. allowable load which can be put on the lower link end

Implement weight $W_1$
The implement’s weight which can be put on the lower link

Max. hitch load $W_2$
The max. loading weight for hitching

Trailer loading weight $W_3$
The max. loading weight for trailer (without trailer’s weight)

Total weight $W_4$
The max. loading weight for trailer with trailer’s weight

NOTE:
- Implement size may vary depending on soil operating conditions.
- Strictly follow the instructions outlined in the operator’s manual of the mounted or trailed machinery or trailer, and do not operate the combination tractor-machine or tractor-trailer unless all instructions have been followed.
When you use the forestry application, there are following hazards:

– toppling trees, primarily in case a rear-mounted-tree-grab-crane is mounted at the rear of the tractor
– penetrating objects in the operator’s enclosure, primarily in case a winch is mounted at the rear of the tractor

To deal with these hazards and other related hazards, the tractor requires optional equipments such as OPS (operator-protective-structure), FOPS (falling-object-protective-structure), and so on. These optional equipments, however, are not available for this tractor. Without optional equipments such as OPS and FOPS, the use of the tractor is limited to tractor-specific-applications like transport and stationary work.
## Implement weight list

<table>
<thead>
<tr>
<th>Implement</th>
<th>Remarks</th>
<th>BX23S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Backhoe</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Max. digging depth</td>
<td>1840 mm (6 ft)</td>
</tr>
<tr>
<td></td>
<td>Max. weight</td>
<td>w/o bucket 266 kg (586 lbs.)</td>
</tr>
<tr>
<td><strong>Front-end loader</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Max. lifting capacity (Bucket pivot pin, max. height)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>335 kg (739 lbs.)</td>
</tr>
<tr>
<td></td>
<td>Max. width</td>
<td>122 cm (48 in.)</td>
</tr>
<tr>
<td></td>
<td>Sub frame</td>
<td>Necessary</td>
</tr>
<tr>
<td><strong>Mower</strong></td>
<td>Mid-mont</td>
<td>Max. cutting width</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max. weight</td>
</tr>
<tr>
<td><strong>Rotary-Cutter (1 Blade)</strong></td>
<td>Max. cutting width</td>
<td>122 cm (48 in.)</td>
</tr>
<tr>
<td></td>
<td>Max. weight</td>
<td>181 kg (400 lbs.)</td>
</tr>
<tr>
<td><strong>Rear-mount (2 or 3 Blade)</strong></td>
<td>Max. cutting width</td>
<td>152 cm (60 in.)</td>
</tr>
<tr>
<td></td>
<td>Max. weight</td>
<td>262 kg (577 lbs.)</td>
</tr>
<tr>
<td><strong>Flail-mower</strong></td>
<td>Max. cutting width</td>
<td>107 cm (42 in.)</td>
</tr>
<tr>
<td><strong>Sickle bar</strong></td>
<td>Max. cutting width</td>
<td>122 cm (48 in.)</td>
</tr>
<tr>
<td><strong>Rotary tiller</strong></td>
<td>Max. tilling width</td>
<td>127 cm (50 in.)</td>
</tr>
<tr>
<td></td>
<td>Max. weight</td>
<td>197 kg (435 lbs.)</td>
</tr>
<tr>
<td><strong>Bottom plow</strong></td>
<td>Max. size</td>
<td>14 x 1 in.</td>
</tr>
<tr>
<td><strong>Disc plow</strong></td>
<td>Max. size</td>
<td>22 x 1 in.</td>
</tr>
<tr>
<td><strong>Cultivator</strong></td>
<td>Max. size</td>
<td>122 cm (48 in.) 1 Row</td>
</tr>
<tr>
<td><strong>Disc harrow</strong></td>
<td>Max. harrowing width</td>
<td>122 cm (48 in.)</td>
</tr>
<tr>
<td></td>
<td>Max. weight</td>
<td>249 kg (549 lbs.)</td>
</tr>
<tr>
<td><strong>Sprayer</strong></td>
<td>Max. tank capacity</td>
<td>150 L (40 U.S.gals.)</td>
</tr>
<tr>
<td><strong>Front blade</strong></td>
<td>Max. cutting width</td>
<td>152 cm (60 in.)</td>
</tr>
<tr>
<td></td>
<td>Sub frame</td>
<td>Necessary</td>
</tr>
<tr>
<td><strong>Rear blade</strong></td>
<td>Max. cutting width</td>
<td>152 cm (60 in.)</td>
</tr>
<tr>
<td></td>
<td>Max. weight</td>
<td>112 kg (248 lbs.)</td>
</tr>
</tbody>
</table>

(Continued)
### IMPLEMENT LIMITATIONS

<table>
<thead>
<tr>
<th>Implement</th>
<th>Remarks</th>
<th>BX23S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Box blade</strong></td>
<td>Max. cutting width</td>
<td>152 cm (60 in.)</td>
</tr>
<tr>
<td></td>
<td>Max. weight</td>
<td>170 kg (375 lbs.)</td>
</tr>
<tr>
<td><strong>Snow blower (Front)</strong></td>
<td>Max. working width</td>
<td>127 cm (50 in.)</td>
</tr>
<tr>
<td></td>
<td>Max. weight</td>
<td>160 kg (353 lbs.)</td>
</tr>
<tr>
<td></td>
<td>Sub frame</td>
<td>Necessary</td>
</tr>
<tr>
<td><strong>Post hole digger</strong></td>
<td>Digging depth</td>
<td>114 cm (45 in.)</td>
</tr>
<tr>
<td><strong>Rotary broom</strong></td>
<td>Cleaning width</td>
<td>119 cm (47 in.)</td>
</tr>
<tr>
<td><strong>Trailer</strong></td>
<td>Max. load capacity</td>
<td>800 kg *4 (1765 lbs.)</td>
</tr>
<tr>
<td></td>
<td>Max. weight</td>
<td>1100 kg (2425 lbs.)</td>
</tr>
</tbody>
</table>

**NOTE:**

- Implement size may vary depending on soil operating conditions.

*1 KUBOTA provides BT603 backhoe for BX23S.
   No other backhoe installed by 3-point hitch is permitted for BX23S.

*2 KUBOTA provides LA340 and LA340S Front-end Loader for BX23S.

*3 The value contains the weight of KUBOTA standard bucket.

*4 Reduce speed and trailer loads when operating in slippery conditions or when operating on slopes and using front wheel drive.
INSTRUMENT PANEL AND CONTROLS

INSTRUMENT PANEL, SWITCHES, AND HAND CONTROLS

(1) Easy Checker™...69
(2) Tachometer...71
(3) Hazard light switch...45
(4) Turn signal light switch...45
(5) Head light switch...45
(6) Fuel gauge...70
(7) Coolant temperature gauge...70
(8) Hour meter...71
(9) Key switch...45
(10) Tilt lever...45
(11) Hood open lever...46
1. Key switch

2. Tilt lever
   The tilt lever is the lever to adjust the steering wheel to proper position.

3. Head light switch
   To turn on the head lights, turn the head-light-switch clockwise. To turn off the head lights, turn the head-light-switch counterclockwise.

4. Hazard light switch
   1. When pressing the hazard-light-switch, the hazard lights flash along with the indicator on the instrument panel.
   2. When pressing the hazard-light-switch again, the hazard lights turn off.

   NOTE :
   • The hazard-light-switch is operative when the key switch is only on position.

5. Turn signal light switch
   To indicate a right turn, turn the turn-signal-light-switch clockwise.
   To indicate a left turn, turn the turn-signal-light-switch counterclockwise.
   When the left or right turn signal is activated in combination with the hazard lights, the indicated turning light will flash and the other light will stay on.

   NOTE :
   • Be sure to return the turn-signal-light-switch to center position after turning.
6. Hood open lever

The hood-open-lever is the lever to open the hood.

**WARNING**

To avoid serious injury or death from contact with moving parts:

- Never open the hood or engine side cover while the engine is running.
- Do not touch the muffler or the exhaust pipes while they are hot. Touching the hot muffler or exhaust pipes could cause severe burns.

1. Pull the front guard forward.
2. Pull the hood-open-lever to release the latch to open the hood, and open the hood.
FOOT CONTROLS AND HAND CONTROLS

1. Brake pedal...48, 48
2. Parking brake lock pedal...48, 48
3. 3-point hitch lowering speed knob...84
4. Cutting height control dial...86
5. PTO clutch lever...77
6. PTO select lever...77
7. Differential lock pedal...72
8. Speed set rod...50, 51
9. Hand accelerator lever...50
10. Loader control lever...93, 95
11. Lock lever...99
12. Speed control pedal...50
13. Hydraulic control lever...84
14. Front wheel drive lever...49
15. Range gear shift lever (Hi-Lo)...49
16. Operator's seat...48
17. Seat belt...48
1. Operator's seat

**WARNING**
To avoid personal injury or death:
- Adjustment to the operator's seat only while the tractor is stopped.
- Make sure that the operator's seat is completely secured after each adjustment.
- Do not allow any person other than the operator to ride on the tractor.

![座席の調整方法](image1)

- **Seat**
- **Position adjust lever**
- **Backrest tilt adjust lever**
- **Arm rest**
- **Seat belt**

**Travel adjustment**
Pull up the position-adjust-lever and slide the seat backward or forward, as required. The seat will lock in position when the position-adjust-lever is released.

**Tilt adjustment [BX2380D, BX2680D]**
Pull the backrest-tilt-adjust-lever and tilt the backrest to the desired position.

**IMPORTANT:**
- After adjusting the operator's seat, be sure to check that the seat is properly locked.
- Be sure the operator's seat is out of contact with the top link.
- See [REVERSING THE OPERATOR'S SEAT on page 74](#) when using the operator's seat in the backhoe position.

2. 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 the tractor is not equipped with ROPS.

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

3. Brake pedal and parking brake lock pedal

**WARNING**
To avoid serious injury or death:
- Do not brake suddenly. An accident may occur as a result of a heavy towed load shifting forward or loss of control.
- To avoid skidding and loss of steering control when driving on icy, wet, or loose surfaces, make sure that the tractor is correctly ballasted, operated at reduced speed, and operated with the front-wheel-drive engaged if equipped.
- The braking characteristics are different between 2-wheel drive and 4-wheel drive. Know the difference between 2-wheel drive and 4-wheel drive and use them carefully.
- Engage 4-wheel drive for 4-wheel braking when traveling down a slope.

![ブレーキペダルとパーキングブレーキロックペダル](image2)

- **Brake pedal**
- **Parking brake lock pedal**
- **Depress**
- **Push down parking brake lock pedal while depressing brake pedal**

**3.1 How to use the parking brake**

**NOTE:**
- It is recommended that the operator practice engaging and disengaging the parking brake on
a flat surface without the engine running before operating the tractor for the first time.

To set the parking brake
1. Depress the brake pedal.
2. Latch the brake pedal on pushing and holding the parking-brake-lock-pedal.
3. Release the brake pedal.

To release the parking brake
Depress the brake pedal again.

4. Range gear shift lever (Hi-Lo)
You can shift the range-gear-shift-lever only when tractor is completely stopped.

WARNING
To avoid serious injury or death:
• Make sure that the range-gear-shift-lever is fully engaged into the high 🛡 position or the low 🛡 position before climbing or descending a slope.

IMPORTANT :
Do not force the range-gear-shift-lever.
• If it is difficult to shift the range-gear-shift-lever into the neutral “N” position, you should attempt the following procedure.
  1. Depress the brake pedal firmly for several seconds.
  2. Without reducing the force to depress the brake pedal, shift the range-gear-shift-lever.
• If it is difficult to shift the range-gear-shift-lever into the low 🛡 position or the high 🛡 position from the neutral “N” position, you should attempt the following procedure.
  1. Slightly depress the speed-control-pedal to rotate the gears inside of transmission.
  2. Release the speed-control-pedal to the neutral “N” position.
  3. Shift the range-gear-shift-lever.

5. Front wheel drive lever
Use the front-wheel-drive-lever to engage the front wheels with the tractor stopped.

WARNING
To avoid serious injury or death:
• Do not engage the front-wheel-drive when traveling at road speed.
• When driving on icy, wet, or loose surfaces, make sure that the tractor is correctly ballasted to avoid skidding and loss of steering control. Operate the tractor at reduced speed and engage the front-wheel-drive.
• An accident may occur if the tractor is suddenly braked, such as by heavy towed loads shifting forward or loss of control.
• The braking characteristics are different between 2-wheel drive and 4-wheel drive. Know the difference and use them carefully.

Shift the front-wheel-drive-lever to the on 🛡 position to engage the front-wheel-drive.
7. Speed control pedal

**WARNING**
To avoid serious injury or death:
• Do not operate the tractor if it moves on level ground with your foot off the speed-control-pedal.

**IMPORTANT:**
• To prevent serious damage to the HST, do not adjust the stopper bolts.

<table>
<thead>
<tr>
<th>Forward pedal</th>
<th>Depress the forward pedal with the toe of your right foot to move forward.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse pedal</td>
<td>Depress the reverse pedal with the heel of your right foot to move backward.</td>
</tr>
</tbody>
</table>

8. Speed set device

The speed-set-device is designed for tractor-operating-efficiency and operator's comfort. This device will provide a constant forward operating speed by mechanically holding the speed-control-pedal at a selected position.
8.1 How to use the speed set device

To engage the speed set device
1. Accelerate speed to desired level using the speed-control-pedal.
2. Push and hold the speed-set-rod downward to **on** position.
Desired speed will be maintained.

To disengage the speed set device
1. Depress the brake pedal.

**IMPORTANT:**
- To prevent the damage of the speed-set-device, do not depress the reverse pedal when the speed-set-device is engaged.

**NOTE:**
- If you step on the speed-control-pedal on the forward acceleration side, the speed-set-device will disengage.
- The speed-set-device will not operate in reverse.

9. Loader control lever

**ACCESSORY**

1. 12 V electric outlet
You may use the 12 V electric outlet to connect an auxiliary light or other devices.

**IMPORTANT:**
- Do not use as a cigarette lighter.
- Do not use when wet.

**NOTE:**
- Do not connect a light or other device that draws more than 120 watts to 12 V electric outlet. The battery may discharge very rapidly or the 12 V electric outlet may fail.
2. Glove box
PRE-OPERATION CHECK OF THE TRACTOR

DAILY CHECK ITEMS BEFORE OPERATION OF THE TRACTOR

To prevent trouble from occurring, it is important to know the condition of the tractor well.

⚠️ WARNING

To avoid serious injury or death:
• Be sure to check and service the tractor on a level surface with the engine shut off, the parking brake on, and the implement lowered to the ground.

Check the condition of the tractor before starting it.

Check items
• Walk-around inspection
• Checking the engine-oil-level
• Checking the transmission-oil-level
• Checking the coolant level
• Cleaning the grill and the radiator screen
• Checking the air-cleaner-evaluator-valve when using the tractor in a dusty place
• Checking the brake pedal
• Checking the indicators, gauges, and meter
• Checking the lights
• Checking the wire harness
• Checking the seat belt and ROPS
• Checking the movable parts
• Refuel
  See 2. Checking the fuel gauge and refueling on page 119.
• Care for safety labels
LUBRICATION BEFORE OPERATING THE LOADER

Lubricate all grease fittings with SAE multipurpose grease, including the control arm.

CHECKING THE TRANSMISSION FLUID

IMPORTANT:
- To check the tractor transmission fluid level, lower the bucket to the ground and lower the 3-point hitch.

1. Check the transmission fluid level of the tractor.
2. Add the transmission fluid if necessary.
   Refer to the tractor operator’s manual for instructions and proper transmission fluid.
3. Repeat check of the transmission fluid after purging air from the loader system.
4. Then, add the transmission fluid if necessary.

WEIGHT OF THE IMPLEMENTS AS THE REAR BALLAST

WARNING
To avoid personal injury or death:
- For tractor stability and operator’s safety, add the rear ballast to the rear of the tractor in the form of 3-point counter weight and the rear wheel ballast. The amount of the rear ballast will depend on the application.

<table>
<thead>
<tr>
<th>Implement as Counter Weight</th>
<th>Approx. kg (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backhoe</td>
<td>266 (586)</td>
</tr>
<tr>
<td>Box Blade</td>
<td></td>
</tr>
<tr>
<td>Rear Blade</td>
<td>190 (420)</td>
</tr>
<tr>
<td>Rotary Tiller</td>
<td></td>
</tr>
<tr>
<td>Ballast Box</td>
<td></td>
</tr>
</tbody>
</table>

1. Liquid ballast in the rear tires
See 2. Rear ballast on page 91.

Liquid weight per tire (75 percent filled)

<table>
<thead>
<tr>
<th>Tire sizes</th>
<th>26x12.00-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slush free at -10 °C (14 ℉)</td>
<td>45 kg (99 lbs.)</td>
</tr>
<tr>
<td>Solid at -30 °C (-22 ℉)</td>
<td>50 kg (110 lbs.)</td>
</tr>
<tr>
<td>[Approx. 1 kg (2 lbs.) CaCl₂ per 4 L (1 gal) of water]</td>
<td></td>
</tr>
<tr>
<td>Slush free at -24 °C (-11 ℉)</td>
<td>56 kg (123 lbs.)</td>
</tr>
<tr>
<td>Solid at -47 °C (-52 ℉)</td>
<td></td>
</tr>
<tr>
<td>[Approx. 1.5 kg (3.5 lbs.) CaCl₂ per 4 L (1 gal) of water]</td>
<td></td>
</tr>
</tbody>
</table>

CHECK OF THE TIRE INFLATION BEFORE OPERATING THE LOADER

Make sure that the tractor tires are properly inflated. See 1. Inflation pressure of tires on page 89.
**PERFORMING THE TEST OPERATION OF THE LOADER**

<table>
<thead>
<tr>
<th>Tire sizes</th>
<th>Inflation Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear</td>
<td></td>
</tr>
<tr>
<td>26x12.00-12 Turf</td>
<td>100 kPa (1.0 kgf/cm²) [14 psi]</td>
</tr>
<tr>
<td>26x12.00-12 Bar</td>
<td>120 kPa (1.2 kgf/cm²) [17 psi]</td>
</tr>
<tr>
<td>26x12.00-12 Ind.</td>
<td>120 kPa (1.2 kgf/cm²) [17 psi]</td>
</tr>
<tr>
<td>Front</td>
<td></td>
</tr>
<tr>
<td>18x8.50-10 Turf</td>
<td>120 kPa (1.2 kgf/cm²) [17 psi]</td>
</tr>
<tr>
<td>18x8.50-10 Bar</td>
<td>150 kPa (1.5 kgf/cm²) [22 psi]</td>
</tr>
<tr>
<td>18x8.50-10 Ind.</td>
<td>150 kPa (1.5 kgf/cm²) [22 psi]</td>
</tr>
</tbody>
</table>

**WARNING**

To avoid personal injury or death:
- Keep engine speed at low idle during the test operation of the loader.
- Escaping the hydraulic fluid under pressure can obtain sufficient force to penetrate skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure by moving the controls.
- Before applying pressure to the loader system, be sure that all connections are tight and that lines, tubes, and hoses are not damaged.
- Hydraulic fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands to search for suspected leaks.
- If injured by escaping fluid, see a doctor at once. Serious infection or allergic reaction may develop if proper medical treatment is not administered immediately.
- Do not move the loader-control-lever into the float position when the bucket is off the ground.

To start the test operation, follow the following procedure.
1. Slightly move the control lever from the "N" position.
2. Slowly raise the boom of the loader just enough for the bucket to clear the ground when fully dumped.
3. Slowly operate the loader through the dump and roll back cycles.

**NOTE:**
- When the lever is at each corner position marked by asterisk "*", cylinders of the boom and bucket work at the same time. However, the blank position (raise and roll back) is not recommended for scooping because of insufficient lift force.

**IMPORTANT:**
- If the boom or bucket of the loader does not work in the directions indicated on the label, follow the following procedure.
  1. Lower the bucket to the ground.
  2. Stop the engine.
  3. Relieve all hydraulic pressure.
  4. Recheck and correct all hydraulic connections.

**REMOVING AIR FROM THE HYDRAULIC SYSTEM**

1. Repeat operations of raising and lowering the boom and the bucket until all the air is removed from the hydraulic system and the hydraulic system responds properly.

**IMPORTANT:**
- Do not move the control lever into the float position when the bucket is off the ground.
PRE-OPERATION CHECK OF THE BACKHOE

CHECKING OF THE BACKHOE BEFORE OPERATION

WARNING
To avoid serious injury or death:
• Read the "Safe operation" in this manual.
• Read the warning and caution labels located on the backhoe.
• Make sure that the swing-lock-pin is set before entering or exiting the operator area of the backhoe.

See PRECAUTIONS OF THE BACKHOE on page 14 and 3. Safety labels of the backhoe on page 22. Prior to starting the engine, check the backhoe according to CHECKING THE BACKHOE DAILY on page 141 before operation.

PRE-OPERATING INSTRUCTION OF THE BACKHOE

1. Check of the operator's seat before operating the backhoe
You can use the operator's seat for the BX23S tractor to operate the loader and backhoe. See 1. Operator's seat on page 48 for the detail to turn the operator's seat around for backhoe operation.

2. Check of the ballast before operating the backhoe

WARNING
To avoid serious injury or death:

• Never remove the loader to ensure the stability of the tractor at all times.

IMPORTANT:
• Do not add the liquid ballast or any other weights to the front tires.
• While the BT603 backhoe is installed on the tractor, the liquid ballast in the rear tires should be removed.

3. Check of the tire inflation before operating the backhoe
Make sure that the tractor tires are properly inflated. See 1. Inflation pressure of tires on page 89.

<table>
<thead>
<tr>
<th>Tire sizes</th>
<th>Inflation Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rear</td>
</tr>
<tr>
<td>26x12.00-12 Turf</td>
<td>100 kPa (1.0 kgf/cm²) [14 psi]</td>
</tr>
<tr>
<td>26x12.00-12 Bar</td>
<td>120 kPa (1.2 kgf/cm²) [17 psi]</td>
</tr>
<tr>
<td>26x12.00-12 Ind.</td>
<td>120 kPa (1.2 kgf/cm²) [17 psi]</td>
</tr>
<tr>
<td></td>
<td>Front</td>
</tr>
<tr>
<td>18x8.50-10 Turf</td>
<td>120 kPa (1.2 kgf/cm²) [17 psi]</td>
</tr>
<tr>
<td>18x8.50-10 Bar</td>
<td>150 kPa (1.5 kgf/cm²) [22 psi]</td>
</tr>
<tr>
<td>18x8.50-10 Ind.</td>
<td>150 kPa (1.5 kgf/cm²) [22 psi]</td>
</tr>
</tbody>
</table>
OPERATING THE ENGINE

WARNING
To avoid serious injury or death:
• Read and understand “Safe operation” in this manual.
• Read and understand the safety labels located on the tractor.
• To avoid the danger of exhaust-fume-poisoning, do not operate the engine in a closed building without proper ventilation.
• Never start the engine while standing on ground. Start the engine only from the operator’s seat.
• Follow the rule to set all shift levers to the neutral positions and to place the PTO lever in the off position before starting the engine.

See 2. Precautions for operating the tractor on page 8, 3. Precautions for parking the tractor on page 10, and 6. Precautions for servicing the tractor on page 11.

IMPORTANT:
• Do not use starting fluid or ether.
• To protect the battery and the starter, make sure that the starter is not continuously turned for more than 30 seconds.

STARTING THE ENGINE

IMPORTANT:
• Because of safety devices, the engine will not start except when the speed-control-pedal is in the neutral position and the PTO-clutch-lever is in the off position respectively.

1. Make sure that the parking brake is set.
   If the parking brake is not set, see “To set the parking brake” in 3.1 How to use the parking brake on page 48.
3. Place the speed-set-rod in the **off** position.

4. Place the speed-control-pedal in the **neutral** position.

**NOTE:**
- The speed-control-pedal automatically returns to the neutral position when the operator’s foot is released from the speed-control-pedal.

5. Place the range-gear-shift-lever (Hi-Lo) in the **neutral “N”** position.

6. Lock the loader-control-lever in the **lock** position if equipped.

7. Move the hydraulic-control-lever forward (the **lowered (down)** position) to lower the implement.

Check that the implement is down at the lowest position after moving the hydraulic-control-lever forward.
8. Set the hand-accelerator-lever to about 1/2 way.

9. Insert the starter key into the key switch and turn the starter key to the on position.

10. Check the indicator lamps on Easy Checker™.

**IMPORTANT**: Daily checks with the Easy Checker™ only are not sufficient. Never fail to conduct daily checks carefully by referring to 8. Checking the gauges, the meters, and the Easy Checker™ on page 122.

When the starter key is turned to the on position, the coolant-temperature-indicator-lamp and the low-fuel-indicator-lamp only should come on and the needles of the fuel gauge, the coolant-temperature-gauge, and the tachometer move up and return.

See 2.1 Easy Checker™ on page 69.

11. Turn the starter key to the preheat position and hold it as follows. For the appropriate preheating time, refer to the following table.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Preheating time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over 0 ℃ (32 ℉)</td>
<td>2 sec. to 3 sec.</td>
</tr>
<tr>
<td>-5 ℃ to 0 ℃</td>
<td>5 sec.</td>
</tr>
<tr>
<td>(23 ℉ to 32 ℉)</td>
<td></td>
</tr>
<tr>
<td>-15 ℃ to -5 ℃</td>
<td>10 sec.</td>
</tr>
<tr>
<td>(5 ℉ to 23 ℉)</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE**: The preheat-indicator-lamp on the Easy Checker™ comes on while the engine is being preheated.

12. Turn the starter key to the start position and release it when the engine starts.

In cold weather, if the engine fails to start after 10 seconds, turn off the starter key for 30 seconds. Then repeat steps 11. and steps 12. See 1. Cold weather starting of the engine on page 60.

**IMPORTANT**: Because of safety devices, the engine will not start except when the speed-control-pedal is in the neutral position and the PTO-clutch-lever is in the off position respectively.

13. Check to see that all the indicator lamps on the Easy Checker™ are off.
1. Cold weather starting of the engine
When the ambient temperature is as follows and the engine is very cold, you may fail to start the engine.

| Ambient temperature | below -5 ℃ (23 ℉) |

To protect the battery and the starter, make sure not to turn the starter continuously for more than following seconds.

| Continuous turning limit of the starter | 30 seconds |

2. Block heater (option)
A block heater is available as an option from your dealer. The block heater will assist you in starting your tractor when the ambient temperature is as follows.

| Ambient temperature | below -15 ℃ (5 ℉) |

STOPPING THE ENGINE
1. After slowing the engine to idle, turn the starter key to the stop position.
2. Remove the starter key.

NOTE:
- If the starter key does not stop the engine, consult your local KUBOTA Dealer.

WARMING UP OF THE ENGINE

WARNING
To avoid serious injury or death:
- Be sure to set the parking brake during warm-up of the engine.
- Be sure to set all shift levers to the neutral positions and to place the PTO-clutch-lever in the off position during warm-up of the engine.

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

JUMP STARTING THE ENGINE
Follow the instructions of jump starting of the engine to safely start the engine.

WARNING
To avoid serious injury or death:
- Battery gases can explode. Keep cigarettes, sparks, and flames away from battery.
- If the tractor battery is frozen, do not jump start the engine.
- Do not connect other end of negative (-) jumper cable to negative (-) terminal of the tractor battery.
- When taking the dead battery, putting the battery, and fixing the battery, do not allow the positive (+) terminal of the battery to touch other parts.
- To prevent short circuit, before connecting jumper cables, make sure to remove the metal-battery-holder.

IMPORTANT:
- The tractor equips a 12 volt negative (-) ground starting system.
• Use only the same voltage for jump starting.
• Use of a higher voltage source on the electrical system of tractor could result in severe damage to the electrical system of tractor.
• Since the metal-battery-holder can crack, do not tighten it too much.

Use only matching voltage source when jump starting in a low battery condition or a dead battery condition.

Connect cables in numerical order.
Disconnect in reverse order after use.

1. Bring the helper vehicle with a battery of the same voltage as the disabled tractor within easy cable reach.

**IMPORTANT:**
• The helper vehicle must not touch the disabled tractor.

2. Engage the parking brakes of both vehicles and put the shift levers in the neutral position. Shut both engines off.
3. Put on safety goggles and rubber gloves.
4. Take the dead battery out and put it on the step of the tractor.
5. Make sure that the vent caps are securely in place if equipped.
6. 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.
7. Clamp the other cable to the negative (black, (-) or neg.) terminal of the helper battery.
8. Clamp the other end of the cable, which is clamped to the negative terminal of the helper battery, to the engine block or frame of the disabled tractor as far from the dead battery as possible.
9. Start the helper vehicle and let its engine run for a few moments. Start the disabled tractor.
10. Disconnect the jumper cables in the exact reverse order of attachment.
    See steps in order of step 8., step 7., and step 6.
11. Put the battery back and fix it.
OPERATING THE TRACTOR

OPERATION OF NEW TRACTOR
How a new tractor is used and maintained determines the life of the tractor.
A new tractor just off the factory production line has been, of course, tested, but the various parts are not accustomed to each other. So you should take care of the tractor. You should operate the tractor as follows for the first 50 hours until the various parts become broken-in.

- Operate the tractor at a slower speed
- Avoid excessive work or operation of the tractor

The manner in which the tractor is used during the breaking-in period greatly affects the life of your tractor. Therefore, to obtain the maximum performance and the longest life of the tractor, it is very important to properly break-in your tractor. In using a new tractor, follow the following precautions.

Do not operate the tractor at full speed for the first 50 hours.

- Do not start the tractor quickly. Do not apply the brakes suddenly.
- In winter, operate the tractor after fully warming up the engine.
- Do not run the engine at speeds faster than necessary.
- On rough roads, slow down to suitable speeds.

Do not operate the tractor at fast speed.

The preceding precautions are not limited only to new tractors, but to all tractors. But you should especially follow the preceding precautions in the case of new tractors.

Changing the lubricating oil for new tractors
The lubricating oil is especially important in the case of a new tractor. If the various parts are not broken-in and are not accustomed to each other, small metal grit may develop during the operation of the tractor. Small metal grit may wear out or damage the parts. Therefore, you should take care of the lubricating oil to change a little earlier than would ordinarily be required.

For further details of change interval hours, see SERVICE INTERVALS on page 113.

PRECAUTIONS FOR GETTING ON AND OFF THE TRACTOR

- Never try to get on or off a moving tractor or to jump off the tractor to exit.
- Face the tractor when getting into or out of the tractor. Do not use the controls as hand-holds to prevent inadvertent machine movements.

OPERATION OF THE FOLDABLE ROPS

WARNING
To avoid serious injury or death:

- When raising or folding the ROPS, apply the parking brake, stop the engine, and remove the starter key.
- Always raise or fold the ROPS from a stable position at the rear of the tractor.
- Fold the ROPS down only when absolutely necessary and fold it up and lock it again as soon as possible.
- Before proceeding to fold ROPS, check for any possible interference with installed implements and attachments. If interference occurs, contact your KUBOTA dealer.

1. Folding the ROPS

NOTE:

- Take care not to bump the ROPS against the rod of backhoe cylinder when folding the ROPS.

1. Loosen the holding knob bolts.

(1) Holding knob bolts

1PSQW00020A01
2. Remove both set pins.

3. Fold the ROPS.

**CAUTION**
To avoid personal injury:
- Hold the ROPS tightly with both hands and fold the ROPS slowly and carefully.

4. Align set pin holes and insert both set pins. Secure set pin holes and set pins with the snap pins.

**CAUTION**
To avoid personal injury:
- Make sure that both set pins are properly installed and secured with the snap pins.

2. Raising the ROPS to upright position

1. Remove both snap pins and set pins.

2. Raise the ROPS to the upright position.

**CAUTION**
To avoid personal injury:
- Hold the ROPS tightly with both hands and raise the ROPS slowly and carefully.
3. Align the set-pin-holes and insert both set pins. Secure the set pins with the snap pins.

**CAUTION**

To avoid personal injury:
- Make sure that both set pins are properly installed as soon as the ROPS is in the upright position and secured with the snap pins.

1. Adjust free fall of the ROPS upper frame regularly.
2. If you feel less friction in folding the ROPS, tighten the nut until you feel the right friction in the movement.

4. Tighten the holding-knob-bolts.
STARTING THE TRACTOR

1. Adjust the operator’s position and engage the seat belt.

   **NOTE:**
   - Adjust the operator’s seat and suspension to ensure that the controls are comfortably at hand for the operator, ensuring that the operator maintains a good posture.

2. Adjust the steering wheel to proper position.

   **CAUTION**
   To avoid personal injury:
   - Do not adjust the steering wheel while the tractor is in motion.

   Pull the tilt lever to adjust the steering wheel.
3. Select positions of the light switches.

   (1) Head light switch
   (2) Hazard light switch
   (3) Turn signal light switch
   (A) On (head light)
   (B) Off (head light)
   (C) Push on-off (hazard light)
   (D) Right turn
   (E) Left turn

4. Check the brake pedal.
   a. Depress the brake pedal.
   b. Depress the parking brake lock pedal.
   c. Release the brake pedal.

   Make sure to latch the brake pedal with the parking brake lock pedal. Use both right and left feet for the procedure.

   See 3. Brake pedal and parking brake lock pedal on page 48 and “To set the parking brake” in 3.1 How to use the parking brake on page 48.

   (1) Hydraulic control lever
   (A) Lowered
   (B) Neutral position
   (C) Raised

5. Start the engine.
   See STARTING THE ENGINE on page 57.

   • Read and understand the safety labels located on the tractor.
   • To avoid the danger of exhaust-fume-poisoning, do not operate the engine in a closed building without proper ventilation.
   • Never start the engine while standing on ground. Start the engine only from the operator’s seat.
   • Follow the rule to set all shift levers to the neutral positions and to place the PTO lever in the off position before starting the engine.

6. Raise the Implement.
   Move the hydraulic control lever rearward (the raised (up) \( \uparrow \) position).
   See 1. Hydraulic control on page 84.

   (1) Brake pedal
   (B) Push down parking brake lock pedal while depressing brake pedal

   WARNING
   To avoid serious injury or death:
   • Read and understand “Safe operation” in this manual.
7. Select the travel speed.
   See 4. Range gear shift lever (Hi-Lo) on page 49 and 5. Front wheel drive lever on page 49.

8. Accelerate the engine.
   See 6. Hand accelerator lever on page 50.

9. Unlock the parking brake.
   See “To release the parking brake” in 3.1 How to use the parking brake on page 48.
10. Depress the speed control pedal. 
   See 7. Speed control pedal on page 50, 8. Speed 
   set device on page 50, and 8.1 How to use the 
   speed set device on page 51.

STOPPING THE TRACTOR

1. Slow the engine down.
2. Depress the brake pedal.
3. After the tractor has stopped, disengage the PTO 
   clutch.

STOPPING THE TRACTOR

4. Lower the implement to the ground.

5. Shift the range-gear-shift-lever to the neutral “N” 
   position.
6. Set the parking brake.  
   See “To set the parking brake” in 3.1 How to use the parking brake on page 48.

   ![Diagram of parking brake components]

   (1) Brake pedal  (2) Parking brake lock pedal  (A) Depress  (B) Push down the parking brake lock pedal while depressing the brake pedal

CHECK DURING DRIVING

1. Cases to stop the engine immediately

   Immediately stop the engine if:
   • The engine suddenly slows down or accelerates.
   • Unusual noises suddenly are heard.
   • Exhaust fumes suddenly become very dark.

2. Check items during driving

   While driving the tractor, check the following items to see that all the parts are functioning normally.

   ![Dashboard of tractor]

   (1) Easy Checker™  (2) Fuel gauge  (3) Coolant temperature gauge  (4) Hour meter  (5) Tachometer

   • **Easy Checker™**
     See 2.1 Easy Checker™ on page 69.
   • **Fuel gauge**
     See 2.2 Fuel gauge on page 70.
   • **Coolant temperature gauge**
     See 2.3 Coolant temperature gauge on page 70.
   • **Hour meter**
     See 2.5 Hour meter on page 71.
   • **Tachometer**
     See 2.6 Tachometer on page 71.

2.1 Easy Checker™

   If trouble should occur at any location while the engine is running, the warning-indicator-lamp in the Easy Checker™ corresponding to that location comes on. If the warning-indicator-lamps in the Easy Checker™ come on during operation of the tractor, immediately stop the engine, and find the cause as the following table.

   Never operate the tractor while the warning-indicator-lamp in the Easy Checker™ is on.

   **NOTE:**
   • For checking and servicing of your tractor, consult your local KUBOTA Dealer for instructions.
Warning-indicator-lamps in Easy Checker™

<table>
<thead>
<tr>
<th>![Icon]</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Icon]</td>
<td>Electrical charge</td>
</tr>
<tr>
<td>![Icon]</td>
<td>Engine oil pressure</td>
</tr>
</tbody>
</table>

- **Electrical charge**
  - If the alternator is not charging the battery, the electrical charge indicator in the Easy Checker™ will come on.
  - If this warning lamp should come on during operation of the tractor, check the electrical charging system or consult your local KUBOTA Dealer.

- **Engine oil pressure**
  - If the oil pressure in the engine goes below the prescribed level, the engine oil pressure indicator in the Easy Checker™ will come on.
  - If this warning lamp should come on during operation of the tractor, and this warning lamp does not go off when the engine is accelerated to more than 1000 rpm, check level of engine oil.
  - See 3. Checking the engine oil level on page 120.

### 2.2 Fuel gauge

The fuel gauge is for the check if the gauge is working. When the key switch is in the on position, the fuel gauge indicates the fuel level.

When the fuel is close to empty level as shown in the following figure, the low-fuel-indicator-lamp in the Easy Checker™ comes on.

- **Low fuel indicator** comes on.

Be careful not to empty the fuel tank. Otherwise air may enter the fuel system.

If air should enter the fuel system, you should bleed it. See 1. Bleeding the fuel system on page 137.

### 2.3 Coolant temperature gauge

**WARNING**

To avoid serious injury or death:
- Do not remove radiator cap until coolant temperature is well below its boiling point. Then loosen cap slightly to the stop to relieve any pressure before removing cap completely.

### 2.4 Dealing with the overheated coolant temperature

When the coolant temperature is nearly or more than the boiling point, this temperature is what is called “overheating”.

**Overheat indication**

1. When the coolant temperature stays at 123 °C (253.4 °F), the coolant-temperature-indicator-lamp in the Easy Checker™ comes on.

**Reference**

| Red zone range | 123 °C to 130 °C (254 °F to 266 °F) |

2. When the coolant temperature stays below 118 °C (244.4 °F), the coolant-temperature-indicator-lamp turns off.
If the coolant-temperature-indicator-lamp in the Easy Checker™ comes on, take the following actions.

1. Stop operating the tractor in a safe place and keep the engine unloaded idling. Do not stop the engine suddenly.
   a. Place the PTO-clutch-lever in the off (disengage) position.
   b. Move the tractor to the level surface, and apply the parking brake.
   c. Place the hand-accelerator-lever in the engine idle position, and operate the engine for about five minutes.

2. Keep yourself well away from the tractor for the following minutes or while the steam blows out.
   | Keeping yourself away from the tractor | further 10 minutes |

3. Check the cooling system after it has sufficient time to cool down.
   Check that there is no danger such as burn. Get rid of the causes of overheating according to ENGINE TROUBLESHOOTING on page 167.
   Check the following items:
   • Shortage or leakage of the coolant
   • Foreign matter on the radiator net dust and dirt between the radiator fins
   • Looseness of fan belt
   • Blockage in the radiator tube
     See 1. Checking the radiator hoses and the hose clamps on page 135

2.5 Hour meter

The hour meter indicates in five digits the hours the tractor has been used as the following table.

<table>
<thead>
<tr>
<th>Tractor operated hours</th>
<th>The step that the display operates</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 0.0 Hr to 9999.9 Hr</td>
<td>every 0.1 Hr step</td>
</tr>
<tr>
<td>10000 Hr to 99999 Hr</td>
<td>every 1 Hr step</td>
</tr>
<tr>
<td>After 99999 Hr</td>
<td>99999 Hr stays on</td>
</tr>
</tbody>
</table>

2.6 Tachometer

When the key switch is the on position and the engine is ON, the tachometer indicates the engine revolution per minute.

**NOTE:**
• When the key is turned on, the tachometer should indicate as follows for just a moment.

| Indication of the tachometer | 4000 rpm |

Recommended Engine Speed

<table>
<thead>
<tr>
<th>Implement</th>
<th>Recommended engine speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTO 540</td>
<td>Use within yellow range</td>
</tr>
<tr>
<td>Loader</td>
<td>Use within orange range</td>
</tr>
</tbody>
</table>

PARKING THE TRACTOR

When parking the tractor, be sure to set the parking brake.

**WARNING**
To avoid serious injury or death:
Before getting off the tractor
• Always set the parking brake and lower all implements to the ground.
  Leaving the transmission in gear with the engine stopped will not prevent the tractor from accidental rolling.
• Stop the engine and remove the key.

Before getting off the tractor, follow the following procedure
1. Disengage the PTO.
   See 2. PTO clutch lever on page 77.
2. Lower all implements to the ground. See 1. Hydraulic control on page 84.

3. Place all control levers in their neutral positions.

4. Set the parking brake. See “To set the parking brake” in 3.1 How to use the parking brake on page 48.

5. Stop the engine. See STOPPING THE ENGINE on page 60.

6. Remove the starter key.

7. If it is necessary to park the tractor on an incline, be sure to chock the wheels to prevent accidental rolling of the tractor.

TECHNIQUES FOR OPERATING THE TRACTOR

1. Differential lock

**WARNING**

To avoid serious injury or death due to loss of steering control:
- Do not operate the tractor at high speed with differential lock engaged.
- Do not turn with the differential lock engaged.
- Be sure to release the differential lock before turning the machine in field conditions.

If one of the rear wheels should slip, depress the differential-lock-pedal. Both wheels will then turn together, which reduce slippage of the rear wheels. The differential lock is maintained only while the differential-lock-pedal is depressed.

**IMPORTANT:**
- When using the differential lock, always slow the engine down.
- To prevent damage to power train, do not engage the differential lock when one wheel is spinning and the other is completely stopped.
- If the differential lock cannot be released in the preceding manner, alternately press the speed-control-pedal forward and backward slightly.
2. Installing the slow-moving-vehicle (SMV) emblem to operate the tractor on a road

**WARNING**
To avoid serious injury or death:
- When traveling on road with 3-point hitch mounted implement attached, be sure to have sufficient front weight on the tractor to maintain steering ability.

Be sure that the SMV emblem and the warning lamps are clean and visible. If towed or rear-mounted equipment obstructs these safety devices, install the SMV emblem and the warning lamps on the equipment.

1. Loosen the knob nut.
2. Turn the bracket vertically.
3. Fasten the knob nut.
4. Set the SMV emblem.

Consult your local KUBOTA Dealer for further details.

3. Precautions for operating the tractor on a slopes and rough terrain

**WARNING**
To avoid serious injury or death:
- Do not drive the tractor close to the edges of ditches or banks which may collapse under the weight of the tractor, especially when the ground is loose or wet.
- Slow down for slopes, rough ground, and sharp turns, especially when transporting heavy, rear mounted equipment.
- Before descending a slope, shift to a gear low enough to control speed without using brakes.

4. Precautions for transporting the tractor safely

**WARNING**
To avoid serious injury or death:
- When transporting, carry the tractor on a truck. Pay attention to the following points when transporting the tractor.
  - Make sure that the ramps used for loading are sufficient capacity and securely connected to the tractor to support safely throughout the loading and unloading process.
  - Stop the engine, lower all implements, apply the parking brake, and place chocks against the front and rear tires.
  - Secure the portions of the tractor which are shown in the figures by using adequate straps or chains.
  - Adequate straps or chains should take into account the weight of the unit, anticipated loads or forces, required factors of safety, and any other pertinent information.
  - Always comply with federal and/or local regulations for securement and transport
5. Directions for use of the power steering

- The power steering is activated only while the engine is running. While the engine is stopped, the tractor functions in the same manner as tractors without power steering.
- Turning the steering wheel all the way to the stop activates the relief valve. Do not hold the steering wheel in the stop for a long period of time.
- Avoid turning the steering wheel while the tractor is stopped, or tires may wear out sooner.

- The power-steering-mechanism makes the steering easier. Be careful when driving on a road at high speeds.

**REVERSING THE OPERATOR'S SEAT**

The operator's seat is reversible for the backhoe operation.

Follow the following procedure to turn the operator's seat around.

1. Loosen the knob nut behind the ROPS and move the bracket left as shown in the illustration.

2. Pull the seat-lock-lever up as shown in the illustration to release the lock of the operator's seat.
3. Raise the operator's seat until the seat pin comes in to the detent notch (see illustration).

4. Turn the operator's seat around rearward.

IMPORTANT:
- Grip the arms of the operator's seat and swivel the operator's seat.

NOTE:
- Make sure to turn the operator's seat for the indicated direction in the preceding figure.

5. Push the operator's seat backward, then the seat pin will come out from detent notch. Push the operator's seat down until the seat-lock-lever is locked at the backhoe position.

NOTE:
- If the seat pin does not come out from the detent notch, apply grease in the notch.

6. After reversing the operator's seat, be sure to check to see that the operator's seat is properly locked.

IMPORTANT:
- Turn the operator's seat at the detent position to avoid damage of seat-locking-mechanism and hitting to the range-gear-shift-lever.
- See 1. Operator's seat on page 48 when using the operator's seat in the tractor-driving-position.

7. For the tractor-driving-position, pull the seat-lock-lever up, and follow the reverse of the preceding procedure.
OPERATING THE TRACTOR

(1) Seat lock lever  (A) Release
PTO OPERATION

WARNING
To avoid serious injury or death:
• Before operation of PTO, be sure to select the position of the PTO-select-lever (mid, mid/rear, rear).
• Disengage PTO, stop the engine, and allow all rotating components to come to a complete stop before connecting, disconnecting, adjusting, or cleaning any PTO driven equipment.

1. PTO select lever

IMPORTANT:
• To avoid shock when loading to the PTO, reduce the engine accelerator from full to half speed by pushing up on the engine accelerator when engaging the PTO. Then open the accelerator to the full speed.
• To avoid damage of transmission, when the PTO-select-lever is not smoothly shifted, slightly shift the PTO-clutch-lever.

The tractor has a 540 rpm rear PTO speed and a 2500 rpm mid PTO speed.

2. PTO clutch lever

The PTO-clutch-lever engages or disengages the PTO clutch which gives the PTO independent control.

IMPORTANT:
• To avoid shock when loading to the PTO, reduce the engine accelerator from full to half speed by pushing up on the engine accelerator when engaging the PTO. Then open the accelerator to the full speed.
• When you engage the PTO clutch, shift the PTO-clutch-lever slowly to avoid damage to the PTO clutch and implement. Do not keep the PTO-clutch-lever half way.

Shift the PTO-clutch-lever to the on position to engage the PTO clutch. Shift the PTO-clutch-lever to the off position to disengage the PTO clutch.
NOTE:

- The tractor engine will not start if the PTO-clutch-lever is in the engaged ON position.
- When you stand up from the seat with the PTO-clutch-lever at the engaged ON position, the engine will stop regardless of the position of the PTO select lever. This is because that the tractor is equipped with operator-presence-control-system (OPC).

3. PTO shaft cover and PTO shaft cap

**WARNING**

To avoid serious injury or death:

- Before connecting or disconnecting a drive shaft to PTO shaft, be sure that the engine is off and raise up the PTO-shaft-cover. Afterward be sure to return the PTO-shaft-cover to the normal position.

**IMPORTANT:**

- The universal joint of the PTO-drive-shaft is technically limited in its moving angle. Refer to the PTO Drive Shaft Instructions for proper use.

Keep the PTO-shaft-cover in place at all times. Keep the PTO-shaft-cap when the PTO is not in use.

4. Using the stationary PTO

To park the tractor and use the PTO system for chipper or pump, for example, start the PTO system in the following steps.

1. Apply the parking brake and place blocks at the tires.
2. Make sure that all shift levers are in their neutral position, and start the engine.
3. Set the PTO-clutch-lever to the on (engage) position.
4. Set the engine speed appropriately to provide recommend rear PTO speed.
5. Unlock the seat-lock-lever.
6. Stand up and raise the operator's seat.

7. Turn the operator's seat around rearward and lock the operator's seat at the backhoe position. See REVERSING THE OPERATOR'S SEAT on page 74.
5. PTO drive shaft

The PTO-drive-shafts are designed for specific machines and power requirement.

- When using a PTO-drive-shaft, read the operator’s manual of the implement before operating the implement.
- If it is necessary for using the PTO-drive-shaft, adjust the length of it. See 5.1 Adjusting the length of PTO drive shaft on page 79.
- Make sure that the PTO-drive-shaft is securely connected at both ends before operating it.

5.1 Adjusting the length of PTO drive shaft

To adjust the length of the PTO-drive-shaft, refer to the following instructions.

1. To adjust the inner-and-outer-guard-tubes, hold the half shafts next to each other in the shortest working position, and mark the half shafts in the shortest working position of the inner-and-outer-guard-tubes.
2. Shorten the inner-and-outer-guard-tubes to the marked position equally.
3. Shorten the inner-and-outer-sliding-profile-tubes by the same length as the inner-and-outer-guard-tubes.
4. Round all sharp edges off, remove burrs, and grease sliding profiles.
3-POINT HITCH AND DRAWBAR

OVERVIEW OF 3-POINT HITCH AND DRAWBAR

(1) Top link
(2) Lifting rod (left)
(3) Check chains
(4) Turnbuckle
(5) Lower link
(6) Top link holder
(7) Lifting rod (right)
(8) Hitch
(9) Holder plate

Use the holder plate to hold the lower link higher while mowing with mid-mount mower only over uneven terrain.
3-POINT HITCH

1. Precautions for attaching and detaching the implements to the 3-point hitch

**WARNING**
To avoid serious injury or death:
- Be sure to stop the engine and remove the starter key.
- Do not stand between the tractor and the implement unless the parking brake is applied.
- Before attaching or detaching the implement to the 3-point-hitch, locate the tractor and the implement on a firm, flat, and level surface.
- Whenever an implement or other attachment is connected to the tractor by the 3-point-hitch, slowly move the 3-point-hitch through the full range of operation and check for interference, binding, or PTO separation before operating the machine.

2. Adjusting the lifting rod (right)

**WARNING**
To avoid serious injury or death:
- Do not extend the lifting rod beyond the groove on the thread rod.

1. Level a 3-point-mounted implement from side to side by turning the adjusting turnbuckle to shorten or lengthen the adjustable lifting rod with the implement on the ground.
2. After adjustment, tighten the lock nut securely. Do not extend the lifting rod beyond the groove on the threaded rod when extending it.

3. Adjusting the top link

The proper length of the top link varies according to the type of implement being used.

**NOTE:**
- When not using the top link, shorten it to the shortest length and fix it to the top-link-holder.

1. Adjust the angle of the implement to the desired position by shortening or lengthening the top link.

4. Adjusting the check chains

1. Make sure that the check chains are installed as the following figure.
2. Adjust the turnbuckle to control horizontal sway of the implement.
3. After adjustment, retighten the lock nut.

**WARNING**
To avoid serious injury or death:
- Never pull from the top link, the rear axle, or any point above the hitch. If you pull from the top link, the rear axle, or any point above the hitch, the tractor can tip over rearward causing personal injury or death.
3-POINT HITCH AND DRAWBAR

HITCH

1BXMC00002A01

(1) Hitch
1. How to use the 3-point hitch

When installing the backhoe, remove the 3-point hitch.

Removing the 3-point hitch
1. Remove the lynch pin and the top link pin. Then remove the top link.
2. Remove the snap ring and the clevis pin. Then remove the left and right lifting rod.
3. Remove the snap pin and the stopper pin. Then remove the check chain plate and lower links.

Installing the 3-point hitch
1. Follow the reverse of the procedure of “Removing the 3-point hitch”.

Diagram:
- (1) Top link
- (2) Clevis pin
- (3) Snap ring
- (4) Lifting rod (left)
- (5) Lower link
- (6) Stopper pin
- (7) Snap pin
- (8) Check chain plate
- (9) Top link pin
- (10) Lynch pin
- (11) Lifting rod (right)
HYDRAULIC UNIT

3-POINT HITCH CONTROL SYSTEM

WARNING
To avoid serious injury or death:
• Before using the 3-point hitch controls, make sure that no person or object is in the area of the implement or 3-point hitch.
• Do not stand on or near the implement or between the implement and tractor when operating the 3-point hitch controls.

1. Hydraulic control

IMPORTANT:
• Do not operate until the engine is warmed up. If operation is attempted when the engine is still cold, the hydraulic system may be damaged.
• If noises are heard when implement is lifting after the hydraulic control lever has been activated, the hydraulic mechanism is not adjusted properly.
If you do not correct the hydraulic control unit, it will be damaged.
Contact your KUBOTA Dealer for adjustment.

Operating the hydraulic control lever actuates the hydraulic lift arm, which controls the elevation of the 3-point-hitch-mounted implement.
To lower the implement, move the hydraulic control lever forward (the down position). To raise the implement, move the hydraulic control lever rearward (the up position).
In the slow down position and the slow up position of the hydraulic control lever in contact with the inner stopper, you can control the valve with ease in the following increments at the lower link end.

| Increments at the lower link end | approximately 6.4 mm (0.25 in.) |

IMPORTANT:
• If the 3-point-hitch can not be raised by setting the hydraulic control lever to the up (raised) position after long term storage or when changing the transmission oil, follow the following air bleeding procedures.
1. Stop the engine.
2. Set the hydraulic control lever to the down (lowered) position and start the engine.
3. Operate the engine at low idle speed for the following seconds to bleed air from the system.

Operating the engine at low idle speed at least 30 seconds

2. Lowering speed of 3-point hitch

The lowering speed of the 3-point hitch can be controlled or locked in similar fashion to a water faucet.

WARNING
To avoid serious injury or death:
• Fast lowering speed may cause damage or injury. Lowering speed of implement should be adjusted to two or more seconds.

Turn toward the fast to increase, the slow to reduce, and the lock firmly to the stop for lock.
1. Connecting hoses for the backhoe

IMPORTANT:
- For the hydraulic outlet, be sure to use the power-beyond-type of the control valve with the relief valve and third line which the hydraulic fluid pass through to return to the tank for the operation of the hydraulic block.

You can use the hoses with the BT603 Backhoe.

When mounting the backhoe, follow the following procedure:

1. Disconnect the coupler.
   
2. Route the inlet hose, the outlet hose, and the power-beyond-hose of the implement as shown in the following illustration.

<table>
<thead>
<tr>
<th>(1) Inlet hose (backhoe)</th>
<th>(6) Power pipe (tractor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) Outlet hose (backhoe)</td>
<td>(A) To Backhoe (outlet)</td>
</tr>
<tr>
<td>(3) Power beyond hose (backhoe)</td>
<td>(B) From Backhoe (inlet)</td>
</tr>
<tr>
<td>(4) Outlet hose (tractor)</td>
<td>(C) Return to tank</td>
</tr>
<tr>
<td>(5) Return pipe (tractor)</td>
<td></td>
</tr>
</tbody>
</table>

Max. flow of the outlet hose (tractor) 14 L/min (3.7 U.S.gals./min)
2. Disconnecting hoses for the mower

**WARNING**
To avoid serious injury or death:
- Escaping the hydraulic fluid under pressure can obtain sufficient force to penetrate skin, which cause serious personal injury. Before disconnecting the lines, be sure to relieve all pressure.
- Before applying the pressure to the hydraulic system, be sure that all connections are tight, and that the lines, tubes, and hoses of the hydraulic system are not damaged.
- Hydraulic fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands to search for suspected leaks.
- If someone gets injured by escaping hydraulic fluid, see a doctor at once. Serious infection or allergic reaction will develop if proper medical treatment is not administered immediately.

Do not attach nor operate the mower with the backhoe still in place.

When installing the mower, remove the backhoe from the tractor with the following procedure.
1. Shut the engine off and set the parking brake.
2. Tilt the operator's seat forward.
3. Remove the hydraulic pressure by moving the controls.
4. Disconnect the inlet hose, the outlet hose, and the power beyond hose of the backhoe.
5. Place the protective cap on the coupler of the inlet hose of the backhoe, the coupler of the outlet hose, and the power beyond hose.
6. Connect the outlet hose of the tractor to the coupler of power beyond pipe of the tractor.

**NOTE:**
- When getting ready to use the backhoe after finishing mowing, connect the hoses of the tractor and backhoe in the reverse order.

---

**MOWER LIFT LINKAGE SYSTEM**

**1. Cutting height control dial**

When mounting the Mid-mount mower, turn the cutting-height-control-dial to the desired height. For further details, refer to the following the operator's manuals of rotary mower.
- RCK60B-23BX
- RCK54-23BX
- RCK60D-26BX
- RCK54D-26BX
IMPORTANT:
When operating the tractor without Mid-mount mower, follow the following procedure.

1. Move the hydraulic lever rearward (the up position) to raise the mower rear links to the highest position.
2. Set the cutting-height-control-dial to the top position.

If you do not follow this procedure, damage of the mower rear link can result.
## 2. Hydraulic control unit use reference chart

In order to use the hydraulics properly, the operator must know the following chart. Though this information may not be applicable to all types of implements and soil conditions, it is useful for general conditions.

<table>
<thead>
<tr>
<th>Implement</th>
<th>Soil condition</th>
<th>Hydraulic control</th>
<th>Gauge wheel</th>
<th>Check chains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moldboard plow</td>
<td>Light soil, medium soil, heavy soil</td>
<td>YES/NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disc plow</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrower (spike type, springtooth type, and disc type)</td>
<td>YES/NO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-soiler</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weeder, ridger</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earthmove, digger scraper, and manure fork rear carrier</td>
<td>YES/NO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mower (mid-and rear-mount type), hayrake, and tedder</td>
<td>YES/NO</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Loose*
Adjust the check chains so that the implement can move 5 cm to 6 cm (2.0 in. to 2.4 in.) laterally. The check chains should be tight enough to prevent excessive implement movement when implement is in raised position.

*Tighten*
For implements with gauge wheels, set the hydraulic control lever to the **lowered (down)** position all way.
TIRES, WHEELS, AND BALLAST

TIRES

⚠️ WARNING
To avoid serious injury or death:
• Do not attempt to mount a tire on a rim. Only a qualified person with the proper equipment should mount a tire on a rim.
• Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure shown in the “Inflation pressure” section.

See 1. Inflation pressure of tires on page 89.

IMPORTANT:
• Do not use tires other than those approved by KUBOTA.
• When you intend to mount different size of tires from equipped ones, consult your dealer about front drive gear ratio for details. Excessive wear of tires may occur due to improper gear ratio.

1. Inflation pressure of tires
Though the tire 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>Inflation Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rea**</td>
<td></td>
</tr>
<tr>
<td>26x12.00-12 Turf</td>
<td>100 kPa (1.0 kgf/cm²) [14 psi]</td>
</tr>
<tr>
<td>26x12.00-12 Bar</td>
<td>120 kPa (1.2 kgf/cm²) [17 psi]</td>
</tr>
<tr>
<td>26x12.00-12 Ind.</td>
<td>120 kPa (1.2 kgf/cm²) [17 psi]</td>
</tr>
<tr>
<td><strong>Front</strong></td>
<td></td>
</tr>
<tr>
<td>18x8.50-10 Turf</td>
<td>120 kPa (1.2 kgf/cm²) [17 psi]</td>
</tr>
<tr>
<td>18x8.50-10 Bar</td>
<td>150 kPa (1.5 kgf/cm²) [22 psi]</td>
</tr>
<tr>
<td>18x8.50-10 Ind.</td>
<td>150 kPa (1.5 kgf/cm²) [22 psi]</td>
</tr>
</tbody>
</table>

NOTE:
• Maintain the maximum pressure in front tires, if using a front loader or when equipped with a full load of front weight.

2. Dual tires
You can not use the dual tires. Dual tires are not approved.

WHEEL TREAD

⚠️ WARNING
To avoid serious injury or death:
• Support the tractor securely on stands before removing a wheel.
• Never operate the tractor with a loose rim, wheel, or axle.

IMPORTANT:
• When re-fitting or adjusting a wheel, follow the procedure.
  1. tighten the bolts to the torques as shown in the following table.

<table>
<thead>
<tr>
<th>Bolt</th>
<th>Tightening torques</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Front</td>
</tr>
<tr>
<td></td>
<td>Rear</td>
</tr>
<tr>
<td></td>
<td>149.2 N m to 179.0 N m (15.2 kgf m to 18.3 kgf m) [110 lbf ft to 132 lbf ft]</td>
</tr>
<tr>
<td></td>
<td>108.5 N m to 130.2 N m (11.1 kgf m to 13.3 kgf m) [80 lbf ft to 96 lbf ft]</td>
</tr>
</tbody>
</table>

2. Then recheck as the following table. See SERVICE INTERVALS on page 113.
Timing to re-check the bolts

After driving the tractor 200 m (200 yards), after 1 day (8 hours), and thereafter every 50 hours.

NOTE:
- Use the tapered bolts for wheels with beveled or tapered holes.

1. Front wheels

IMPORTANT:
- Do not turn the front discs to obtain wider tread.
- Always attach tires as shown in the figures in the following table. If you do not attach the front wheel as illustrated in the table, transmission parts may be damaged. You can not adjust width of the front tread.

<table>
<thead>
<tr>
<th>Tire</th>
<th>18x8.50-10 Turf, Bar, and Ind.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tread</td>
<td><img src="A" alt="Image" /> 910 mm (35.8 in.)</td>
</tr>
</tbody>
</table>

How to jack up the front axle

**WARNING**
To avoid serious injury or death:
- Before jacking up the tractor, park it on a firm and level ground and chock the rear wheels.
- Fix the front axle to keep it from pivoting.
- Select jacks that withstand the machine weight and set them up as shown in the following figure.

2. Rear wheels

IMPORTANT:
- Do not turn the rear discs to obtain wider tread.
- Always attach tires as shown in the figures in the following table. If you do not attach the rear wheel as illustrated in the table, transmission parts may be damaged. You can not adjust width of the rear tread.

<table>
<thead>
<tr>
<th>Tire</th>
<th>26x12.00-12 Turf, Bar, and Ind.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tread</td>
<td><img src="A" alt="Image" /> 820 mm (32.2 in.)</td>
</tr>
</tbody>
</table>

How to jack up rear part of the tractor

**WARNING**
To avoid serious injury or death:
- Before jacking up the tractor, park it on a firm and level ground and chock the front wheels.
- Fix the front axle to keep it from pivoting.
- Select jacks that withstand the machine weight and set them up as shown in the following figure.
BALLAST

WARNING
To avoid serious injury or death:
• You will need the additional ballast for transporting the heavy implements. When the implement is raised, drive slowly over rough ground, regardless of how much ballast is used.
• Do not fill the front wheels with liquid to maintain steering control.

NOTE:
• The ballast is not required when doing the normal operations with the BX23S tractor, the LA340 loader, and the BT603 backhoe connected in factory settings.

1. Front ballast

IMPORTANT:
• Do not overload tires.
• Add no more weight than indicated in the following table.

| Maximum weight | 125 kg (275 lbs.) |

Add weights if needed to improve traction or for stability. Heavy pulling and heavy rear mounted implements tend to lift front wheels. Add enough ballast to maintain steering control and prevent tip over. Remove weight when no longer needed.

2. Rear ballast

Add weight to rear wheels if needed to improve traction or for stability. The amount of rear ballast should be matched to job and the ballast should be removed when it is not needed.

When the loader is attached on the tractor and the backhoe is not attached on it, you should install the rear wheel weight (option) to the tractor.

Liquid ballast in rear tires
You should add the weight to the tractor in the form of liquid ballast. Water and calcium chloride solution provides safe economical ballast. Using the liquid ballast properly will prevent tires, tubes, or rims from damaging. The addition of calcium chloride is recommended to prevent the water from freezing. The addition of calcium chloride for weighting the wheels has the full approval of the tire companies. See your tire dealer for this service.

Liquid weight per tire (75 percent filled)

<table>
<thead>
<tr>
<th>Tire sizes</th>
<th>26x12.00-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slush free at -10 °C (14°F)</td>
<td>45 kg (99 lbs.)</td>
</tr>
<tr>
<td>Solid at -30 °C (-22°F)</td>
<td>[Approx. 1 kg (2 lbs.) CaCl₂ per 4 L (1 gal) of water]</td>
</tr>
<tr>
<td>Slush free at -24 °C (-11°F)</td>
<td>50 kg (110 lbs.)</td>
</tr>
<tr>
<td>Solid at -47 °C (-52°F)</td>
<td>[Approx. 1.5 kg (3.5 lbs.) CaCl₂ per 4 L (1 gal) of water]</td>
</tr>
<tr>
<td>Slush free at -47 °C (-52°F)</td>
<td>56 kg (123 lbs.)</td>
</tr>
<tr>
<td>Solid at -52 °C (-62°F)</td>
<td>[Approx. 2.25 kg (5 lbs.) CaCl₂ per 4 L (1 gal) of water]</td>
</tr>
</tbody>
</table>

IMPORTANT:
• Do not fill tires with water or solution more than the correct percentage of full capacity as shown in the following table to the level of valve stem at the 12 o’clock position.

<table>
<thead>
<tr>
<th>Amount of water</th>
<th>Correct</th>
<th>Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>75% of full capacity of tire</td>
<td>100% of full capacity of tire</td>
<td></td>
</tr>
<tr>
<td>Characteristic</td>
<td>Air compresses like a cushion</td>
<td>Water can not be compressed</td>
</tr>
</tbody>
</table>
To avoid damage of the transmission, do not use the rear wheel weights and liquid ballast at the same time.

Do not add liquid ballast or any other weights to the front tires.

While BT603 backhoe is installed on the tractor, remove liquid ballast from the rear tires.

NOTE:

- When mounting a heavy implement, a liquid in the tire may not be required.

Rear wheel weight (option)

You can install the rear wheel weight to the 3-point hitch. Consult your local KUBOTA dealer to use.

NOTE:

- Besides the rear wheel weight, a 3-point kit is required for installing the weight.
OPERATING THE LOADER

PRECAUTIONS FOR OPERATING THE LOADER

⚠ WARNING
To reduce the possibility of roll over:
• It is not recommended that the loader is attached when operating another implement on a hillside.

IMPORTANT:
• When operating the loader in rough terrain, remove the mower to avoid damage to the mower.

You should operate the loader with engine speed of the tractor depending on the machine and the operator's level of experience. Excessive speeds are dangerous, and may cause spillage of the bucket and unnecessary strain on the tractor and the loader.

When operating the loader in temperature shown in the following table, run the tractor engine as the following engine speed until the oil temperature exceeds the value in the following table.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>below -1 °C (30 °F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine speed</td>
<td>below 1200 rpm</td>
</tr>
<tr>
<td>Oil temperature</td>
<td>-1 °C (30 °F)</td>
</tr>
</tbody>
</table>

TECHNIQUES FOR OPERATING THE LOADER AND THE TRACTOR

1. Filling the bucket
The rollback and lifting of the bucket will increase efficiency because a level bucket throughout the lifting cycle resists lifting of the bucket and increases effort of breakaway from the pile.

1. Approach and enter the pile with a level bucket.
2. Ease the loader-control-lever toward you and then toward left to rollback and lift the bucket.

![Image](1JDJD00015A01)

**NOTE:**
- Do not be concerned if the bucket is not completely filled during each pass. Maximum productivity is determined by the amount of material loaded in a given period of time. Two or more attempts to fill the bucket on each pass may take more time.

2. Precautions for lifting the load

**WARNING**
To avoid personal injury or death:
- Do not lift the loads of the bucket in excess of the loader capacity.
- Before raising the bucket to full height, make sure that the tractor is on level ground. If the tractor is not on level ground, the tractor may tip over, even if it is not moving.

When lifting the load, keep the bucket positioned to avoid spillage.

![Image](1AIABACAP015A)

3. Precautions for carrying the load

**WARNING**
To avoid personal injury or death:
- Be extra careful when working on inclines.
- When operating on a slope, always operate the loader up and down the slope, never across the slope.

- Position the bucket just below the level of the tractor hood for maximum stability and visibility, whether the bucket is loaded or empty.

![Image](1JDJD00018A01)

(A) Incorrect  (B) Correct

- Use extreme care when operating the loader on a slope. Keep the bucket as low as possible. Keeping the bucket low keeps the bucket and the tractor center of gravity low and will provide maximum stability of the tractor.
- When transporting a load, keep the bucket as low as possible to avoid tipping, in case a wheel drops in a rut.
4. Dumping and lowering the bucket

Dumping the bucket
1. Lift the bucket just high enough to clear the side of the vehicle.
2. Move the tractor in as close to the side of the vehicle as possible.
3. Then dump the bucket.

Lowering the bucket
1. After dumping the bucket, back away from the vehicle while lowering and rolling back the bucket.

5. Precautions for operating the loader with float control

- During operation of the loader on hard surface, keep the bucket level and put the lift control in the float position to permit the bucket to float on the working surface. If hydraulic down pressure is exerted on the bucket, the bucket will wear faster than normal.

- The float position will also avoid mixing of surface material with stockpile material. The float position will reduce the chance of surface gouging while removing snow or other material, or when working with a blade.
6. Loading from a bank

**WARNING**
To avoid personal injury or death:
- Be extra careful when working on inclines.
- When operating on a slope, always operate the loader up and down the slope, never across the slope.

- Choose a forward gear that provides a safe ground speed and power for loading.

**NOTE:**
- Loader lift and break-away capacity diminish as loading height is increased.
- Side cutting is a good technique for cutting down a big pile. Wheel width should not exceed the bucket width for the side cutting procedure.

- If the pile sides are too high and liable to cause cave-in, use the loader to break down the sides until a slot can be cut over the top.

- Another method for large dirt piles is to build a ramp to approach the pile.

- It is important to keep the bucket level when approaching a bank or pile. This will help avoid gouging the work area.
7. Peeling and scraping the ground

1. Produce a short cut and break-out cleanly.
   a. Use a slight bucket down angle.
   b. Travel forward.
   c. Hold the lift control forward to start the cut.

2. With the bucket level, start a cut at the following notch.

<table>
<thead>
<tr>
<th>Notch</th>
<th>Approximately 2 in. deep</th>
</tr>
</thead>
</table>

   Hold the depth by feathering the bucket control to adjust the cutting edge up or down. When the front tires enter the notch, adjust the boom cylinder to maintain proper depth.

3. Proceed additional passes until the desired depth is reached. During each pass, use only the bucket control while at working depth. Using only the bucket control will allow you to concentrate on controlling the bucket angle to maintain a precise cut.

8. Loading low trucks or spreaders from a pile

- For faster loading, minimize the angle of turn and length of run between pile and spreader.

- Back grade occasionally with a loaded bucket to keep the work surface free of ruts and holes. Also, hold the lift control forward. The full weight of the bucket is scraping the ground. Use the heel of the bucket.
9. Backfilling

- Approach the pile with the bucket flat. Poor operating methods will move less dirt and make it more difficult to hold a level grade.

**IMPORTANT:**
- Do not use the bucket in the dumped position for bulldozing the pile. As shown in the preceding method, approaching the pile with the bucket flat will impose severe shock loads on the dump-linkage, the bucket cylinders, and the tractor.
- Leave dirt in the bucket because dumping on each pass wastes time.
- Leave dirt which drifts over the side of the bucket for final cleanup.
- Pile dirt on the high side for easier backfilling on a slope.

- Operate at right angles to the ditch. Take as big a bite of the soil pile as the tractor can handle.
10. Precautions for handling large heavy objects

**DANGER**
To avoid personal injury or death:
- Handling large, heavy objects can be dangerous due to the following reasons.
  - Danger of rolling the tractor over
  - Danger of upending the tractor
  - Danger of the object rolling or sliding down the loader boom onto the operator
- If you must handle large, heavy objects, protect yourself by the following methods.
  - Not lifting the load higher than necessary to clear the ground when the tractor is moving
  - Adding the rear ballast to the tractor to compensate for the load
  - Not lifting large objects with equipment which does not equip an anti-rollback device
  - Moving the machine slowly and carefully
  - Avoiding rough terrain
  - Keeping the transport distance as short as possible and carry the load as low as possible during transport
  - Confirming that the loader and the bucket are at proper height and have stopped moving before transport

**VALVE LOCK**
The control valve is equipped with a feature of the valve lock.

**WARNING**
To avoid personal injury or death from crushing:
- Do not utilize the valve lock for machine maintenance or repair.

---

**BUCKET LEVEL INDICATOR (IF EQUIPPED)**
Depending on the front attachment, loosen the lock bolt of the indicator rod and readjust the length of the indicator rod.

**IMPORTANT:**
- Fix the engine-indicator-rod in parallel with the boom, so that the end of the engine-indicator-rod does not hit the hood when opening and closing the hood.
HOW TO USE THE QUICK COUPLER

IMPORTANT:
• Be sure to relieve all pressure before connecting or disconnecting lines.

The quick-coupler-system is designed to easily connect and disconnect the hydraulic hoses simultaneously without oil leak when attaching and detaching the loader.

Connecting the quick coupler

IMPORTANT:
• Before connecting each hose, make sure to carefully clean the mating surfaces of the fixed part, mating surfaces of the mobile part, and the reference pins.

1. Connect the quick coupler and lower the lever until it stops.
2. Turn the safety-lock-button clockwise.

Disconnecting the quick coupler

1. Turn the safety-lock-button counterclockwise to unlock it.
2. Raise the lever until it stops.

FRONT REMOTE HYDRAULIC CONTROL SYSTEM (IF EQUIPPED)

You can use the front-remote-hydraulic-control-system for a front mounted hydraulic implement.

The front-remote-hydraulic-control-system provides hydraulic oil to the front outlet directly.

1. Installing the front remote hydraulic control system

   1. Mount the loader and connect the wire harness of the front-remote-hydraulic-control-system.

2. Operating the control lever

   WARNING
   To avoid personal injury or death:
   • Valve lock does not lock out the switch-operated third-function hydraulics, which are...
active when the key switch and the front hydraulic valve main switch are on.

1. Turn the front-hydraulic-valve-main-switch **on**.
   a. Push the front-hydraulic-valve-main-switch to engage the front-hydraulic-valve.
   The light on the front-hydraulic-valve-main-switch will illuminate to indicate that the front-hydraulic-valve is **on** and to enable the activation switch and operation of the lever.

2. Turn the activation switch **on** or **off**.
   • When operating the lever to left side with pressing the activation switch, hydraulic oil will come out of port 1 and return through port 2 as long as operating the lever to left side with pressing the activation switch.
   • When operating lever to right side with pressing the activation switch, hydraulic oil will come out of port 2 and return through port 1 as long as operating lever to right side with pressing the activation switch.

3. Turn the front-hydraulic-valve-main-switch **off**.
   a. Push the front-hydraulic-valve-main-switch again to disengage the front hydraulic valve.
   The light of the front-hydraulic-valve-main-switch will turn off.

3. How to use the remote control coupler

**WARNING**
To avoid personal injury or death:
• Stop the engine and relieve the pressure before connecting or disconnecting the lines of remote-control-coupler.
• Do not use your hands to check for leaks.

Relieving the hydraulic pressure
1. Move the key switch to the **on** position.

   **NOTE :**
   • Do not start the engine.
2. Push the front-hydraulic-valve-main-switch onto **on**.
3. Press the activation switch and move the loader lever to left and right several times.
4. Push the front hydraulic valve main switch onto **off**.
5. Turn the key switch to the **off** position.

### Connecting
1. Clean both couplers of the implement and tractor.
2. Remove the dust plugs.
3. Insert the remote-control-coupler of the implement to the hydraulic coupler of the tractor.
4. Pull the remote-control-coupler of the implement slightly to make sure that both couplers of the implement and tractor are firmly connected.

**NOTE:**
- Your local KUBOTA dealer can supply parts to adapt couplers to hydraulic hoses.

### Disconnecting
1. Lower the implement first to the ground to release hydraulic pressure in the hoses.
2. Clean both couplers of the implement and tractor.
3. Press the activation switch and move the loader lever to left and right several times to relieve hydraulic pressure.
4. Pull the hose straight from the hydraulic coupler to release it.
5. Clean oil and dust from the hydraulic coupler, and then replace the dust plugs.

### FRONT GUARD (OPTION FOR THE QUICK ATTACH COUPLER)

1. **How to use the front guard (if equipped)**

   **Attaching the front guard**
   1. Attach the front guard in position on the tractor.

   ![Diagram of front guard](1JJD00057A01)
   **(1) Front guard**
USING THE ATTACHMENTS (IF EQUIPPED)

1. Attaching the attachments (if equipped)

**DANGER**
To avoid personal injury or death:
- Use of a non-KUBOTA attachment that does not comply with ISO24410 or the improper positioning of handle(s) or non-protrusion of pin(s) may result in detachment of the attachment or deformation, causing loss of performance, personal injury, or death.

**NOTE:**
- Locate the attachments on a flat, firm surface when attaching and detaching them from the quick-attach-coupler.

The quick-attach-coupler is designed to be used with KUBOTA attachments. To use non-KUBOTA attachments, it must comply with ISO 24410, first edition 2005-04-15. The quick-attach-coupler allows the operator to change the attachments easily without the use of tools.

1. To mount an attachment, pull the quick-attach-coupler-handles to the unlatched position to release the latching pins.
   Move the quick-attach-coupler-handles all the way up to make sure that the latching pins are fully retracted.
2. Position the tractor squarely in front of the attachment and tilt the quick-attach-coupler forward with the bucket cylinder.

3. Ease the quick-attach-coupler-mounting-plate into the saddle of the attachment.
4. Roll the quick-attach-coupler back using the bucket cylinder and raise the boom slightly. The back of the attachment should rest against the front of the quick-attach-coupler-mounting-plate, and the loader should support the weight of attachment.

**CAUTION**
To avoid personal injury or machine damage:
- Raise the boom only enough to latch the attachment. The attachment could swing off the quick-attach-coupler.

5. When the attachment is properly seated in the saddle and against the front of the quick-attach-coupler-mounting-plate, turn off the engine and set the parking brake.
6. Push the quick-attach-coupler-handles to the fully latched position.

7. Make sure that both latching pins are completely engaged in the base of the attachment.

**DANGER**

To avoid personal injury or death:
- The following engagement points are critical.
  - The lock pins of the quick-attach-coupler have to protrude into and through the pin slots of the attachment on both sides.
  - The lock pins must be in good condition and without visible signs of wear or damage.
  - The operator must align the quick-attach-coupler of the loader with the attachment to allow the lock pins to go through the pin slots.
  - Push down both quick-attach-coupler-handles until they contact the ear plates near the points where the pin bolt goes through the handle.
- Do not operate the tractor or attachment unless all of the preceding conditions are met.

8. When pushing the quick-attach-coupler-handles into the locked position, visually make sure that the latch pins rotate completely and are located underneath the stop of the quick-attach-coupler.

9. When attaching different attachments, visually inspect for broken or damaged latch pins. If broken or damaged latch pins are found, replace before using.

Use of broken latch pins may result in detachment or deformation of the attachment, causing loss of performance, personal injury, or death.

You are now ready to use the attached attachment.

Attach and detach all compatible attachments using the same method.

**WARNING**

To avoid personal injury, death, or machine damage:
- Never operate or transport the attachments which are not attached properly.
- Always replace damaged hardware immediately.
2. Detaching the attachments (if equipped)

Detach the attachments in the reverse procedure of attaching the attachments.

1. Lower the attachment to ground level with the attachment slightly in the rolled back position.
2. Stop the engine and set the parking brake.
3. Pull the quick-attach-coupler-handles to the unlatched position to release the latching pins.
4. While sitting in the operator’s seat of the tractor, start the engine and slowly move the loader-control-lever to the dump position until the attachment is pushed away slightly from the quick-attach-coupler.
5. Lower the boom of the loader so that the quick-attach-coupler-mounting-plate clears the attachment saddle.
6. Back away from the attachment slowly.
7. If an attachment is not going to be attached to the quick-attach-coupler immediately, push the quick-attach-coupler-handles to the locked position to prevent damage to the handle assembly.

3. Performing the maintenance of the attachments (if equipped)

Attachments are secured to the quick-attach-coupler with an over-center-latching-system. It is important that parts of the attachments are kept clean, lubricated, and free from debris.

- Keep the latching pins and latching handles free from debris.
- Lubricate the latching pins weekly with grease.
- Keep the latching handles tight. If the handles become loose, tighten the hex nut slightly to remove any play from the handles.
- Clean the saddle, the top of the attachment, and the latching-pin-slots of any dirt and debris before mounting an attachment to the quick-attach-coupler.

4. Attachments (option for the quick attach coupler)

4.1 Quick bucket (option for the quick attach coupler)

<table>
<thead>
<tr>
<th></th>
<th>Square 48 in.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>1219 mm (48.0 in.)</td>
</tr>
<tr>
<td>Struck capacity</td>
<td>0.13 m³ (4.36 ft³)</td>
</tr>
</tbody>
</table>

4.2 Snow blade (option for the quick attach coupler)

<table>
<thead>
<tr>
<th></th>
<th>Straight blade with HYD / angulation</th>
<th>Straight blade with manual angulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>1524 mm (60.0 in.)</td>
<td></td>
</tr>
</tbody>
</table>
4.3 Pallet fork (option for the quick attach coupler)

4.3.1 Assembling the pallet fork (option for the quick attach coupler)

1. Install the pallet fork to the middle of the frame. Fit the lower hook of the pallet fork to the center notch of the frame.

2. Slide the fork to the desired position.

3. Push the lock lever and slide the fork slightly until the lock pin engages with one of the notches to lock the folk.

4. Install the other fork using the same procedures.

DISMOUNTING THE LOADER

**WARNING**

To avoid personal injury, death, or machine damage:
• **Remove the loader from the tractor only when an approved bucket of the loader is attached to the tractor.**

1. Dismount the loader following the instructions provided in HOW TO REMOVE THE LOADER on page 147.
ENGINE SPEED WHEN OPERATING THE BACKHOE

**WARNING**
To avoid serious injury or death:

- Use care when operating the backhoe on slopes to avoid tip over. Travel at speed compatible with safe operation, especially when operating the backhoe in uneven terrain, crossing ditches, or while turning.

- You can operate this backhoe at any engine speed in the following rated rpm. The backhoe is most efficient at rated engine speed.

<table>
<thead>
<tr>
<th>Engine speed</th>
<th>about 75% of rated rpm to factory rated rpm</th>
</tr>
</thead>
</table>

However, in special digging condition, for optimal fuel economy, or in residential neighborhood where noise may be a consideration, the engine speed can be lowered to about 75% of rated rpm.

- When operating the backhoe in the air temperature below the following temperature, run the tractor engine below about 50% of rated rpm until the oil temperature exceeds the following temperature.

<table>
<thead>
<tr>
<th>Temperature</th>
<th>0 °C (32 °F)</th>
</tr>
</thead>
</table>

**CONTROLS OF THE BACKHOE**
You can control the backhoe using the two-lever-joystick-system.

**WARNING**
To avoid serious injury or death:

- For all excavation work, operate the backhoe from the operator's seat of the backhoe only.
- Do not tamper with any backhoe-control-valve-relief-pressure-setting. The relief valve is preset at the factory. Changing the setting of the relief valve can cause overloading of the backhoe and the tractor and serious personal injury may result.
- Put the boom-and-swing-lock-lever into the lock position when the backhoe is not in use or during transport.

The left lever controls the boom and swing circuits, and the right lever controls the dipperstick and bucket circuits. The further the levers are moved from neutral, the faster the component will move. Learn the feature of the controls for smooth and precise component movement.

1. **Boom and swing lever**
   - Pushing the boom-and-swing-lever forward will lower the boom.
   - Pulling the boom-and-swing-lever back will raise the boom.
   - Moving the boom-and-swing-lever to the left will swing the bucket to the left.
   - Moving the boom-and-swing-lever to the right will swing the bucket to the right.

By moving the boom-and-swing-lever out of the plus “+” position and into an “X” relationship, it is possible to raise or lower the boom and swing the bucket at the same time.
2. Boom and swing lock lever

**WARNING**

To avoid serious injury or death:
- Do not utilize the boom-and-swing-lock-lever for maintenance or repair of the machine.
- The boom-and-swing-lock-lever can prevent accidental actuation when the implement is not in use or when getting on and off from the backhoe.

- To lock the boom-and-swing-lever, move down the boom-and-swing-lock-lever.
- To unlock the boom-and-swing-lever, move up the boom-and-swing-lock-lever.

3. Dipperstick and bucket lever

- Pushing the bucket lever forward will crowd the dipperstick and the bucket out.
- Pulling the bucket lever back will crowd the dipperstick and the bucket in.
- Moving the bucket lever to the left will curl the bucket to fill it.
- Moving the bucket lever to the right lever movement will dump the bucket.
- Moving the bucket lever into an “X” relationship will crowd dipperstick and the bucket in and fill the bucket, or crowd them out and dump the bucket.

With experience, the combination of both joystick levers will allow lift, swing, crowd out, and spoil dumping, all in one smooth movement, or lowering, swing, crowd in, and bucket filling with reverse movement.

4. Stabilizer control levers

The stabilizers are the only controls that may be operated from out of the operator’s seat of the backhoe over then only for the purpose of mounting the backhoe to the tractor or dismounting the backhoe from the tractor.

Be sure to stay well clear of stabilizers, arms, and pads during installation or removal process. Staying well clear of stabilizers, arms, and pads is necessary because the mounting step moves up and down in conjunction with the cylinder of the stabilizer.
- Moving the stabilizer-control-levers downward will lower the stabilizers.
- Moving the stabilizer-control-levers upward will raise the stabilizers.

**PLACING THE STABILIZER**

**WARNING**

To avoid serious injury or death:
- When working on slopes, one stabilizer may be lower than the other.
- When digging on a hillside, always dump the bucket on the uphill side of excavation.
• To reduce the risk of overturn on a slope, place the spoil to the high side of the excavation.

1. Lower the stabilizers and remove the weight of the backhoe from the rear wheels. However, one or both rear tires should remain in light contact with the ground.

When you place the stabilizers on an unusually steep slope, see 1. Placing the stabilizer on an unusually steep slope on page 110.

Preceding step will give the backhoe the widest possible stance and the lowest center of gravity.

NOTE:
• Raising the rear wheels too high will reduce digging depth and exert undue stress on the frame components of the backhoe.

2. Lower the bucket of the loader to give the backhoe unit a tri-pod stance.

With the bucket of the loader in ground contact, bounce of the front tire will not be a factor in overall control.

3. When possible, lower the cutting edge of the bucket of the loader vertically into the ground surface.

Lowering the cutting edge of the bucket of the loader will assist the stabilizers, not allowing the unit to shift, while excavating.

However, on a slope, you should use the bottom of the bucket and only the side that contacts the uneven terrain. Too much loader-down-pressure, on a slope, will restrict the unit from being correctly leveled and will place an undue twist through the bucket of the loader and lift arms.

1. Placing the stabilizer on an unusually steep slope

Following procedure is recommended when a wall, tree line, or other obstruction prevents placing the backhoe spoil on the high side of the excavation.

1. Cut a level surface with the loader and pile the spoil on the downhill side.

2. Back drag and pack the spoil which will support the stabilizer on the low side.

1. Digging with operating the dipperstick

1. Lower the bucket to the ground.

2. The same as with bucket digging, curl until the teeth of the bucket are flat on the ground.
3. Using only the crowd cylinder, retract the dipperstick, dragging the bucket through the trench until it is approximately half full.
4. Start to curl the bucket in while continuing to crowd until the bucket is completely full.
5. Raise and swing the boom and dump the bucket in the spoil area on the high side of the trench or excavation.

2. Dealing with the spoil pile

**WARNING**

To avoid serious injury or death:

- Do not place the spoil close to the edge of the excavation where its weight could cause a cave-in.

Carefully preplan the location for the spoil which will be removed from the excavation. The location will vary depending on the excavation being dug.
1. Approach the pile with the bucket of the backhoe full and ready to empty.
2. Instead of dumping on top, lower the full bucket into the top of the pile.
3. Start dumping and crowding out at the same time.

Because the bucket opens and dumps, the bottom of the bucket will push the top of the pile off and behind its location, safely away from the excavation.

3. Digging straight wall or cemetery

1. Strip the top soil off the ground, within the confines of the straight hole or grave to be dug.
2. Clean out as much material, within the confines of the straight hole or grave, as possible with normal digging methods.
3. Finish the far wall by crowding out while forcing the bucket down with the boom.
4. Curl the bucket out to keep the bottom of the bucket vertical while cutting from top to down.

5. To finish the near wall, raise the boom while crowding in.

The bucket will have to be curled in to keep the cutting edge horizontal with the wall during the up cut.

6. When finishing straight wall, or digging graves, in sandy soil, use a platform under the rear tires and stabilizers.

The platform distributes the load of the backhoe over a large area and lessens the possibility of a cave-in.

4. Stabilizer pads (standard)

**IMPORTANT:**

- Always lower the stabilizers slightly when changing from one position to another to avoid soil splash.

TRANSPORTING OF THE BACKHOE

**WARNING**

To avoid serious injury or death:

- Before transporting the machine, raise and center the boom, close the dipperstick, curl the bucket, engage the boom and swing locks and
1. Precautions for driving to the job-site

- When driving or transporting the backhoe from one job-site to another, or when using the loader such as stockpiling and backfilling, always engage the locks of the boom and swing.

- Put the boom-and-swing-lock-lever into the lock position.

2. Precautions of the trailer transporting

- When loading or off-loading the machine on or from the trailer and the truck, use strong, secure ramps long enough to provide a low angle to the transport vehicle.

- After loading the machine, follow the following procedure.
  1. Release the lock of the boom.
  2. Lower the bucket of the backhoe to the bed of the transport vehicle.
  3. Lower the bucket of the loader.
  4. Set the parking brake of the tractor.
  5. Shut the engine off.
  6. Remove the key.

- Check the hood for proper securement, and remove the slow-moving-vehicle (SMV) sign from holder when driving to transport to avoid damage. Reinstall the SMV sign after transport.

- Check the local codes or regulations which may apply to the tractor, the loader, and the backhoe operation on public streets or highways, before transporting them or traveling. Use the SMV emblem and warning flashers as required.
## MAINTENANCE OF THE TRACTOR

### SERVICE INTERVALS

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Indication on hour meter</th>
<th>Since then</th>
<th>Ref. page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Engine oil Change</td>
<td>every 200 Hr</td>
<td>129 *1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Engine oil filter Replace</td>
<td>every 200 Hr</td>
<td>129 *1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Transmission oil filter Replace</td>
<td>every 200 Hr</td>
<td>130 *1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Engine start system Check</td>
<td>every 50 Hr</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>OPC system Check</td>
<td>every 50 Hr</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Greasing</td>
<td>every 50 Hr</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Wheel bolt torque Check</td>
<td>every 50 Hr</td>
<td>124</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Lock lever Clean</td>
<td>every 50 Hr</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Battery condition Check</td>
<td>every 100 Hr</td>
<td>125 *B</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Air cleaner element Clean Replace</td>
<td>every 1000 Hr or 1 year</td>
<td>133 *2</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Fuel filter element Check Replace</td>
<td>every 100 Hr</td>
<td>127</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Fan belt Adjust</td>
<td>every 400 Hr</td>
<td>133 *K</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>HST neutral spring Adjust</td>
<td>every 100 Hr</td>
<td>128</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Brake pedal Adjust</td>
<td>every 100 Hr</td>
<td>128 *K</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Toe-in Adjust</td>
<td>every 200 Hr</td>
<td>131</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Transmission fluid Change</td>
<td>every 400 Hr</td>
<td>131</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Transmission strainer Clean</td>
<td>every 400 Hr</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Front axle case oil Change</td>
<td>every 400 Hr</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Front axle pivot Adjust</td>
<td>every 400 Hr</td>
<td>131</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Engine valve clearance Adjust</td>
<td>every 800 Hr</td>
<td>133 *K</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Injection pressure of the fuel injection nozzle Check</td>
<td>every 1500 Hr</td>
<td>133 *K</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Injection pump Check</td>
<td>every 3000 Hr</td>
<td>135 *K</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Cooling system Flush</td>
<td>every 2000 Hr or 2 years</td>
<td>133 *4</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Coolant Change</td>
<td>every 2000 Hr or 2 years</td>
<td>133 *4</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Radiator hose and clamp Replace</td>
<td>every 1 year</td>
<td>135 *R</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Power steering oil line Check</td>
<td>every 4 years</td>
<td>136 *K</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Fuel line Check</td>
<td>every 1 year</td>
<td>135 *R</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Intake air line Check Replace</td>
<td>every 4 years</td>
<td>137 *K</td>
<td></td>
</tr>
</tbody>
</table>

*(Continued)*
## MAINTENANCE OF THE TRACTOR

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Indication on hour meter</th>
<th>Since then</th>
<th>Ref. page</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>Engine breather hose</td>
<td>Check</td>
<td>every 1 year</td>
<td>136 R* K</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace</td>
<td>every 4 years</td>
<td>137 K</td>
</tr>
<tr>
<td>30</td>
<td>Fuel system</td>
<td>Bleed</td>
<td>Service as</td>
<td>137</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>required</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Fuse</td>
<td>Replace</td>
<td></td>
<td>137</td>
</tr>
<tr>
<td>32</td>
<td>Light bulb</td>
<td>Replace</td>
<td></td>
<td>138</td>
</tr>
</tbody>
</table>

**IMPORTANT:**
- You must perform the jobs indicated by ◎ after the first 50 hours of operation.
- The items which is @ marked are registered as the emission-related-critical-parts by KUBOTA in the U.S.EPA nonroad emission regulation. As the engine owner, you are responsible for the performance of the required maintenance on the engine according to the preceding instruction. Please see Warranty Statement in detail.

*1 The initial 50 hours should not be a replacement (changing) cycle.
*B When the battery is used for less than 100 hours per year, check the battery condition by reading the indicator annually.
*2 You should clean the air cleaner more often in dusty conditions than in normal conditions.
*3 Every 1,000 hours or every 1 year whichever comes faster.
*K Consult your local KUBOTA Dealer for this service.
*4 Every 2,000 hours or every 2 years whichever comes faster.
*R Replace if any deterioration (crack, hardening, scar, or deformation) or damage occurred.
## LUBRICANTS, FUEL, AND COOLANT TABLE

<table>
<thead>
<tr>
<th>No.</th>
<th>Locations</th>
<th>Capacities</th>
<th>Grade</th>
</tr>
</thead>
</table>
| 1   | Fuel                      | 25 L (6.6 U.S.gals.) | No. 2-D diesel fuel  
No. 1-D diesel fuel if temperature is below  
-10 °C (14 ℉) |
| 2   | Coolant with recovery tank | 3.1 L (3.3 U.S.qts.) | Fresh clean soft water with anti-freeze |
| 3   | Engine crankcase          | 3.3 L *1 (3.3 U.S.qts.) | • Engine oil  
API Service Classification CF or higher  
Above 25 °C (77 ℉)  
0 °C to 25 °C (32 ℉ to 77 ℉)  
Below 0 °C (32 ℉)  
SAE30, SAE10W-30 or 15W-40  
SAE20, SAE10W-30, or 15W-40  
SAE10W, SAE10W-30, or 15W-40 |
| 4   | Transmission case         | 11.3 L (2.99 U.S.gals.) | • KUBOTA SUPER UDT-2 fluid*2 |
| 5   | Front axle case           | 3.6 L (3.8 U.S.qts.) | • KUBOTA SUPER UDT-2 fluid*2 or SAE 80-SAE90 gear oil |

### Greasing

<table>
<thead>
<tr>
<th>Greasing</th>
<th>Number of greasing points</th>
<th>Capacity</th>
<th>Type of grease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery terminal</td>
<td>2</td>
<td>Moderate amount</td>
<td>Multipurpose</td>
</tr>
<tr>
<td>Speed control pedal</td>
<td>1</td>
<td>Until grease overflow</td>
<td>EP2 Grease (NLGI Grade No.2)</td>
</tr>
<tr>
<td>Hood lock</td>
<td>1</td>
<td>Moderate amount</td>
<td></td>
</tr>
<tr>
<td>Hood guide</td>
<td>1</td>
<td>Moderate amount</td>
<td></td>
</tr>
</tbody>
</table>

### IMPORTANT:
- To prevent serious damage to hydraulic systems, use only KUBOTA genuine fluid or its equivalent.

*1 Oil amount when the oil level is at the upper level of the oil level gauge.
*2 The product name of KUBOTA genuine UDT fluid may be different from that in the operator's manual depending on countries or territories. Consult your local KUBOTA Dealer for further detail.

## 1. Lubricants, fuel, and coolant for North American market

### Fuel
- Cetane number of 45 is minimum. Cetane number greater than 50 is preferred, especially for the following temperatures or the following elevations.

<table>
<thead>
<tr>
<th>Temperatures</th>
<th>Below -20 °C (-4 ℉)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevations</td>
<td>Above 1500 m (5000 ft)</td>
</tr>
</tbody>
</table>

- Diesel fuels specified to EN 590 or ASTM D975 are recommended.
- No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service (SAE J313 JUN87).

### 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 in LUBRICANTS, FUEL, AND COOLANT TABLE on page 115.

### Engine oil classification (API classification)

<table>
<thead>
<tr>
<th>Fuel used</th>
<th>Engine oil classification except external EGR</th>
<th>Oil class of engines with external EGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultra low sulfur fuel</td>
<td>CF, CF-4, CG-4, CH-4, or CI-4</td>
<td>CF or CI-4</td>
</tr>
<tr>
<td></td>
<td>You cannot use the class CF-4, CG-4, nor CH-4 engine oils on ERG-type-engines.</td>
<td></td>
</tr>
</tbody>
</table>

### EGR
- There is exhaust gas re-circulation.
- The CJ-4 engine oil is intended for DPF (diesel-particulate-filter) type engines, and cannot be used on this tractor.
Transmission oil

- **KUBOTA Super UDT-2**
  For an enhanced ownership experience, we highly recommend Super UDT-2 to be used instead of standard hydraulic/transmission fluid. Super UDT-2 is a proprietary KUBOTA formulation that delivers superior performance and protection in all operating conditions. Regular UDT is also permitted for use in this machine.

- Indicated capacities of water and oil are manufacturer's estimate.

2. Lubricants, fuel, and coolant for other than North American market

**Fuel**

- Cetane number of 45 is minimum. Cetane number greater than 50 is preferred, especially for the following temperatures or the following elevations.

<table>
<thead>
<tr>
<th>Temperatures</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below -20 °C (-4 °F)</td>
<td>Above 1500 m (5000 ft)</td>
</tr>
</tbody>
</table>

- If diesel fuel with sulfur content greater than the following percentage, reduce the service interval for engine oil and filter by 50%.

<table>
<thead>
<tr>
<th>Percentage of sulfur content diesel fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5% (5000 ppm)</td>
</tr>
</tbody>
</table>

- Never use diesel fuel with sulfur content greater than the following percentage for EXTERNAL-EGR-type engine.

<table>
<thead>
<tr>
<th>Percentage of sulfur content diesel fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5% (5000 ppm)</td>
</tr>
</tbody>
</table>

- Do not use diesel fuel with sulfur content greater than the following percentage.

<table>
<thead>
<tr>
<th>Percentage of sulfur content diesel fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0% (10000 ppm)</td>
</tr>
</tbody>
</table>

- Diesel fuels specified to EN 590 or ASTM D975 are recommended.

- No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service (SAE J313 JUN87).

**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 in LUBRICANTS, FUEL, AND COOLANT TABLE on page 115.

- With the emission control now in effect, the CF-4 and CG-4 lubricating oils have been developed for use of a low-sulfur fuel on the engines of the on-road vehicle. When an engine of off-road vehicle runs on a high-sulfur fuel, it is advisable to employ the CF or better lubricating oil with a high total-base-number (TBN). Minimum of the TBN is 10.

- Refer to the following table for the suitable API classification engine oil according to the engine type with internal EGR, external EGR, or non-EGR, and the fuel (low-sulfur or high-sulfur fuel).

<table>
<thead>
<tr>
<th>Fuel used</th>
<th>Engine oil classification (API classification)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil class of engines with external EGR</td>
<td>Oil class of engines except external EGR</td>
</tr>
<tr>
<td>High sulfur fuel [0.05% (500 ppm)]</td>
<td>CF, CG-4, CH-4, or CI-4</td>
</tr>
<tr>
<td></td>
<td>If the lubricating oil of CF-4, CG-4, CH-4, or CI-4 is used with a high-sulfur fuel, change the lubricating oil at shorter intervals (approximately half).</td>
</tr>
<tr>
<td>Low sulfur fuel [&lt;0.05% (500 ppm)] or ultra low sulfur fuel [0.0015% (15 ppm)]</td>
<td>CF, CF-4, CG-4, CH-4, or CI-4</td>
</tr>
<tr>
<td></td>
<td>CF or CI-4</td>
</tr>
<tr>
<td></td>
<td>You cannot use the class CF-4, CG-4, nor CH-4 engine oils on ERG-type-engines.</td>
</tr>
</tbody>
</table>

**EGR**

- Exhaust gas re-circulation

- The CJ-4 engine oil is intended for DPF (diesel-particulate-filter) type engines, and cannot be used on this tractor.

<table>
<thead>
<tr>
<th>Except external EGR</th>
<th>With external EGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>BX23S</td>
</tr>
</tbody>
</table>
3. Biodiesel fuel (BDF)

B0-B20 biodiesel fuels (BDF)
You can use mixed diesel fuels containing 20% or less biodiesel under the following conditions.

IMPORTANT:
• Concentrations greater than B5 (5%) are not approved for common rail engines and engines with aftertreatment device. Using concentrations greater than B5 (5%) can cause damage and reduce engine life.
• Refuel and use the fuel with caution in order to avoid contact with the fuel and spillage that could create a potential environmental or fire hazard. Wear appropriate protective equipment when refueling.

Applicable BDF
• You can use blended diesel fuels containing 6% through 20% BDF (B6-B20) which comply with American society for testing and materials (ASTM) D7467 standard, as revised, without adversely affecting the performance and durability of the engine and the components of the fuel system.
• Any mineral-oil-diesel-fuel, if used, must conform to ASTM D975 (or the European EN590) Standard, as revised.
B100 fuel used to generate biodiesel-blended-fuels must meet ASTM D6751 (or EN14214) Standard, as revised.
The final blended fuel B20 must conform to ASTM D7467 standard, as revised.
Straight-vegetable-oil is not allowed in any blended fuel.
• Allowable blended fuel is mineral-oil-diesel-fuel blended with B100 (for example 100% BDF).
The blended fuel ratio shall be less than 20% B100 and 80% or more diesel fuel.
Purchase the B100 source used for biodiesel blends from an accredited BQ-9000 marketer or producer.
You can find more information about qualified marketer(s) and producer(s) at http://www.bq-9000.org.

Product warranty, emission, and other precautions
• The engine-emission-control-system was certified according to current regulations based on the use of non-BDF. When using BDF, the owner is advised to check applicable local and federal emission regulations, and comply with all of them.
• BDF may cause restricted or clogged fuel filters during cold weather conditions, resulting in the engine not operating properly.
• BDF encourages the growth of microorganisms which may cause degradation of the fuel. Degradation of the fuel may cause corrosion of the fuel line or reduce the fuel filter flow earlier than expected.
• BDF inherently absorbs moisture which may cause degradation of the fuel earlier than expected. To avoid absorbing moisture of BDF, drain the water separator and the fuel-filter-port often.
• Do not use biodiesel whose concentrations higher than 20% (for example, greater than B20). Higher concentrated biodiesel will affect engine performance and fuel consumption, and degradation of the fuel system components may occur.
• Do not readjust the engine-fuel-control-system because readjusting it will violate the emission-control-levels for which the equipment was approved.
• Compared with soybean-based and rapeseed-based feedstock, palm-oil-based feedstock has a thicker consistency (for example, higher viscosity) at lower temperatures. Consequently, palm-oil-based feedstock may reduce performance of the fuel filter, particularly during cold weather conditions.
• The KUBOTA warranty, as specified in the Owner’s Warranty Information Guide, only covers flaws in product materials and workmanship. Accordingly, The KUBOTA warranty do not cover any problems that may arise due to the use of poor quality fuels that fail to meet the preceding requirements, whether biodiesel or mineral-oil-based.

Routine using
• Avoid spilling BDF onto painted surfaces because this may damage the finish. If the fuel is spilled, immediately wipe clean and flush with soapy water to avoid permanent damage.
• When using BDF, you are advised to maintain a full tank of the fuel, especially overnight and during short term storage, to reduce condensation within the tank. Be sure to tighten the fuel cap after refueling to prevent moisture build up within the tank. Water in the biodiesel mixture will damage the fuel filters and may damage the engine components.

Maintenance Requirements when using BDF B0 through B5
Follow the oil-change-intervals recommended by referring to the SERVICE INTERVALS on page 113. Extended oil-change-intervals may result in premature wear or engine damage.

Maintenance Requirements when using BDF B6 through B20
The maintenance interval for fuel related parts changes.
See the following table for the new maintenance interval.
<table>
<thead>
<tr>
<th>Items</th>
<th>Interval</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check</td>
<td>Every 50 hr</td>
<td></td>
</tr>
<tr>
<td>Replace</td>
<td>Every 200 hr</td>
<td>Consult your local KUBOTA dealer for replacing the fuel filter.</td>
</tr>
<tr>
<td>Fuel hose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check</td>
<td>Every 6 months</td>
<td>Replace if any deterioration (crack, hardening, scar, or deformation) or damage occurred.</td>
</tr>
<tr>
<td>Replace</td>
<td>Every 2 years</td>
<td>Consult your local KUBOTA dealer for replacing the fuel hose.</td>
</tr>
</tbody>
</table>

**Long term storage for B5**
- BDF easily deteriorates due to oxygen, water, heat, and foreign substances. Do not store B5 longer than three months.
- When using B5 fuel and storing the machine longer than three months, drain the fuel from the tanks and replace with light-mineral-oil-diesel-fuel. Subsequently, run the engine at least the following minutes to remove all of the biodiesel from the fuel lines.

| Running the engine | 30 minutes |

**Long term storage for B6 through B20**
- BDF easily deteriorates due to oxygen, water, heat, and foreign substances. Do not store B6 through B20 longer than one month.
- When using B6 through B20 fuel and storing the machine longer than one months, drain the fuel from the tanks and replace with light-mineral-oil-diesel-fuel. Subsequently, run the engine at least the following minutes to remove all of the biodiesel from the fuel lines.

| Running the engine | 30 minutes |
PERIODIC SERVICE OF THE TRACTOR

WARNING
To avoid serious injury or death:
• Do not work under any hydraulically supported devices. Working under any hydraulically supported devices can settle, suddenly leak down, or be accidentally lowered.
• If necessary to work under the tractor or any machine elements for servicing or adjustment, securely support the tractor or any machine elements with stands or suitable blocking beforehand.

HOW TO OPEN THE FRONT GUARD AND THE HOOD

WARNING
To avoid serious injury or death from contact with moving parts:
• Never open the hood or engine side cover while the engine is running.
• Do not touch the muffler or the exhaust pipes while they are hot. Touching the hot muffler or exhaust pipes could cause severe burns.

1. Pull the front guard forward.
2. Pull the hood-open-lever to release the latch to open the hood, and open the hood.

DAILY CHECK OF THE TRACTOR

WARNING
To avoid serious injury or death:
Take the following precautions when checking the tractor.
• Park the machine on firm and level ground.
• Set the parking brake.
• Lower the implement to the ground.
• Release all residual pressure of the hydraulic system.
• Stop the engine and remove the key.

For your own safety and maximum service life of the machine, daily inspect the machine thoroughly before operating it or starting the engine.

1. Walk around inspection
Before checking the tractor, inspect surroundings of it. Look around and under the tractor for such items as loose bolts, trash build-up, oil or coolant leaks, or broken or worn parts.

2. Checking the fuel gauge and refueling

WARNING
To avoid serious injury or death:
• Do not smoke while refueling.
• Be sure to stop the engine and remove the key before refueling.
To avoid allergic skin reaction:
• Wash hands immediately after contact with diesel fuel.

IMPORTANT:
• Do not permit dirt, trash, or water to get into the fuel system.
• Be careful not to empty the fuel tank, otherwise air will enter the fuel system, necessitating bleeding before next starting the engine.
• Be careful not to spill the fuel during refueling. If you should spill, wipe it off at once, or it may cause a fire.
• To prevent water condensation and water accumulation in the fuel tank, fill the tank before parking overnight.
Using fuel

<table>
<thead>
<tr>
<th>Temperature</th>
<th>fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above -10 °C (14 °F)</td>
<td>Grade No.2-Diesel fuel</td>
</tr>
<tr>
<td>Below -10 °C (14 °F)</td>
<td>Grade No.1-Diesel fuel</td>
</tr>
</tbody>
</table>

1. Turn the key switch to the on position and check the amount of fuel by the fuel gauge.
2. Fill the fuel tank with fuel when the fuel gauge shows as follows.

<table>
<thead>
<tr>
<th>Amount of fuel for refueling</th>
<th>1/4 or less in the fuel tank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel tank capacity</td>
<td>25 L (6.6 U.S.gals.)</td>
</tr>
</tbody>
</table>

1. Park the machine on a firm, flat, and level surface.
2. Check the engine oil before starting the engine, or, after five minutes or more when the engine has been stopped.
3. To check the engine oil level, draw out the dipstick, wipe it clean, replace it, and draw it out again.
4. Check to see that the engine oil level lies between the two notches.
5. If the engine oil level is too low, add new oil to the prescribed level at the oil inlet.
See LUBRICANTS, FUEL, AND COOLANT TABLE on page 115.

3. Checking the engine oil level

**WARNING**
To avoid serious injury or death:
• Be sure to stop the engine before checking the engine oil level.

**IMPORTANT :**
• When using an engine oil of different maker or viscosity from the previous one, remove all of the old oil and oil filter. Never mix two different types of oil.
• If the engine oil level is low, do not run the engine.
• When using the BT603 Backhoe and checking oil level, locate the tractor, the loader, and the backhoe on a flat surface and set the loader and the backhoe as illustrated as follows.

4. Checking the transmission fluid level

**WARNING**
To avoid serious injury or death:
• Park the tractor on a firm, flat, and level surface, lower the implement to the ground, and shut off the engine.

**IMPORTANT :**
• If the transmission fluid level is low, do not run the engine.
1. To check the transmission fluid level, check the dipstick as the following procedure.
   a. Draw out the dipstick.
   b. Wipe the dipstick clean.
   c. Replace the dipstick.
   d. Draw the dipstick out again.
2. Check to see that the transmission fluid level lies between the two notches.
3. If the transmission fluid level is too low, add new fluid to the prescribed level at the oil inlet. See LUBRICANTS, FUEL, AND COOLANT TABLE on page 115.

5. Checking the coolant level

**WARNING**
To avoid serious injury or death:
- Be sure to stop the engine and remove the starter key before checking coolant level.
- Do not remove the radiator cap while the coolant is hot. When the coolant is cool, slowly rotate the radiator cap to the first stop and allow sufficient time for excess pressure to escape before removing the radiator cap completely.

**IMPORTANT:**
- If the radiator cap has to be removed, follow the preceding warning and securely retighten the radiator cap.
- Use clean, fresh, soft water and anti-freeze to fill the recovery tank.
- If water should leak, consult your local KUBOTA Dealer.

1. Check to see that the coolant level is between the “H” and “L” marks of the recovery tank.
2. When the coolant level drops due to evaporation, add soft water only. In case of leakage, add antifreeze and soft water in the specified mixing ratio up to the “H” level.

6. Cleaning the panel and the radiator screen

**WARNING**
To avoid serious injury or death:
- Be sure to stop the engine and remove the starter key before checking or cleaning the panel.
- Before checking or cleaning the panel, wait long enough until it cools down.

**IMPORTANT:**
- The panel and the radiator screen must be clean from debris to prevent the engine from overheating and to allow good air intake for the air cleaner.
- Be sure to reinstall the panel on the pillar completely to prevent the invasion of dust.
- Be sure to stop the engine to avoid personal injury and to allow good air intake for air cleaner.

1. Make sure that the panel and the radiator screen are clean from debris.
2. Detach the radiator screen, and then remove all the foreign material.

**NOTE:**
- If the dust or chaff is accumulated in the battery compartment, open the panel and clean completely.

7. Checking the brake pedal
1. Inspect the brake pedal for free travel, and smooth operation.
2. Adjust the brake pedal if incorrect measurement is found.
   See 6. Adjusting the brake pedal on page 128.

8. Checking the gauges, the meters, and the Easy Checker™
1. Inspect the instrument panel for the broken gauge(s), the meter(s), and the Easy Checker™ lamps.
2. Replace the gauge(s), the meter(s), or the Easy Checker™ if they are broken.

9. Checking the head light, hazard light, and so on
1. Inspect the lights for broken bulbs and lenses.
2. Replace the lights if they are broken.

10. Checking the seat belt and the ROPS
1. Always check condition of the seat belt and the ROPS attaching hardware before operating the tractor.
2. Replace the seat belt or the ROPS if it is damaged.

11. Checking and cleaning the electrical wiring and the battery cables

**WARNING**
To avoid serious injury or death:
- A loosened terminal or connector, or damaged wire may affect the performance of the electrical components or cause short circuits. Leakage of electricity could result in a fire hazard, a dead battery, or damage to the electrical components.
- Replace the damaged wires or connections promptly.
- If a fuse blows soon after replacement, do not use the capacity larger than recommended or bypass the fuse system.
- Many wiring connections are protected by waterproof plugs. Plug and unplug these connections carefully and make sure that they are sealed correctly after assembly.
- Accumulation of dust, chaff, and deposits of spilled fuel around the battery, electrical wiring, engine, or exhaust system may cause fire hazards. Clean around the battery, electrical wiring, engine or exhaust system before starting to work.
- To avoid premature electrical malfunctions, do not apply high pressure water directly to the battery, the wiring, the connectors, the electrical components, or the instrument panel.

Inspect the following check items regularly
- Check the wiring for chafed or cracked insulation.
- Check the wiring harness clamps. Replace them if necessary.
- Check the connectors and the terminals for looseness, contamination, or overheated or discolored connections.
- Check the instrument panel for correct operation of the switches and the gauges.
Consult your KUBOTA Dealer regarding maintenance, diagnosis, and repair.

**12. Checking the movable parts**

1. If any of the movable parts, such as levers and pedals, is not smoothly moved because of rust or sticky material, remove the rust or the sticky material, and apply oil or grease on the relevant spot. Do not force the movable parts into motion. Otherwise, the machine may get damaged.

**SERVICE OF THE TRACTOR**

**EVERY 50 HOURS**

1. **Lubricate fittings with grease**

   Apply a small amount of multipurpose grease to the following points every 50 hours. If you operated the machine in extremely wet and muddy conditions, lubricate grease fittings more often. Apply grease between rod and hole.

   **Apply grease between stays.**

2. **Checking the engine start system**

   **WARNING**

   To avoid serious injury or death:
   - Do not allow anyone near the tractor while testing.
   - If the tractor does not pass the test, do not operate the tractor.
Preparation before testing
1. Sit on the operator’s seat.
2. Set the parking brake and stop the engine.
3. Shift the range-gear-shift-lever to the neutral “N” position.
4. Check whether the speed-control-pedal is in the neutral position.
5. Shift the PTO-clutch-lever to the off position.

Test of switch for the speed control pedal
1. Make sure that the range-gear-shift-lever is set in the neutral “N” position.
2. Depress the speed-control-pedal.
3. Turn the key to the start position.
The engine must not crank. If the engine cranks, consult your local KUBOTA Dealer.

Test of switch for the PTO clutch lever
1. Make sure that the range-gear-shift-lever is set in the neutral “N” position.
2. Make sure that the speed-control-pedal is set in the neutral position.
3. Shift the PTO-clutch-lever to the on position.
4. Turn the key to the start position.
The engine must not crank. If the engine cranks, consult your local KUBOTA Dealer.

3. Checking the OPC (operator presence control) system

**WARNING**
To avoid serious injury or death:
- Do not allow anyone near the tractor while testing.
- If the tractor does not pass the test, do not operate the tractor.

Preparation before testing
1. Sit on the operator’s seat.
2. Set the parking brake and stop the engine.
3. Shift the range-gear-shift-lever to the neutral “N” position.
4. Check whether the speed-control-pedal is in the neutral position.
5. Shift the PTO-clutch-lever to the off position.

Test of switches for the operator’s seat and the speed control pedal
1. Start the engine.
2. Depress the speed-control-pedal.
3. Stand up.
   Do not get off the machine.
The engine must shut off after approximately one second. If it does not stop, consult your local KUBOTA Dealer.

Test of switches for the operator’s seat and the PTO clutch lever
1. Start the engine.
2. Engage the PTO-clutch-lever.
3. Stand up.
   Do not get off the machine.
The engine must shut off after approximately one second. If it does not stop, consult your local KUBOTA Dealer.

4. Checking the wheel bolt torque

**WARNING**
To avoid serious injury or death:
- Never operate the tractor with a loose rim, wheel, or axle.
- Any time bolts are loosened, retighten to the specified torque.
- Check all bolts frequently and keep them tight.

1. Check the wheel bolts regularly especially when new.
2. If they are loose, tighten them as follows.

Front

(1) 149.2 N m to 179.0 N m
(15.2 kgf m to 18.3 kgf m)
(110 lbf ft to 132 lbf ft)

Rear

(2) 108.5 N m to 130.2 N m
(11.1 kgf m to 13.3 kgf m)
(80 lbf ft to 96 lbf ft)

5. Cleaning the lock lever shaft

1. Before you use the lock lever, clean the lever-movable-area (1).

![Diagram of lock lever shaft]

(1) Lever movable area

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**SERVICE OF THE TRACTOR EVERY 100 HOURS**

1. Checking of the battery

⚠️ DANGER

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

⚠️ WARNING

To avoid serious injury or death:
- Never remove the battery cap while the engine is running.
- Keep electrolyte away from eyes, hands, and clothes. If you are spattered with electrolyte, 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.
- Tighten the battery holder firmly when you reassemble the battery.
- Make sure to put a clamp to the positive cable of the battery.

**IMPORTANT :**
- The factory-installed battery is of non-refillable type. If the battery is weak, charge the battery or replace it with new one.
- 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 the battery of equal specification in the following table.

---

**SERVICE OF THE TRACTOR EVERY 50 HOURS**
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 the following table to determine if charging is necessary.

<table>
<thead>
<tr>
<th>Battery voltage</th>
<th>Reference state of charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.6</td>
<td>100% (Full charge)</td>
</tr>
<tr>
<td>12.4</td>
<td>75%</td>
</tr>
<tr>
<td>12.2</td>
<td>50%</td>
</tr>
<tr>
<td>12.0</td>
<td>25%</td>
</tr>
<tr>
<td>11.8</td>
<td>0%</td>
</tr>
</tbody>
</table>

1.1 Battery charging

**WARNING**

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.
• 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.
• To prevent short circuit, before charging, make sure to remove the metal-battery-holder.
• Never check the battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

**IMPORTANT:**

• Since the metal-battery-holder can crack, do not tighten it too much.
• To slow charge the battery, connect the battery positive terminal to the charger positive terminal and the negative to the negative, then charge as follows.

<table>
<thead>
<tr>
<th>Charging the battery</th>
<th>For at least 1 hour at 6.5 amperes</th>
</tr>
</thead>
</table>
| A boost charge is only for emergencies. It will partially charge the battery at a high rate and in a short time. When using a boost-charged battery, it is necessary to recharge the battery as early as possible. Failure to recharge the battery will shorten the service life of battery.
• When the specific gravity of electrolyte is shown in the following table, the charging is completed.

<table>
<thead>
<tr>
<th>Specific gravity of electrolyte</th>
<th>Between 1.27 and 1.29</th>
</tr>
</thead>
</table>

1.2 Dealing with the battery when storing the tractor for a long period

1. Remove the battery from the tractor.
2. Adjust the electrolyte to the proper level.
3. Store the battery in a dry place out of direct sunlight.

The battery self-discharges while it is stored. Recharge the battery once every three months in hot seasons and once every six months in cold seasons.

2. Cleaning the air cleaner element

**WARNING**

To avoid serious injury or death:
• Be sure to stop the engine and remove the key before cleaning the air cleaner element.
IMPORTANT :
- The air cleaner uses a dry element. Never apply oil to the air cleaner.
- Do not run the engine with filter element removed.
- Align the arrow marks when reinstalling the cover. If the cover is improperly fitted, dust passes by the baffle and directly adheres to the air-cleaner-element.

NOTE :
- Check to see if the evacuator valve is blocked with dust.

1. Remove the air-cleaner-cover and air-cleaner-element.
   a. Undo the hook.
   b. Turn the air-cleaner-cover clockwise and detach it.

2. Clean the air-cleaner-element.
   When dry dust adheres to the air-cleaner-element, blow compressed air from the inside, turning the air-cleaner-element. Pressure of compressed air must be the value shown in the following table.

<table>
<thead>
<tr>
<th>Pressure of compressed air</th>
<th>Below 205 kPa (2.1 kgf/cm², 30 psi)</th>
</tr>
</thead>
</table>

3. When carbon or oil adheres to the air-cleaner-element, follow the following procedure.
   a. Soak the air-cleaner-element in detergent for the following minutes.

<table>
<thead>
<tr>
<th>Soaking the air cleaner element in detergent</th>
<th>15 minutes</th>
</tr>
</thead>
</table>
   b. Then wash it several times in water.
   c. Rinse the air-cleaner-element with clean water.
   d. Dry the air-cleaner-element naturally.
   e. After the air-cleaner-element is fully dried, inspect inside of it with a light and check if it is damaged or not. Refer to the instructions on the label attached to the case.

4. Replace the air-cleaner-element as the following table.

<table>
<thead>
<tr>
<th>Replacing the air cleaner element</th>
<th>Every 1000 hours or every 1 year whichever comes faster</th>
</tr>
</thead>
</table>

3. Checking the fuel filter

**WARNING**
To avoid serious injury or death:
- Stop the engine and remove the key before checking the fuel lines and the fuel filter.
- 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.

IMPORTANT :
- When the fuel line is disconnected for maintenance or repair, plug both ends of the fuel line with a clean plug of suitable size to prevent dust and dirt from entering. Take particular care of the fuel filter in order to avoid dust and dirt getting into the fuel system. Entrance of dust and dirt causes malfunction of the fuel pump.

The fuel line is the rubber product and ages regardless of service period.
1. Inspect the fuel filter.
2. After inspection of the fuel filter, if the fuel line and clamps are found damaged or deteriorated, replace them.

Evacuator valve
Open the evacuator valve once a week under ordinary conditions or daily when used in a dusty place to get rid of large particles of dust and dirt.
3. Check the fuel filter. If the fuel filter is clogged by debris or contaminated by water, replace it.

**NOTE:**
- If the fuel line is removed, be sure to properly bleed the fuel system. See 1. Bleeding the fuel system on page 137.

4. Replace fan belt if it is damaged.

5. Adjusting the HST neutral spring for speed control pedal

**WARNING**
To avoid serious injury or death:
- Do not operate if the tractor moves on level ground with foot off the speed-control-pedal.
- If the tractor moves on level ground with foot off the speed-control-pedal, or, if the pedal is too slow in returning to the neutral position when removing the foot from the pedal, consult your local KUBOTA dealer.

The HST-neutral-spring located under the front right side of the fender can adjust returning speed of the speed-control-pedal.
- Consult your local KUBOTA Dealer for service.

6. Adjusting the brake pedal

**WARNING**
To avoid serious injury or death:

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**PERIODIC SERVICE OF THE TRACTOR**

**SERVICE OF THE TRACTOR EVERY 100 HOURS**

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**128**

**BX23S, LA340, BT603**
SERVICE OF THE TRACTOR EVERY 200 HOURS

• Stop the engine, remove the key, lower the implement to the ground, and chock the wheels before checking the brake pedal.
• Even if free travel of the brake pedal is within the limitation, adjust the brake pedal.
• If you are not able to adjust, consult your local KUBOTA dealer.

1. Release the parking brake.
2. Loosen the lock nut and turn the turnbuckle to adjust the rod length so that free travel of the brake pedal is the length shown in the following table.

<table>
<thead>
<tr>
<th>Free travel of the brake pedal</th>
<th>10 mm (0.4 in.)</th>
</tr>
</thead>
</table>

3. Extend the turnbuckle one additional turn.
4. Retighten the lock nut.
5. Depress the brake pedal several times and make sure that free travel of the brake pedal is the length shown in the following table.

<table>
<thead>
<tr>
<th>Free travel of the brake pedal</th>
<th>25 mm to 35 mm (1.0 in. to 1.4 in.)</th>
</tr>
</thead>
</table>

1. Replace the engine oil filter

**WARNING**
To avoid serious injury or death:
• Be sure to stop the engine before replacing the oil filter cartridge.
• Oil can be hot and can burn. Allow the engine to cool down sufficiently.

**IMPORTANT**
• To prevent serious damage to the engine, use only a KUBOTA genuine filter.

1. Remove the oil filter.
2. Put a film of the clean engine oil on the rubber seal of the new filter.
3. Tighten the filter quickly until it contacts the mounting surface.
4. Tighten filter by hand an additional 1/2 turn only.
5. After the new filter has been replaced, the engine oil normally decreases a little. Make sure that the engine oil does not leak through the seal and be sure to check the oil level on the dipstick.
6. Fill the engine with the engine oil up to the prescribed level.
7. Properly dispose of the used engine oil.

2. Changing the engine oil

**WARNING**
To avoid serious injury or death:
• Be sure to stop the engine and remove the key before changing the oil.
• Oil can be hot and can burn. Allow the engine to cool down sufficiently.
1. To drain the used engine oil, remove the drain plug at the bottom of the engine, and drain the engine oil completely into the oil pan.
2. After draining of the used engine oil, reinstall the drain plug.
3. Fill the engine with the new engine oil up to the upper notch on the dipstick. See LUBRICANTS, FUEL, AND COOLANT TABLE on page 115.
4. Properly dispose of the used engine oil.

### 3. Replacing the transmission oil filter

**WARNING**
To avoid serious injury or death:
- Be sure to stop the engine before changing the transmission oil filter cartridge.
- Oil can be hot and can burn. Allow the engine to cool down sufficiently.

1. Remove the transmission oil filter.
2. Put a film of clean transmission oil on rubber seal of new transmission oil filter.
3. Tighten the transmission oil filter quickly until it contacts the mounting surface.
4. Tighten the transmission oil filter by hand an additional 1/2 turn only.
5. After the new transmission oil filter has been replaced, the transmission fluid level will decrease a little. Make sure that the transmission fluid does not leak through the seal, and check the fluid level. Check the dipstick and refill with oil to prescribed level.
6. Properly dispose of used oil.

### 4. Checking the toe-in

**WARNING**
To avoid serious injury or death:
- Park the tractor on a firm, flat, and level place.
- Lower the implement to the ground, and apply the parking brake.
- Stop the engine and remove the key.

1. Turn the steering wheel so that the front wheels are in the straight ahead position.
2. Measure the distance between the tire beads at front of the tires, and at the hub heights.
3. Measure the distance between the tire beads at rear of the tires, and at the hub heights.
4. Front distance should be the length as shown in the following table. If front distance is not proper length, adjust the length of the tie rod.
To adjust the tie rod, see 4.1 Adjusting the toe-in on page 131.

| Front distance | 0 mm to 5 mm (0 in. to 0.2 in.) less than rear distance |

4.1 Adjusting the toe-in

1. Loosen the lock nut and turn the tie rod to adjust the rod length until the proper toe-in measurement is obtained.

2. Retighten the lock nut.

1. Adjusting the front axle pivot

**WARNING**
To avoid serious injury or death:
• Be sure to stop the engine and remove the key before adjusting the front axle pivot.

If the front axle pivot pin adjustment is not correct, front wheel vibration can occur causing vibration in the steering wheel.

1. Remove the split pin and tighten the adjusting nut.

2. Make sure that one of the nut slots aligns with the split pin hole.

3. Tighten the nut slightly if necessary when aligning the nut slots with the split pin hole.

4. Replace the split pin.

2. Changing the transmission fluid

**WARNING**
To avoid serious injury or death:
• Oil can be hot and can burn. Allow the engine to cool down sufficiently.

<table>
<thead>
<tr>
<th>Transmission fluid</th>
<th>KUBOTA SUPER UDT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission fluid capacity</td>
<td>11.6 L (3.1 U.S.gals.)</td>
</tr>
</tbody>
</table>

1. To drain the used transmission fluid, remove the drain plug at the bottom of the transmission case and drain the transmission fluid completely into the oil pan.
2. After draining the transmission fluid, reinstall the drain plug.
3. Clean the transmission strainer.
4. Fill with new transmission fluid up to the upper notch on the dipstick.
See LUBRICANTS, FUEL, AND COOLANT TABLE on page 115 and 4. Checking the transmission fluid level on page 120.
5. After running the engine for a few minutes, stop it and check the transmission fluid level again.
6. If the transmission fluid level is lower than the prescribed level shown in the following figure, add it to the prescribed level.
7. Properly dispose of used transmission fluid.

When reassembling the transmission strainer, be careful not to damage the parts.

IMPORTANT:
- Do not operate the tractor immediately after changing the transmission fluid.
Run the engine at medium speed for a few minutes to prevent damage to the transmission.

3. Cleaning the transmission strainer
1. When changing the transmission fluid, disassemble and rinse the transmission strainer with nonflammable solvent to completely clean off filings.

NOTE:
- Since the fine filings in the oil can damage the precision component parts of the hydraulic system, the end of the suction line is provided with an oil strainer.

4. Changing the front axle case oil

**WARNING**
To avoid serious injury or death:
- Be sure to stop the engine and remove the key before changing the front axle case oil.

| Oil capacity | 3.6 L (3.8 U.S.qts.) |

1. Park the tractor on a firm, flat, and level place.
2. To drain the used front-axle-case-oil, remove the right and left drain plugs and oil gauge at the front axle case.
3. Drain the front-axle-case-oil completely into the oil pan.
4. After draining the front-axle-case-oil, reinstall the drain plugs.
5. Remove the right and left breather plugs.
6. Fill with new front-axle-case-oil up to the upper notch on the dipstick. See LUBRICANTS, FUEL, AND COOLANT TABLE on page 115.

**IMPORTANT:**
- After the following minutes, check the front-axle-case-oil level again. If the front-axle-case-oil level is lower than the prescribed level shown in the following figure, add the front-axle-case-oil to prescribed level.

<table>
<thead>
<tr>
<th>Checking the front axle case oil level</th>
<th>10 minutes after filling with new front axle case oil</th>
</tr>
</thead>
</table>

7. After filling with front-axle-case-oil, reinstall the oil gauge and breather plugs.

5. Replacing the fuel filter element
- Consult your local KUBOTA Dealer for replacing the fuel filter element.

### SERVICE OF THE TRACTOR EVERY 800 HOURS

1. Adjusting the engine valve clearance
- Consult your local KUBOTA Dealer for adjusting the engine valve clearance.

### SERVICE OF THE TRACTOR EVERY 1000 HOURS OR 1 YEAR

1. Replacing of the air cleaner element
Replace the air cleaner element every 1000 hours or every 1 year whichever comes faster. See 2. Cleaning the air cleaner element on page 126.

### SERVICE OF THE TRACTOR EVERY 1500 HOURS

1. Checking the injection pressure of the fuel injection nozzle
- Consult your local KUBOTA Dealer for checking the injection pressure of the fuel injection nozzle.

### SERVICE OF THE TRACTOR EVERY 2000 HOURS OR 2 YEAR

1. Flushing the cooling system and changing the coolant

**WARNING**
To avoid serious injury or death:
- Do not remove the radiator cap while the coolant is hot. When the coolant is cool, slowly rotate the radiator cap to the first stop and allow sufficient time for excess pressure to escape before removing the radiator cap completely.

**IMPORTANT:**
- Do not start the engine without coolant.
- Use clean, fresh soft water and the anti-freeze to fill the radiator and the recovery tank.
- When mixing the anti-freeze with water, the anti-freeze mixing ratio is the following percentage.

<table>
<thead>
<tr>
<th>Anti-freeze mixing ratio with water</th>
<th>50%</th>
</tr>
</thead>
</table>

- Securely tighten the radiator cap. If the radiator cap is loose or improperly fitted, water may leak out and the engine could overheat.

Be sure to flush the cooling system and to change the coolant once every 2000 hours or every two years whichever comes faster.

<table>
<thead>
<tr>
<th>Coolant capacity (with recovery tank)</th>
<th>3.1 L (3.3 U.S.qts.)</th>
</tr>
</thead>
</table>

1. Stop the engine and let it cool down.
2. To drain the coolant, open the radiator-drain-plug or the engine-drain-plug and remove the radiator cap. The radiator cap must be removed to completely drain the coolant.
3. After all coolant is drained, close the drain plug.
4. Fill the radiator with clean soft water and the cooling-system-cleaner.
5. Follow directions of the instruction of cooling-system-cleaner.
6. After flushing the radiator, fill it with clean soft water and the anti-freeze until the coolant level is just below the radiator cap.
7. Install the radiator cap securely.
8. Fill the recovery tank with coolant up to the “H” mark on the recovery tank.
9. Start and operate the engine for few minutes.
10. Stop the engine and let it cool.
11. Check the coolant level of the recovery tank and add the coolant if necessary.

- When using the antifreeze, put on some protection such as rubber gloves. The antifreeze contains poison.
- If someone drank antifreeze, seek immediate medical help. Do not make a person throw up unless told to throw up by poison-control-center or a health care professional. Use standard first aid and CPR for signs of shock or cardiac arrest. Call your local poison control center or your local emergency number for further assistance.
- When the antifreeze comes in contact with the skin or clothing, wash it off immediately.
- Do not mix different types of the antifreeze. The mixture can produce chemical reaction causing harmful substances.
- The antifreeze is extremely flammable and explosive under certain conditions. Keep fire and children away from the antifreeze.
- When draining fluids from the engine, place some container underneath the engine body.
- Do not pour waste onto the ground, down a drain, or into any water source.
- Also, follow the relevant environmental protection regulations when disposing of the antifreeze.

Always use a 50/50 mix of long-life coolant and clean soft water in KUBOTA engines. Consult your local KUBOTA Dealer concerning coolant for extreme conditions.

NOTE:
- The following data represent industry standards that necessitate a minimum glycol content in the concentrated antifreeze.
- Long-life coolant (hereafter LLC) comes in several types. Use ethylene glycol (EG) type for this engine.
- Before using LLC-mixed cooling water, fill the radiator with fresh water and empty it again. Repeat this procedure two times or three times to clean up the inside.
- Mixing the LLC

| Premix                  | 50% LLC with 50% clean soft water. |

When mixing, stir it up well, and then fill into the radiator.
- Adding the LLC
  - Add only water if the mixture reduces in amount by evaporation.
  - If there is a mixture leak, add the LLC of the same manufacturer and type in the same mixture percentage.
  - Never add any long-life coolant of different manufacturer. Different brands may have

2. Antifreeze

WARNING
To avoid serious injury or death:
different additive components, and the engine may fail to perform as specified.

- When the LLC is mixed, do not use any radiator cleaning agent. The LLC contains anticorrosive agent. If mixed with the cleaning agent, sludge may build up, adversely affecting the engine parts.
- KUBOTA's genuine long-life coolant has a service life of two years. Be sure to change the coolant as follows.

| Changing the coolant | every 2000 hours or every 2 years whichever comes faster |

- The procedure for the mixing of water and the antifreeze differs according to the make of the antifreeze and the ambient temperature. Refer to SAE J1034 standard, more specifically also to SAE J814c.

<table>
<thead>
<tr>
<th>Antifreeze</th>
<th>Freezing point</th>
<th>Boiling Point*1</th>
</tr>
</thead>
<tbody>
<tr>
<td>50Vol%</td>
<td>-37 °C</td>
<td>108 °C</td>
</tr>
<tr>
<td></td>
<td>-34 °F</td>
<td>226 °F</td>
</tr>
</tbody>
</table>

*1 At 1.013 x 10^5 Pa (760 mmHg) atmospheric pressure. A higher boiling point is obtained by using a radiator pressure cap which permits the development of pressure within the cooling system.

## SERVICE OF THE TRACTOR EVERY 3000 HOURS

### 1. Checking the injection pump
- Consult your local KUBOTA Dealer for checking the injection pump.

### SERVICE OF THE TRACTOR EVERY 1 YEAR

#### 1. Checking the radiator hoses and the hose clamps

**WARNING**
To avoid serious injury or death:
- Be sure to stop the engine and remove the key before checking the radiator hose and the hose clamps.

1. If the hose clamps are loose or water leaks, tighten them securely.
2. Replace the radiator hoses and tighten the hose clamps securely if you checked and found that the radiator hoses are swollen, hardened, or cracked.
3. Properly dispose of used coolant.

## 2. Checking the power steering line

**WARNING**
To avoid serious injury or death:
- Be sure to stop the engine and remove the key before checking the power steering line.

1. Check to see that all power steering lines are tight and not damaged.
2. If the power steering pressure hoses are found to be worn or damaged, replace or repair them at once.

#### 3. Checking the fuel lines

**WARNING**
To avoid serious injury or death:
- Stop the engine and remove the key before checking the fuel lines and fuel filter.
- 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.
IMPORTANT:

• When the fuel line is disconnected for maintenance or repair, plug both ends of the fuel line with a clean plug of suitable size to prevent dust and dirt from entering. You must take particular care of the fuel lines in order to avoid dust and dirt getting into the fuel system. Entrance of dust and dirt causes malfunction of the fuel pump.

The fuel line is made of rubber and ages regardless of service period.

1. Inspect the fuel lines.
2. After inspection, if the fuel lines and clamps are found damaged or deteriorated, replace them.
3. Check the fuel filter. If the fuel filter is clogged by debris or contaminated by water, replace it.

4. Checking the intake air line

WARNING
To avoid serious injury or death:

• Stop the engine and remove the key before checking the intake air line.

1. Check to see that the hose and the hose clamps are tight and not damaged.
2. If the hose and the clamps are found worn or damaged, replace or repair them at once.

5. Checking the engine breather hose

• Consult your local KUBOTA Dealer for checking the engine breather hose.

SERVICE OF THE TRACTOR EVERY 4 YEAR

1. Replacing the radiator hose (water pipes)

See 1. Checking the radiator hoses and the hose clamps on page 135.

NOTE:

• If the fuel line is removed, be sure to properly bleed the fuel system.

See 1. Bleeding the fuel system on page 137.
1. Replace the radiator hoses and tighten the hose clamps securely.

2. Replacing the power steering hose
   - Consult your local KUBOTA Dealer for replacing the power steering hose.

3. Replacing the fuel hose
   - Consult your local KUBOTA Dealer for replacing the fuel hose.

4. Replacing the engine breather hose
   - Consult your local KUBOTA Dealer for replacing the engine breather hose.

5. Replacing the intake air line
   - Consult your local KUBOTA Dealer for replacing the intake-air-line.

SERVICE OF THE TRACTOR AS REQUIRED

1. Bleeding the fuel system
   Air must be removed:
   - When the fuel filter or lines are removed
   - When the tank is completely empty
   - After the tractor has not been used for a long period of time

   Bleeding procedure is as follows
   1. Fill the fuel tank with fuel.

2. Replacing the fuse
   The electrical system of the tractor is protected from potential damage by fuses. A blown fuse indicates that there is an overload or short somewhere in the electrical system.

   1. If any of the fuses should blow, replace with a new fuse with the same capacity.

   IMPORTANT:
   - Before replacing a blown fuse, determine why the fuse blew and perform any necessary repairs. Failure to follow the repairing procedure may result in serious damage to the electrical system of the tractor. Refer to the ENGINE TROUBLESHOOTING on page 167 of this manual or your local KUBOTA Dealer for specific information dealing with electrical problems.
3. Replacing the light bulb

<table>
<thead>
<tr>
<th>Light</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head light</td>
<td>37.5 W×2</td>
</tr>
<tr>
<td>Tail light</td>
<td>12.8 W×2</td>
</tr>
<tr>
<td>Hazard light</td>
<td>23 W×2</td>
</tr>
</tbody>
</table>

**Head light**
1. Take the light bulb out of the body of the light and replace with a new one.

**Other lights**
1. Detach the lens and replace the light bulb.

### Protected circuit

#### [Fuse box]

<table>
<thead>
<tr>
<th>FUSE no.</th>
<th>Capacity (A)</th>
<th>Protected circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>Option (3rd -function)</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>OPC</td>
</tr>
<tr>
<td>5</td>
<td>15</td>
<td>DC outlet</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>Fuel pump</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>5</td>
<td>Glow indicator</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td>Meter</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
<td>Stop solenoid</td>
</tr>
<tr>
<td>11</td>
<td>20</td>
<td>Lamp</td>
</tr>
<tr>
<td>12</td>
<td>20</td>
<td>Option (work light)</td>
</tr>
</tbody>
</table>

#### Slow blow fuse

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Protected circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 A</td>
<td>Check circuit against wrong battery connection</td>
</tr>
</tbody>
</table>
MAINTENANCE OF THE LOADER

**CAUTION**

To avoid personal injury:

- Be sure to check and service the tractor on a flat surface with the bucket on the ground, engine shut off, the starter key removed, and the parking brake on.

DAILY CHECKING THE LOADER

**WARNING**

To avoid personal injury or death:

- When removing the engine-side-covers, be careful not to touch hot loader cylinders. Allow all surfaces to cool before performing maintenance.
- Before servicing the loader or the tractor, be sure to place the boom of the loader in contact with the ground. When raising the boom of the loader during service or maintenance, support the boom as shown in the figure.

1. Check all hardware of the loader daily before operation. Tighten the hardware of the loader to torque values as specified in the GENERAL TORQUE SPECIFICATION on page 144.
2. With the engine off and the bucket on the ground, inspect all hoses for cuts or wear. Check for signs of leaks and make sure all fittings are tight.

**WARNING**

To avoid personal injury or death:

- Escaping the hydraulic fluid under pressure can obtain sufficient force to penetrate skin, causing serious personal injury.
- Before disconnecting lines, be sure to relieve all pressure.
- Before applying pressure to the loader system, be sure that all connections are tight and that lines, tubes, and hoses are not damaged.
- Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than your hands, to search for suspected leaks.
- If you are injured by escaping fluid, see a doctor at once. Serious infection or allergic reaction will develop if proper medical treatment is not administered immediately.

![Diagram](1JJD00059A01)

1. Hydraulic line  
2. Cardboard  
3. Magnifying glass

SERVICE OF THE LOADER  
EVERY 10 HOURS

1. Lubricating the loader

KUBOTA recommends the high quality grease designated as the extreme pressure and containing the Molybdenum disulfide. Recommended grease may specify "Moly EP" on its label.
1. Lubricate all grease fittings every 10 hours of operation. Also, lubricate the joints of the control-lever-linkage every 10 hours.

2. Daily before operation, check the hydraulic-fluid-level of the tractor. If the hydraulic-fluid-level is low, add the hydraulic fluid as described in the tractor operator’s manual. Also change the filter element and the hydraulic fluid as recommended in the tractor operator’s manual.

SERVICE OF THE LOADER EVERY 20 HOURS TO 30 HOURS

1. Re-tightening of hardware of the loader

After 20 hours to 30 hours of initial loader operation, re-tighten all mounting bolts and nuts to the required torque value as follows.

<table>
<thead>
<tr>
<th>Location</th>
<th>Bolt or nut</th>
<th>Required Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main frame</td>
<td>M14 bolts or nuts</td>
<td>147 N·m (15.0 kgf·m) [108 lbf·ft]</td>
</tr>
</tbody>
</table>

NOTE:
- Before finally tightening all mounting hardware of the loader, start the engine and apply down pressure to the bucket until the loader raises the front wheels slightly. Make sure that you can rotate the mounting pins easily, and then tighten all bolts and nuts.

SERVICE OF THE LOADER EVERY 50 HOURS

1. Checking the torque of bolt and nut of the main frame

**WARNING**

To avoid personal injury or death:
- Never operate the front loader with a loose main frame.
- Any time bolts and nuts are loosened, retighten to specified torque.
- Check all bolts and nuts frequently and keep them tight.
- Check the bolts and nuts of the main frame regularly especially when they are new. If the bolts and nuts of the main frame are loose, tighten them as follows.

1. Check to see if the torque of bolt and nut of the main frame is as follows.

<table>
<thead>
<tr>
<th>Bolt or nut of the main frame (1)</th>
<th>Bolt and nut of the main frame (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>147 N·m (15.0 kgf·m) [108 lbf·ft]</td>
<td>203 N·m (20.7 kgf·m) [150 lbf·ft]</td>
</tr>
</tbody>
</table>

**Tightening torque table**

<table>
<thead>
<tr>
<th>Location</th>
<th>Bolt or nut</th>
<th>Required Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main frame</td>
<td>M14 bolts or</td>
<td>147 N·m (15.0 kgf·m) [108 lbf·ft]</td>
</tr>
<tr>
<td></td>
<td>nuts</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
- Before finally tightening all mounting hardware of the loader, start the engine and apply down pressure to the bucket until the loader raises the front wheels slightly. Make sure that you can rotate the mounting pins easily, and then tighten all bolts and nuts.
MAINTENANCE OF THE BACKHOE

CHECKING THE BACKHOE DAILY

**WARNING**
To avoid serious injury or death:
- Never repair, service, or adjust any kind when the hydraulic system is under pressure, when the engine is running, or when any cylinder of the backhoe is under load.
- Escaping hydraulic fluid under pressure can obtain sufficient force to penetrate skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure.
- Before applying pressure to the system, be sure all connections are tight and that lines, tubes, and hoses are not damaged.
- Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.
- If injured by escaping fluid, see a doctor at once. Serious infection or allergic reaction will develop if proper medical treatment is not administered immediately.

The backhoe is run by the tractor hydraulic system.
- Daily before operation, check the hydraulic level of the tractor. If the hydraulic level of the tractor is low, replenish the oil as described in 4. Checking the transmission fluid level on page 120. Also check the filter screen and change the hydraulic fluid as recommended in 3. Replacing the transmission oil filter on page 130 and 2. Changing the transmission fluid on page 131.

SERVICE OF THE BACKHOE EVERY 10 HOURS

1. Lubricating the backhoe
KUBOTA recommends the high quality grease designated as the extreme pressure and containing the Molybdenum disulfide. Recommended grease may specify “Moly EP” on its label.
1. Lubricate all grease fittings every 10 hours of operation.

SERVICE OF THE BACKHOE EVERY 50 HOURS

1. Checking the bolt torque of the sub frame

![Diagram of sub frame and bolts]

**WARNING**

To avoid serious injury or death:
- Never operate the backhoe and front loader with a loose sub frame.
- Any time the bolts and nuts are loosened, retighten to specified torque.
- Check all bolts and nuts frequently and keep them tight.

1. Check the bolts and nuts of the sub frame regularly, especially when the sub frame is new.

2. If the bolts and nuts of the sub frame are loose, tighten them as follows.

| Tightening torque | 147 N·m (15.0 kgf·m) [108 lbf·ft] |

SERVICE OF THE BUCKET

**WARNING**

To avoid serious injury or death:
- When servicing or repairing the pins in cylinder ends, bucket, and so on, always use a brass drift and a hammer. Failure to using a brass drift and a hammer could result in injury from flying metal fragments.

1. Changing the backhoe bucket

Changing the backhoe bucket becomes necessary as the type of job to be accomplished changes. In most operations of the backhoe, changing the backhoe bucket is a common occurrence.

By using the following instructions, changing the backhoe bucket will be quick and easy. Always select a smooth level area to change buckets.

1. Place the backhoe bucket to be installed on its bottom near the dipperstick of the backhoe, and place the backhoe bucket to be removed.
2. Position the backhoe bucket to be removed, hydraulically, into this natural position, just touching the ground.
2. Service of the bucket teeth

The bucket teeth are locked with bolts on the bucket. Even though the bucket teeth are heat-treated and hard, they will eventually need replacement. As the bucket teeth becomes worn, the resistance of digging will increase. When the bucket teeth are worn, install new bucket teeth using new bolts. You may remove and store the bucket teeth when work of drainage is required. Drainage type of work may not require the bucket teeth to trench.

1PSQWD0056A01

(1) Bucket
(2) Bucket teeth
(3) Bolt
# GENERAL TORQUE SPECIFICATION

American standard cap screws with UNC or UNF threads

<table>
<thead>
<tr>
<th>SAE grade No.</th>
<th>GR5 or GR8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>7.2 lbf ft to 8.6 lbf ft&lt;br&gt;9.8 to 11.7 N m&lt;br&gt;1.0 kgf m to 1.2 kgf m</td>
</tr>
<tr>
<td>5/16</td>
<td>14 lbf ft to 17 lbf ft&lt;br&gt;19 to 23.1 N m&lt;br&gt;1.9 kgf m to 2.4 kgf m</td>
</tr>
<tr>
<td>3/8</td>
<td>25 lbf ft to 30 lbf ft&lt;br&gt;33.9 to 40.7 N m&lt;br&gt;3.5 kgf m to 4.2 kgf m</td>
</tr>
<tr>
<td>1/4</td>
<td>7.2 lbf ft to 8.6 lbf ft&lt;br&gt;9.8 to 11.7 N m&lt;br&gt;1.0 kgf m to 1.2 kgf m</td>
</tr>
<tr>
<td>1/2</td>
<td>65 lbf ft to 78 lbf ft&lt;br&gt;88.1 to 105.8 N m&lt;br&gt;9.0 kgf m to 10.8 kgf m</td>
</tr>
<tr>
<td>9/16</td>
<td>90 lbf ft to 108 lbf ft&lt;br&gt;122 to 146.4 N m&lt;br&gt;12.4 kgf m to 14.9 kgf m</td>
</tr>
<tr>
<td>5/8</td>
<td>130 lbf ft to 156 lbf ft&lt;br&gt;176.3 to 211.5 N m&lt;br&gt;18.0 kgf m to 21.6 kgf m</td>
</tr>
</tbody>
</table>

## Metric cap screws

<table>
<thead>
<tr>
<th>Property class</th>
<th>8.8 Approx. SAE GR5</th>
</tr>
</thead>
<tbody>
<tr>
<td>M6</td>
<td>7.2 lbf ft to 8.3 lbf ft&lt;br&gt;9.8 to 11.2 N m&lt;br&gt;1.0 kgf m to 1.1 kgf m</td>
</tr>
<tr>
<td>M8</td>
<td>17.4 lbf ft to 20.2 lbf ft&lt;br&gt;23.6 to 27.4 N m&lt;br&gt;2.4 kgf m to 2.8 kgf m</td>
</tr>
<tr>
<td>M10</td>
<td>35.5 lbf ft to 41.2 lbf ft&lt;br&gt;48.1 to 55.8 N m&lt;br&gt;4.9 kgf m to 5.7 kgf m</td>
</tr>
<tr>
<td>M12</td>
<td>57.2 lbf ft to 66.5 lbf ft&lt;br&gt;77.5 to 90.1 N m&lt;br&gt;7.9 kgf m to 9.2 kgf m</td>
</tr>
<tr>
<td>M14</td>
<td>91.2 lbf ft to 108 lbf ft&lt;br&gt;124 to 147 N m&lt;br&gt;12.6 kgf m to 15.0 kgf m</td>
</tr>
<tr>
<td>M16</td>
<td>145 lbf ft to 166 lbf ft&lt;br&gt;196 to 225 N m&lt;br&gt;20.0 kgf m to 23.0 kgf m</td>
</tr>
</tbody>
</table>
MAINTENANCE OF THE BACKHOE

(A) Top of bolt

(B) Length

M6, M8, M10, M12, M14, M16, M18, M20

1JDJD00094A01

(A) Top of bolt

(B) Length
STORAGE OF THE TRACTOR

**WARNING**
To avoid serious injury or death:
- Do not clean the tractor while the engine is running.
- To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.
- When storing the tractor, remove the key from the key switch to avoid unauthorized persons from operating the tractor and getting injured.

**STORING THE TRACTOR**

**IMPORTANT:**
- When washing the tractor, be sure to stop the engine. Allow sufficient time for the engine to cool before washing the tractor.
- Cover the tractor after the muffler and the engine have cooled down.

If you intend to store your tractor for an extended period of time, follow the procedures outlined as follows. These procedures will insure that the tractor is ready to operate with minimum preparation when it is removed from storage.

1. Check the bolts and nuts for looseness, and tighten them if necessary.
2. Apply grease to the areas of the tractor where bare metal will rust and to pivot areas.
3. Detach the weights from the tractor body.
4. Inflate the tires to a pressure a little higher than usual.
5. Change the engine oil and run the engine to circulate oil throughout the engine block and internal moving parts for about five minutes.
6. With all implements lowered to the ground, coat any exposed hydraulic-cylinder-piston-rods with grease.
7. Remove the battery from the tractor. Store the battery following the battery-storage-procedures. See 1.2 Dealing with the battery when storing the tractor for a long period on page 126.
8. Keep the tractor in a dry place, where the tractor is sheltered from the elements. Cover the tractor.
9. Store the tractor indoors in a dry area that is protected from sunlight and excessive heat. If the tractor must be stored outdoors, cover it with a waterproof tarpaulin. Jack the tractor up and place blocks under the front and rear axles so that all four tires are off the ground. Keep the tires out of direct sunlight and extreme heat.

**REMOVING THE TRACTOR FROM STORAGE**

1. Check air pressure of the tires and inflate the tires if they are low.
2. Jack the tractor up and remove the support blocks from under the front and rear axles.
3. Before installing the battery, be sure that it is fully charged.
4. Install the battery.
5. Check the fan belt tension.
6. Check all fluid levels:
   - engine oil
   - transmission/hydraulic oil
   - engine coolant
   - any attached implements
7. Start the engine. Check all gauges. If all gauges are functioning properly and reading normal, move the tractor outside. Once outside, park the tractor and let the engine idle for at least five minutes.
8. Shut the engine off and walk around tractor and make a visual inspection looking for evidence of oil or water leaks.
9. With the engine fully warmed up, release the parking brake and test the brakes for proper adjustment as you move forward. Adjust the brakes if it is necessary for the brakes to be adjusted.
HOW TO REMOVE THE LOADER

WARNING
To avoid personal injury or death:
• Make sure that an approved bucket is attached before removing the loader from the tractor.
• For removing the loader, choose flat and hard ground, preferably concrete.
• If the ground surface is soft, place suitable planks on the ground for the bucket and the stand.
• When starting the engine or using the loader-control-lever, always sit in the operator's seat.
• Make sure that the bucket and the stand are at ground level.

1. Set the engine speed to the following speed, and then raise the boom until the bucket pin is the height of the boom fulcrum pin.

| Engine speed | 1800 rpm |

2. Dump the bucket fully.

3. Slide the stand lever downward direction completely, and release the stand from the stand hook.

4. Get the bucket rolled back until its bottom is positioned the following angle with respect to the ground surface.

| Angle between ground surface and bucket bottom (A) | About 20 degrees |
5. Lower the boom and raise the front wheels slightly.

**IMPORTANT:**
- When raising the front wheels, the stands are not to be grounded.

6. Slide the mounting levers of both sides to the upward direction as shown in the following figure.

7. Slowly move the loader-control-lever to the **rollback** position to raise the side frames of the loader up and out of the receivers of the main frames as shown in the following figure.

8. Down the mounting levers of both sides as shown in the following figure.

9. Back the tractor so that the quick coupler is positioned at the back of side frame as shown in the following figure.

10. Stop the engine, and slowly release all hydraulic pressure by moving the loader-control-lever in all directions.
11. When the third-function-kit is mounted, remove the connector. Connect the caps to the connectors of mobile side and tractor side.

12. Unfasten the seat belt, turn the safety-lock-button counterclockwise to unlock it, and then raise the lever until it stops.

13. Put the mobile part on the coupler stay (1). Put the mobile part on the coupler stay (2) for cab model.
14. Place the protective caps and plugs on the ends of the quick coupler.

15. Wear the seat belt and slowly back the tractor away from the loader.

**STORING THE LOADER**

1. Store the loader in a clean, dry place.
2. Make sure that the loader is properly supported.
3. Check the hydraulic hoses and connections. Repair or replace the hydraulic hoses if necessary.
4. Repair or replace any worn, damaged, or missing parts.
5. Lubricate the loader as described 1. Lubricating the loader on page 139.
6. Apply a coat of grease to all exposed cylinder rods to prevent rust.
7. Repaint worn or scratched parts.
HOW TO REINSTALL THE LOADER

WARNING
To avoid personal injury or death:
• When starting the engine and operating the loader-control-valve, always sit in the operator's seat.

1. Slowly drive the tractor between the side frames of the loader until the rear portion of both side frames touches the main frames as shown in the following figures.

2. Stop the engine and unfasten the seat belt.
3. Remove the protective cap.

REINSTALLING THE LOADER

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4. Connect the quick coupler and lower the lever until it stops, and then turn the safety-lock-button clockwise.

5. When mounting the third-function-kit, remove the caps from the connectors of mobile side and tractor side. Connect the connectors and the caps as shown in the follow figures.

6. Make sure that the mounting levers of both sides are at their low position as shown in the follow figures.

7. Fasten the seat belt. Start the engine and run at the following speed.

| Engine speed | 1800 rpm |
8. Slowly move the loader-control-lever to the **up** position (boom raise direction) until left and right guide bosses of side frames (1) touches the main frames.

![Diagram](image1)

**IMPORTANT:**
- Do not attempt to install the side frames onto the main frames with the boom cylinders fully retracted. Be sure to expose the boom-cylinder-rods at least the following length before installing the loader.

![Diagram](image2)

**IMPORTANT:**
- Make sure that the guide bosses of the side frames are engaged by the bosses of the main frames. Otherwise the loader in use may drop off the main frames, thereby damaging the tractor itself.

9. Slowly move the loader-control-lever to the **dump** position to lower the side frames into the main frames, and engage the left and right bosses of the side frames to the bosses of the main frames, as shown in the following figure (encircled (B)).

![Diagram](image3)
10. Make sure that the left and right bosses of the side frames are engaged by the bosses of the main frames. Then slowly move the loader-control-lever to the dump position until the bucket tilts down the following degrees to the ground.

![Diagram](1JJD00080A01)

(1) Bucket (A) Angle between bucket bottom and ground

(2) Tip of the stand

**IMPORTANT:**
- Make sure that the tips of the stands are off the ground.

11. Slowly move the loader-control-lever to the down position to lift the front wheels slightly with the loader until the mount hooks are completely mounted on the main frame as shown in the following figure.

![Diagram](1JJD00081A02)

(1) Mount hook (2) Mounting lever

**IMPORTANT:**
- Make sure that the hooks at both sides are properly mounted on the main frame.

12. Slowly move the loader-control-lever to the up position until the cutting edge of the bucket comes up slightly off the ground. Then make sure that the right and left mounting levers can not be activated. Do not use the machine if the cutting edge of the bucket is off the ground but the mount hooks are unlocked.

**IMPORTANT:**
- Make sure not to pinch the wire harness in the side frame when mounting the third-function-kit.
13. Raise the boom until the bucket-fulcrum-pin comes up to the height of the boom-fulcrum-pin.

14. Make sure that the stand lever is at its low position as shown in the following figure.

15. Slowly dump the bucket until the stand touches the boom.

**IMPORTANT:**
- Do not fold up the stand while the boom is around its highest position. Otherwise the stand links may get under an excessive load.

16. Slide the stand lever upward direction, and then slide the stand lever left side completely as shown in the following figure.

**IMPORTANT:**
- Do not force the stand lever if it gets twisted halfway and fails to stow away the stand. In such case, lower the stand lever and move the bucket to the full scoop position. Then go back to step 13. and take its following steps.

17. Hold the stand by stand hook.
ADJUSTING THE HEIGHT OF THE LIFTING STAND

If the stand does not get hooked and fold up successfully, readjust the height of lifting stand.

1. Raise the boom until the bucket-fulcrum-pin comes up to the height of the boom-fulcrum-pin.
2. Roll back the bucket to maximum.

3. Stop the engine.
4. Make sure that the stand lever is at its low position as shown in the following figure.

5. Apply the adjusting bolts in the parts box to both the right and left stand adjusting blocks as shown in the following figure.

IMPORTANT:
- Be sure to apply the adjusting bolts all the way to prevent the damage of the stand.

NOTE:
- There is no need to tighten up the lock nuts.
6. Move the loader-control-lever to the **dump** position, and check to see if the stands are folded as specified.

   ![Diagram](image1)

   - **A** Good
   - **B** No good
   - **(A)** Encircled part gets folded backward into position
   - **(B)** Encircled part gets stretched forward into position

**IMPORTANT:**
- Keep the engine off and move the bucket to the dump position.

**NOTE:**
- If either of the links gets stuck in the wrong position, move the bucket back to the full roll back position and extend the adjusting bolt at the wrong side by the following length.

   ![Diagram](image2)

   - **(A)** Extend by 1 mm to 2 mm

7. Fasten the seat belt, and start the engine.
8. Move the loader-control-lever to the **dump** position until the hydraulic pressure gets relieved.
9. Lower the boom to put the bucket on the ground and stop the engine.

10. Lift the stand on the right side of the loader up to the position by hand shown in the following figure.

   ![Diagram](image3)

   - **(1)** Stand hook
   - **(2)** Stand pin
   - **(A)** Almost the same length
   - **(B)** Hold up by hand

11. Reposition the adjusting bolt until it touches the stand.

   ![Diagram](image4)

   - **(1)** Adjusting bolt

**NOTE:**
- The position of the adjusting bolt is provisional and may be roughly set for now.

12. Adjust the adjusting bolt in the same way as for the stand on the left side of the loader.
13. Position the stand lever as shown in the figure.

14. Turn the adjusting bolt on the right side of the loader to set the stand pin as shown as follows.

15. Lock the stand pin using the lock nut.

16. Turn the adjusting bolt and lock the stand pin on the left side of the loader in the same way as for the right side.

17. Look at the right and left stands to make sure that the heads of the adjusting bolts are pressed upon the stands.

IMPORTANT:
- Be careful not to allow the stands to go beyond their adjustable range. Otherwise the stands may get damaged.
18. Be sure that the stands run parallel with the loader pipe.

19. Slide the stand lever in the upward direction and make sure that the stand gets locked.

20. Set the stand lever to the low position.

21. Fasten the seat belt.

22. Get the engine started, roll back the bucket and move up the boom, both to maximum.

23. Stop the engine.

24. Move the loader-control-lever to the dump position until the bucket comes to a complete stop.

25. Make sure that the stands are folded as specified.

26. Fasten the seat belt.

27. Get the engine started and raise the engine speed up to the following speed.

| Engine speed | 1800 rpm |

28. Slowly dump the bucket until the stand touches the boom.

29. Slide the stand lever upward direction, and then slide the stand lever left side completely as shown in the following figure.
30. Hold the stand by stand hook.

![Diagram](image1)

1. Stand 2. Stand hook

31. Make sure that the stand lever is at its upside position.

32. Move the loader-control-lever to the dump position until the hydraulic pressure gets relieved.

33. Look at the right and left side of the stands to make sure that the heads of the adjusting bolts are not pressed upon the stand.

![Diagram](image2)

[A] Good  [B] No good

(1) Adjusting bolt  (2) Stand  (3) Link 3

(A) Not pressed  (B) Pressed

**NOTE:**
- There is no problem with the link 3 in contact with the bolt, as shown in the preceding figure.
HOW TO REMOVE THE BACKHOE

WARNING
To avoid serious injury or death:
• Before starting the engine, always sit in the operator’s seat of the tractor.
• Before getting off the tractor, make sure that the PTO lever is off and the range-gear-shift-lever is in the neutral position. Then set the parking brake.
• Keep hands, feet, and body from between the tractor and the backhoe. Never allow any part of body under the machine.
• Before leaving the operator’s seat of the backhoe, fully lower the boom to the ground.
• Before removing the backhoe, set the swing-lock-pin.

IMPORTANT :
• Before removing the backhoe, set the engine speed as follows.

<table>
<thead>
<tr>
<th>Engine speed</th>
<th>Approximately 1800 rpm</th>
</tr>
</thead>
</table>

• For removing the backhoe, locate the tractor, the loader, and the backhoe on a flat level and hard surface, preferably concrete. If the surface is soft, place a board on the ground for the bucket and stabilizers.

1. Set the swing-lock-pin to prevent the pivoting of the boom before removing the backhoe.

2. Stand beside the rear tire, fold the boom and dipper completely, and dump the bucket to approximately 60 degrees.

3. Keep the stabilizer pads at height of the following value.

(A) Height of stabilizer pads

Height of stabilizer pads  About 381 mm (15.0 in.)
4. Lower the boom, and raise the rear wheels slightly off the ground. While the mounting levers are pulled, the mounting pins of the main frame may turn in both directions. When the mounting pins come to the release position, push the levers in the holding hole to release the mounting pins.

5. Slowly raise the boom to disengage the backhoe from the tractor.

6. Raise the backhoe by operating the stabilizers to the lowering direction until the mount bars hit to the guide stopper on the support hooks.

7. Move the tractor forward from the backhoe to the following value.

| Distance between the tractor and the backhoe | About 203 mm (8.0 in.) |

**IMPORTANT:**
- Be careful not to damage or break the hoses when moving the tractor.

8. Lower the main frame and the swing frame onto the ground by operating the boom and the stabilizer-control-levers.

9. Shut off the engine and set the parking brake.

10. Slowly release all hydraulic pressure by moving the hydraulic control levers of the backhoe in all directions.
11. Disconnect the hydraulic hoses in the following manner.
   a. Disconnect the inlet hose, the outlet hose, and the power-beyond-hose from the tractor.
   b. Connect the outlet hose of the tractor to the coupler of the power-beyond-pipe.
   c. Cap the other couplers.

12. Restart the engine.

13. Then drive the tractor and loader slowly away from the backhoe.

14. Shut the engine off, and remove the key from the tractor. Set the parking brake.

IMPORTANT:
   • The entire 3-point hitch can now be reinstalled on the tractor for use with other rear mount implements.
   • Be sure that there is sufficient ballast in the rear tires and an implement is attached to the 3-point hitch before using the loader with the backhoe removed.

STORING THE BACKHOE

IMPORTANT:
   • When storing the backhoe, install the dust caps onto the hydraulic fittings of the backhoe to prevent contamination.

1. Store the backhoe in a dry place.
2. Apply a coat of grease to all exposed rods of the cylinder to prevent rusting.
3. If you store the backhoe outside, cover the backhoe with suitable weather cover. Weather cover will keep moisture, dirt, and other airborne debris from getting into the system.
4. Repair or replace any worn, damaged or missing parts.
REINSTALLING THE BACKHOE

HOW TO REMOVE THE BACKHOE

**WARNING**
To avoid serious injury or death:

- When starting the engine, always sit in the operator’s seat.
- When getting off the tractor, make sure that the PTO lever is off and the range-gear-shift-lever is in the neutral position. Set the parking brake.
- Keep hands, feet, and body from between the tractor and the backhoe. Never allow any part of body under the machine.
- Make sure that the PTO of the tractor is disengaged.

**IMPORTANT :**
- Before reinstalling the backhoe, set the engine speed to low-idle.

1. Remove the 3-point hitch and / or drawbar (if equipped).
2. Detach the mower if attached in position.
3. Make sure that the swing-lock-pin is installed.
4. Slowly back the tractor and the loader, centering to the main frame of the backhoe.
5. Stop the tractor keeping at the following distance from the backhoe.

<table>
<thead>
<tr>
<th>Distance between the tractor and the backhoe</th>
<th>254 mm to 304 mm (10.0 in. to 12.0 in.)</th>
</tr>
</thead>
</table>

6. Shut the engine off and set the parking brake.
7. Connect the inlet hose, outlet hose, and the power-beyond-hose of the backhoe to the outlet hose, the power-beyond-pipe and the return pipe of the tractor.

8. Pull the mounting levers for left and right mounting pins of the main frame of the backhoe to release mounting pins.

9. Restart the engine.

**WARNING**
To avoid serious injury or death:

- Do not move the joystick-control-lever to the swing position.
10. Stand beside the rear tire. Move the boom to fully raising position and raise the backhoe by operating the stabilizers until the mount bar on the main frame of the backhoe is slightly higher than the support hooks on the main frame of the tractor.

11. Move the tractor backward until the support hooks on the main frame of the tractor are just beneath the mount bars on the main frame of the backhoe.

12. Lower the mount bars onto the support hooks by operating the stabilizer and the boom-control-levers.

13. Lower the boom slowly and interlock the mounting pins with the support hooks.

14. Continue to slowly lower the boom so that the rear wheels are slightly off the ground.

**NOTE:**
- If the support hooks are not parallel to the mount bars, adjust them with the stabilizers.

15. Operate the boom or the stabilizers to maximum lift height, and insert the lock pin of the boom.

**IMPORTANT:**
- If the slide bar of the mounting pins is inserted to the upper hole, the mounting pin comes off and the backhoe might come off. Therefore, please make sure to insert the slide bar to the lower hole.

**NOTE:**
- Make sure that the left and right mounting pins are in holding position.
- When mounting, check the gap between the mounting bar and the link. If there is a gap, push the link in.

The lock pins will click.

16. Operate the boom or the stabilizers to maximum lift height, and insert the lock pin of the boom.

**IMPORTANT:**
- If the slide bar of the mounting pins is inserted to the upper hole, the mounting pin comes off and the backhoe might come off. Therefore, please make sure to insert the slide bar to the lower hole.

**NOTE:**
- Move the tractor, the loader, the backhoe to a vacant area and cycle all backhoe functions. Cycling all backhoe functions will check their operation and flow oil back through the system, filtering it, and refilling each circuit. Check the
hydraulic oil level before putting the backhoe into full operation. See LUBRICANTS, FUEL, AND COOLANT TABLE on page 115 for oil type and correct level.
### TROUBLESHOOTING

**ENGINE TROUBLESHOOTING**

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

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Cause</th>
<th>Countermeasure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine is difficult to start or will not start.</td>
<td>• No fuel flow.</td>
<td>• Check the fuel tank and the fuel filter. Replace the filter if necessary.</td>
</tr>
<tr>
<td></td>
<td>• Air or water is in the fuel system.</td>
<td>• Check to see if the fuel line coupler bolt and nut are tight. • Bleed the fuel system. See 1. Bleeding the fuel system on page 137. • Remove water from the system and replace the fuel filter.</td>
</tr>
<tr>
<td></td>
<td>• In winter, oil viscosity increases and engine revolution is slow.</td>
<td>• Use oils of different viscosity, depending on ambient temperatures. • Use engine block heater (option).</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. • Charge the battery. • In cold weather, always remove the battery from the engine, charge and store the battery indoors. Install the battery on the tractor only when the tractor is going to be used.</td>
</tr>
<tr>
<td>Insufficient engine power.</td>
<td>• Insufficient or dirty fuel.</td>
<td>• Check the fuel system.</td>
</tr>
<tr>
<td></td>
<td>• The air cleaner is clogged.</td>
<td>• Clean or replace the air cleaner element.</td>
</tr>
<tr>
<td>Engine stops suddenly.</td>
<td>• Insufficient fuel.</td>
<td>• Refuel. • Bleed the fuel system if necessary.</td>
</tr>
<tr>
<td>Exhaust fumes are colored.</td>
<td>Black</td>
<td>• Fuel quality is poor. • Too much oil. • The air cleaner is clogged.</td>
</tr>
<tr>
<td></td>
<td>Blue white</td>
<td>• The inside of exhaust muffler is damp from fuel.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Injection nozzle trouble.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fuel quality is poor.</td>
</tr>
<tr>
<td>Engine overheats.</td>
<td>• Engine overloaded.</td>
<td>• Shift to lower gear or reduce load.</td>
</tr>
<tr>
<td></td>
<td>• Low coolant level.</td>
<td>• Fill cooling system to the correct level. Check the radiator and the hoses for loose connections or leaks.</td>
</tr>
<tr>
<td></td>
<td>• Loose or damaged fan belt.</td>
<td>• Adjust or replace the fan belt.</td>
</tr>
<tr>
<td></td>
<td>• Dirty radiator core or grille screens.</td>
<td>• Remove all trash.</td>
</tr>
<tr>
<td></td>
<td>• Coolant flow route corroded.</td>
<td>• Flush the cooling system.</td>
</tr>
</tbody>
</table>

If you have any questions, consult your local KUBOTA Dealer.
Consult your local KUBOTA Dealer for further details of the following options.

- 18 x 8.5-10 Turf Tire
- 26 x 12.0-12 Turf Tire
- Engine block heater
  For facilitating starting and reducing warm up period in cold weather.
- Rear work light
  For high visibility for night work
- Rear wheel weight
- Sunshade for ROPS
- Tool box
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