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KUBOTA Corporation

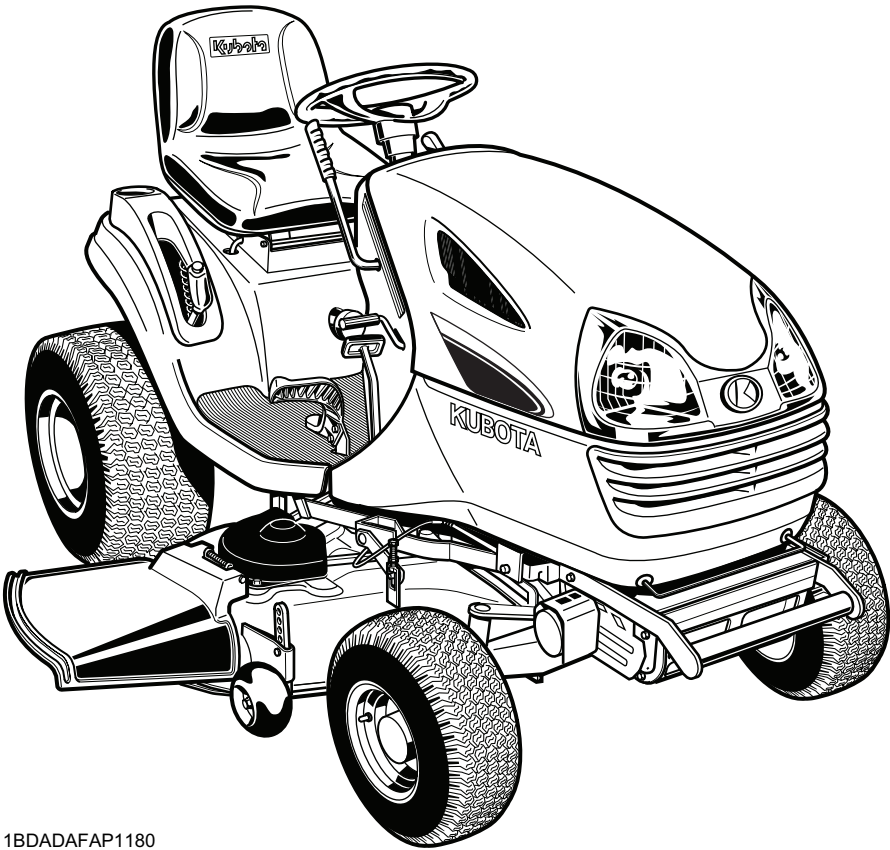
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Code No. K1032-7122-1

OPERATOR'S MANUAL

KUBOTA LAWN TRACTOR

MODELS **T1880**
T2080
T2380



1BDADAFAP1180

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READ AND SAVE THIS MANUAL



ABBREVIATION LIST

Abbreviations	Definitions
API	American Petroleum Institute
PTO	Power Take Off
PT	Permanent Type (=Ethylene glycol anti-freeze)
rpm	Revolutions Per Minute
SAE	Society of Automotive Engineers
KRA	Kubota Reverse Awareness System

UNIVERSAL SYMBOLS

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

 Safety Alert Symbol

 Gasoline Fuel

 Brake

 Parking Brake

 Engine-Stop

 Engine-Run

 Starter Control

 Power Take-Off Clutch Control-Off Position

 Power Take-Off Clutch Control-On Position

 Mower-Lowered position

 Mower-Raised position

 Cutting Height

 Headlight

 Headlight-ON

 Headlight-OFF

 Fast

 Slow

 Engine Speed Control

 Choke

 Battery

 Oil Pressure

 Cruise Control

California Proposition 65

 **WARNING** 

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

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.

This spark ignition system complies with Canadian ICES-002.

KUBOTA Corporation is ...

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

To achieve this status, the company has through the years diversified the range of its products and services to a remarkable extent. Nineteen plants and 16,000 employees produce over 1,000 different items, large and small.

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

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

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

FOREWORD

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



SAFETY FIRST

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



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



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



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

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

NOTE : Gives helpful information.

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SAFE OPERATION

Careful operation is your best insurance against an accident. Read and understand this section carefully before operation. All operators, no matter how experienced they may be, should read this and other related manuals before operation of the machine or any implement attached to it. It is the owner's obligation to instruct all operators in safe operation.

This cutting machine is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

1. BEFORE OPERATING

1. Know your equipment and its limitations. Read, understand and follow all instructions in this manual before attempting to start and operate the machine.
2. Know the controls and how to stop quickly.
3. Pay special attention to the safety labels on the machine and mower.
4. The exhaust gas from the muffler is very hot. To prevent fire, do not expose dry grass, mowed grass, oil or any other combustible materials to exhaust gas. Also keep the engine and muffler clean all the time.
5. Never wear loose, torn, or bulky clothing. It may catch on moving parts or controls, leading to the risk of accident. Safety boots or shoes, eye and hearing protection, gloves, etc. are recommended.
6. Do not operate machine or any implement attached to it while under the influence of alcohol, drugs, or other substances or while fatigued.
7. Check brakes, and other mechanical parts for faulty adjustment and wear. Replace worn or damaged parts promptly. Check the tightness of all nuts and bolts regularly. (For further details, see "MAINTENANCE" section.)
8. Keep the machine and attachments in good operating condition and keep safety devices in place and in proper working condition.
9. This machine is equipped with many safety devices. Do not attempt to remove or alter them.
10. Keep all shields and guards in place. Replace all missing or damaged items for your safety.
11. Never allow any bystanders around or near machine during operation.
Be sure the area is clear of other people before mowing.
Stop machine if anyone enters the area.
12. Before allowing other people to use your machine, explain proper operation to them and have them read this manual before operation.
13. Never allow passengers or non-qualified operators on the machine at any time. You must operate the machine from the seat only.
14. Carefully check the area to be mowed and clear any objects such as rocks, bottles, cans, toys, etc., that may damage the mower, the grass catcher or cause personal injury.

15. Keep your machine clean. Dirt, grease, and trash accumulations contribute to fires or lead to personal injury.
16. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
Check the mower blade mounting bolts for proper tightness at frequent intervals.
17. Use only implements recommended by KUBOTA. Use proper ballast to front or rear of machine to reduce the risk of upsets. Follow the "SAFE OPERATION" procedures, specified in the Equipment's Manual.
18. Follow the maintenance recommendations. See "MAINTENANCE" section.
19. It is recommended that your machine be thoroughly inspected at least once a year by an authorized KUBOTA Dealer.

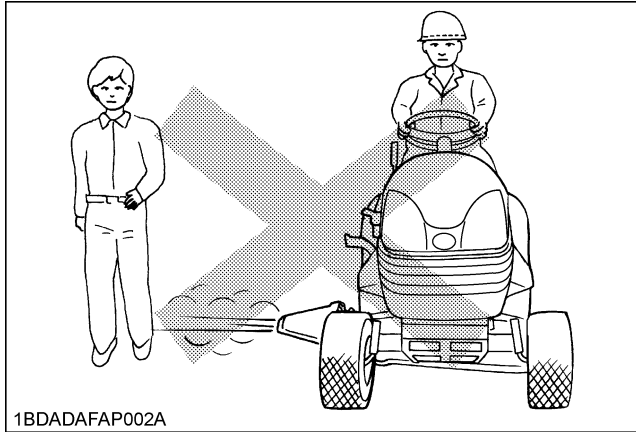
2. OPERATING

◆ Starting

1. Never start engine or operate levers from anywhere other than the seat.
2. 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 both the mower clutch and the Power Take-Off (PTO) are disengaged.
3. Do not start engine by shorting across starter terminals or by by-passing the safety start switch. The machine may start and move if normal starting circuitry is bypassed.
4. Do not operate or idle engine in a poorly ventilated area. Exhaust contains poisonous carbon monoxide, a colorless and odorless gas.

◆ Working

1. Watch where you are going at all times. Watch for and avoid obstacles. Be alert near trees and other obstructions.
2. When working in groups, always let others know what you are doing ahead of time.
3. Never try to get on or off a moving machine.
4. When using any attachments, never direct discharge material toward bystanders. Do not allow anyone near the attachments while in operation.
Do not mow when bystanders are present in the mowing area.



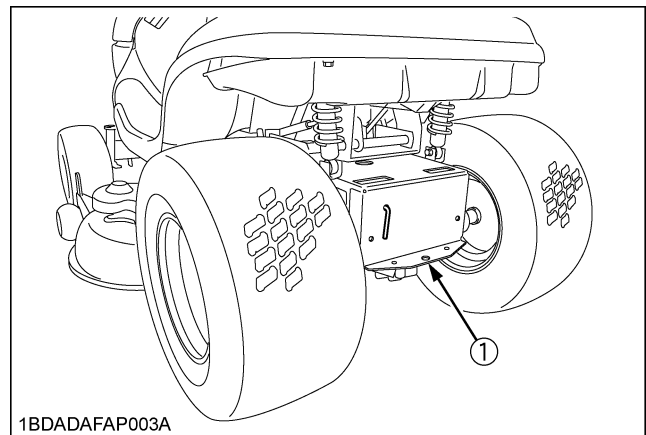
5. To reduce fire hazards, keep the engine exhaust area free of grass or leaves.
6. Slow down before turning.
7. Turn off blades when not mowing.
8. Mow only in daylight.
9. Be sure rotating blades and engine are stopped and the key is removed before placing hands or feet near blades.
10. Shut the engine off and wait for all movement to stop before removing grass catcher or unclogging chute. [if equipped]
11. Know what is behind you before overriding the KRA system. Do not override the KRA system unless absolutely necessary and safe to do so. KUBOTA strongly recommends against overriding the KRA system.
12. When mowing for the first time, cut the grass higher than desired.
This will uncover any unseen object that may damage the mower or grass catcher.
13. Always inspect the mower and grass catcher after striking any foreign object. This will insure that all mower and grass catcher parts are safe and secure and not damaged.
Repair or replace any damaged parts before re-starting.
14. Use only implements recommended in this manual.
Use proper ballast to front or rear of machine to reduce the risk of upsets. Follow the "SAFE OPERATION" procedures specified in the manuals included with the equipment.
15. Do not operate the mower without the entire grass catcher or the discharge shield in place.
Be aware of the mower discharge direction and do not point it at anyone.
16. Watch for traffic when operating near or crossing roadways.
17. Never leave a running machine unattended.
Always turn off blades, set parking brake, stop engine, and remove the key before dismounting.
18. Be extremely alert for all other traffic when operating the mower and grass catcher near public roads or highways.

19. Do not operate where machine could tip or slip.
Do not operate near ditches, holes, embankments, or other terrain which may collapse under the machine's weight. The risk of machine tip-over is increased when the ground is loose or wet.

◆ Pulling loads

Use extra care when pulling loads to reduce the risk of serious personal injury or death due to a machine tip-over.

- a) Pull only from the hitch. Never attach loads to the axle housing or any other point above hitch.
- b) Limit loads to those you can safely control.
- c) Do not turn sharply.
- d) Use care when backing.



(1) Hitch hole

◆ Operation on slopes

Slopes are a major factor related to loss-of-control and tip-over accidents, which can result in severe injury or death. All slopes require extra caution. If you cannot back up the slope or if you feel uneasy on it, do not mow it.

DO

1. Mow up and down slopes, not across, to avoid machine tip-over. Stay off hills and slopes too steep for safe operation.
2. Remove obstacles such as rocks, tree limbs, etc.
3. Stay alert for holes in the terrain and other hidden hazards. Keep away from drop-offs. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
4. Use slow speed.
5. Follow the KUBOTA's recommendations for wheel weights or counterweights to improve stability.
6. The weight of grass in the grass catcher may increase the possibility of tip over.
7. Keep all movement on slopes slow and gradual. Do not make sudden changes in speed or direction.
8. Avoid starting or stopping on a slope. If tires lose traction, disengage the blades and proceed slowly straight down the slope.

9. If the machine stops going uphill, disengage PTO and back slowly down.
10. Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tip-over or loss of control.
11. Use special caution when changing direction on slopes.

DO NOT

1. Do not turn on slopes unless necessary and then turn slowly and gradually downhill, if possible.
2. Do not mow near drop-offs, ditches, or embankments. The machine could suddenly turn over if a wheel falls over the edge of a cliff or ditch, or if an edge caves in.
3. Do not mow on wet grass. Reduced traction could cause sliding.
4. Do not try to stabilize the machine by putting your foot on the ground.
5. Do not use grass catcher on steep slopes.
6. Do not stop or start suddenly when going uphill or downhill.
7. Never "freewheel". Do not let the machine travel downhill with HST pedal at neutral position.
8. Do not modify or alter the machine.

◆ Children

Tragic accidents can occur if the operator is not alert to the presence of children. Children are attracted to the machine and the mowing activity. Never assume that children will remain where you last saw them.

1. Keep children out of the mowing area and under the watchful care of another responsible adult.
2. Be alert and turn the machine off if children enter the area.
3. Before and when backing, look behind and down for small children.
4. Never carry children. They may fall off and be seriously injured or interfere with safe machine operation.
5. Never allow children to operate the machine, even under adult supervision.
6. Use extra care when approaching blind corners, shrubs, trees, or other obstructions that might hide children from sight.

◆ Operators, age 60 years and above

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

◆ Stopping

1. Make sure that the machine has come to a complete stop before dismounting.

2. Before dismounting, disengage the PTO, lower all implements, place all control levers in their neutral positions, apply parking brake, turn off the engine and remove the key.
3. Do not park the machine on a steep incline. Park on relatively flat areas.

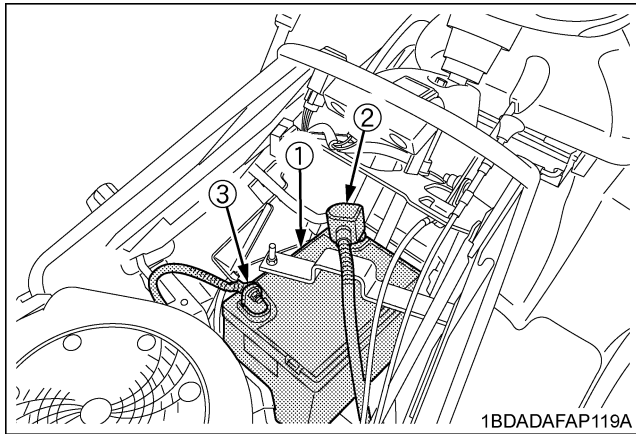
3. TRANSPORTING

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

4. SERVICING

1. Before servicing the machine, park the machine on a firm, level surface, set the parking brake, stop the engine and remove the key.
2. To avoid injury, do not adjust, unclog or service the mower or grass catcher with the engine running. Make sure rotating blades are stopped before dismounting the machine.
3. Disengage power to attachment(s), stop the engine and remove the key before making any repairs or adjustments.
4. Allow the machine to cool off before servicing the engine, muffler, etc.
5. Keep machine free of grass, leaves, or other debris build-up.
6. Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.
 - a) Use only an approved container.
 - b) Never remove fuel cap or refuel with the engine running. Allow engine to cool before refueling. Do not smoke while refueling or when standing near fuel.
 - c) Never refuel the machine indoors and always clean up spilled fuel or oil.
 - d) Never store the machine or fuel container inside where there is an open flame, such as in a water heater.
7. Do not change the engine governor setting or overspeed the engine.
8. Never run a machine inside a closed area.
9. Mower blades are sharp and can cut your hands. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.
10. Keep nuts and bolts, especially blade attachment bolts, tight and keep equipment in good condition.

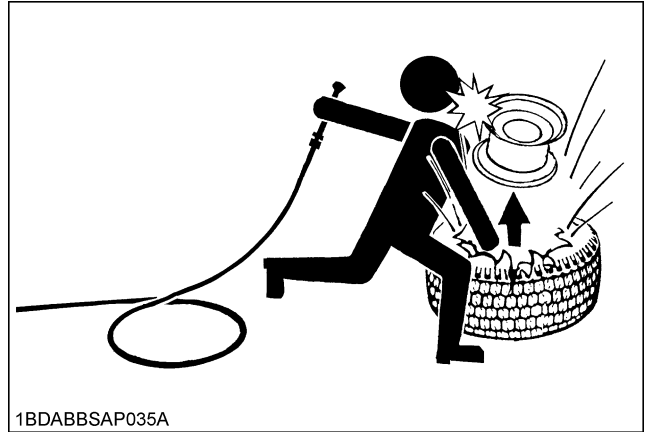
11. Do not smoke when working around the battery.
Keep all sparks and flames away from battery. The battery presents an explosion hazard because it gives off hydrogen and oxygen...especially when recharging.
12. Before "JUMP STARTING" a dead battery, read and follow all of the instructions to help protect the alternator from damage due to extreme load changes. (See "JUMP STARTING" in "OPERATING THE ENGINE" section.)
Batteries contain sulfuric acid and produce explosive gases. Follow the instructions below to prevent personal injury.
 - Wear eye and skin protection.
 - Keep sparks and flame away.
 - Always have adequate ventilation while charging or using the battery.
13. Keep first aid kit and fire extinguisher available at all times.
14. Disconnect the battery's negative (-) cable before working on or near electric components.
15. Do not use or charge the refillable type battery if the fluid level is below the LOWER (lower limit level) mark. Otherwise, the battery component parts may prematurely deteriorate, which may shorten the battery's service life or cause an explosion. Check the fluid level regularly and add distilled water as required so that the fluid level is between the UPPER and LOWER levels.
16. To avoid sparks from an accidental short circuit, always disconnect the battery's negative (-) cable first and connect it last.



- (1) Battery
(2) Positive cable (+)
(3) Negative cable (-)

17. Make sure cotter pins and cir clips are properly secured on the front and rear wheels, respectively.
18. Never tamper with safety devices.
Check their proper operation regularly.
19. Check brake operation frequently. Adjust and service as required.
20. Properly dispose of used lubricants, filters, batteries, and other such components.

21. Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment.
22. Always maintain the correct tire inflation pressure. Do not inflate tires above the recommended pressure shown in the Operator's Manual.

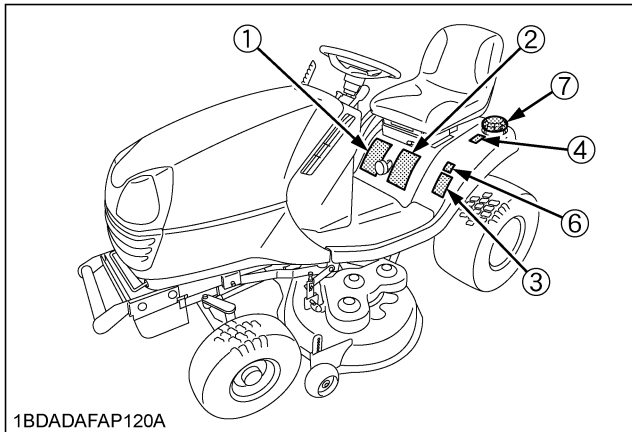


23. Securely support the machine when changing wheels or the wheel tread width.
24. Make sure that wheel bolts have been tightened to the specified torque.

5. STORAGE

1. Keep the machine and supply of fuel in locked storage and remove the ignition key to prevent children or others from playing or tampering with them.
2. When machine is to be stored for a long time, disconnect battery cables or remove the battery. Always remove the negative (-) cable first and reinstall the negative (-) cable last.
3. Do not store the machine with fuel in the tank inside a building where fumes may ignite. Allow the engine to cool before storing.
4. To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without adequate ventilation.
5. To reduce fire hazards, clean the machine thoroughly before storage. Dry grass and leaves around the engine and mufflers may ignite.

6. DANGER, WARNING AND CAUTION LABELS

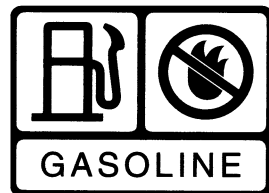


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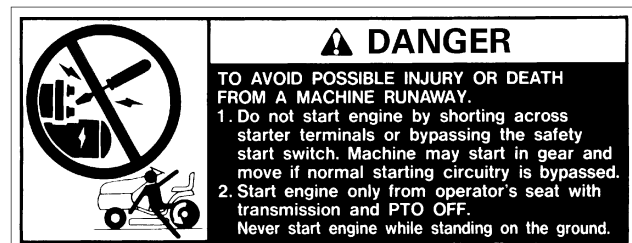
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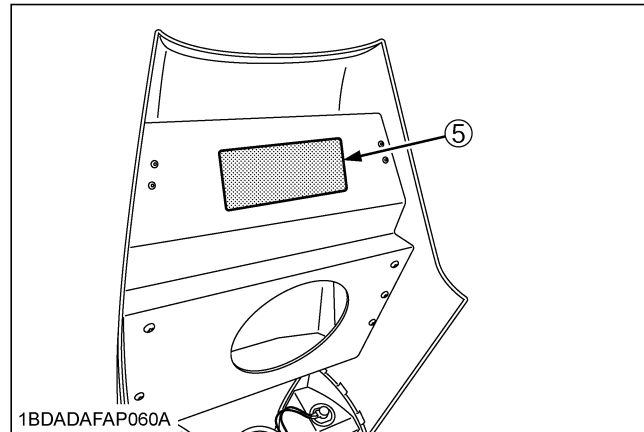
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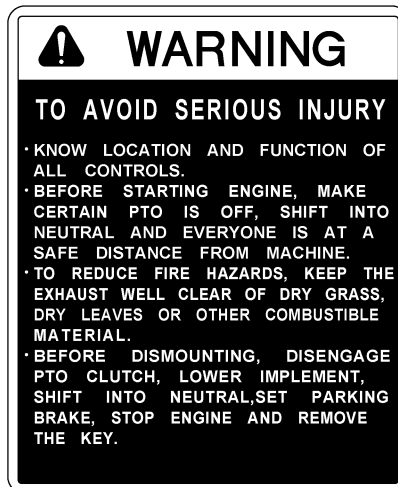


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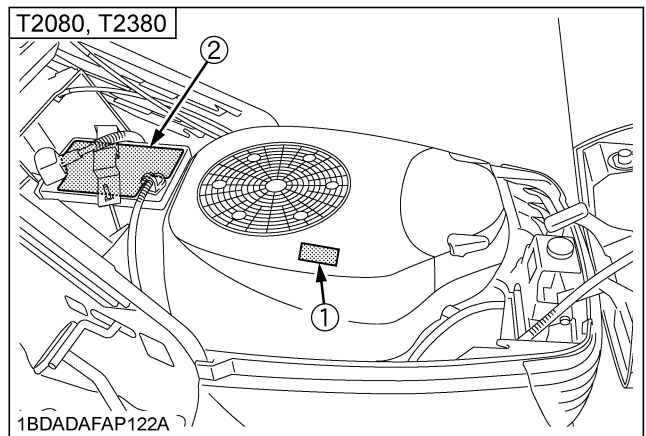
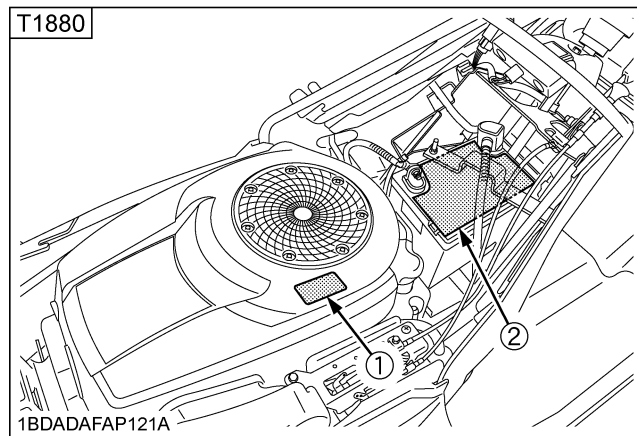


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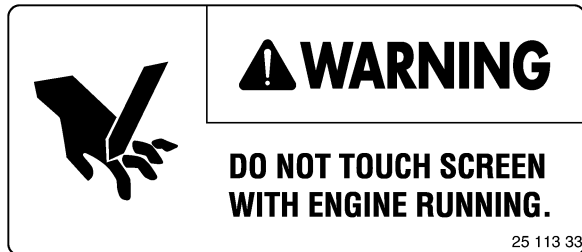
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1BDAHAMAP005A



(1) Part No. E7194-4719-1



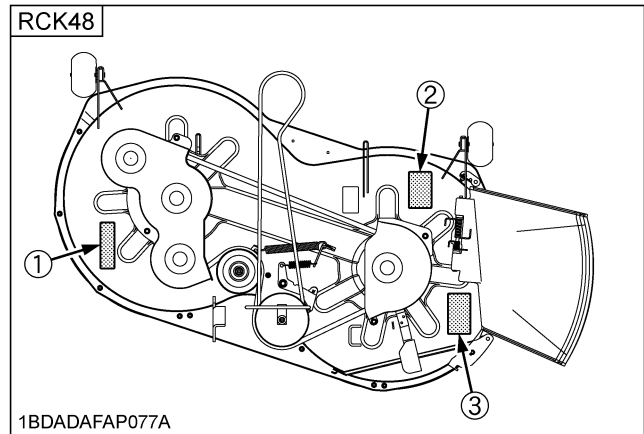
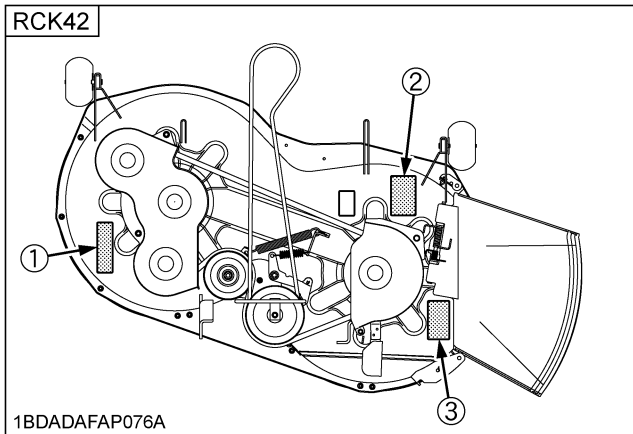
1BDADAFAP0540

(2) Part No. K1221-6118-1



1BDFAIAP136A

1BDADAFAP1310



(1) Part No. K5617-7311-1



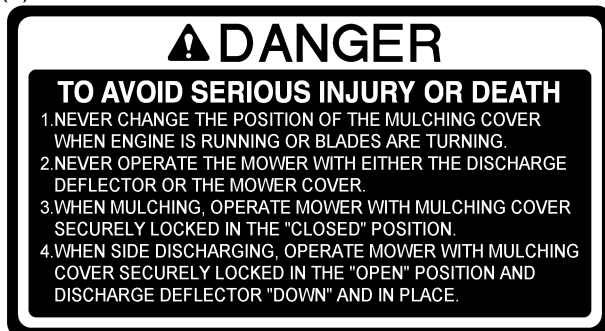
1BDABBSAP0030

(2) Part No. K5617-7312-1



1BDABBSAP0020

(3) Part No. K5184-7317-2



1BDADAFAP0780

1BDADAFAP0790

7. CARE OF DANGER, WARNING AND CAUTION LABELS

1. Keep danger, warning and caution labels clean and free from obstructing material.
2. Clean danger, warning and caution labels with soap and water, and dry with a soft cloth.
3. Replace damaged or missing danger, warning and caution labels with new labels from your KUBOTA Dealer.
4. If a component with danger, warning and/or caution label(s) affixed is replaced with new part, make sure the label(s) is(are) attached in the same location(s) as the replaced component.
5. Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

SERVICING OF MACHINE

After reading this manual thoroughly, you will find that you can do some of the regular maintenance yourself. Your dealer is interested in helping you get the best performance from your new machine and wants to help you get the most value from it. When in need of parts or major service, be sure to see your KUBOTA Dealer. When in need of parts, be prepared to give your dealer the machine, engine and mower serial numbers.

Locate the serial numbers now and record them in the space provided.

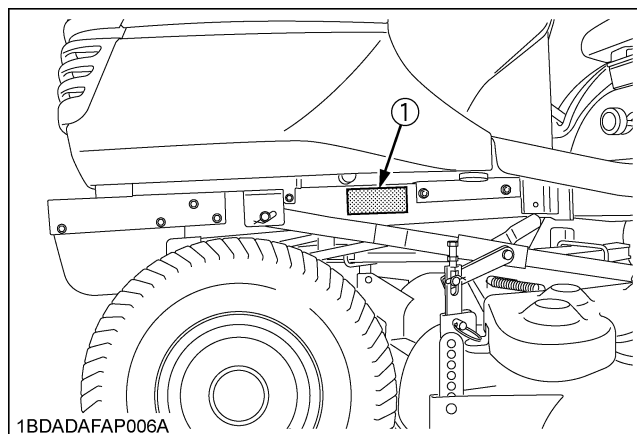
	Type	Serial No.
Machine		
Engine		
Mower		
Date of Purchase		
Name of Dealer		
(To be filled in by purchaser)		

◆ Warranty

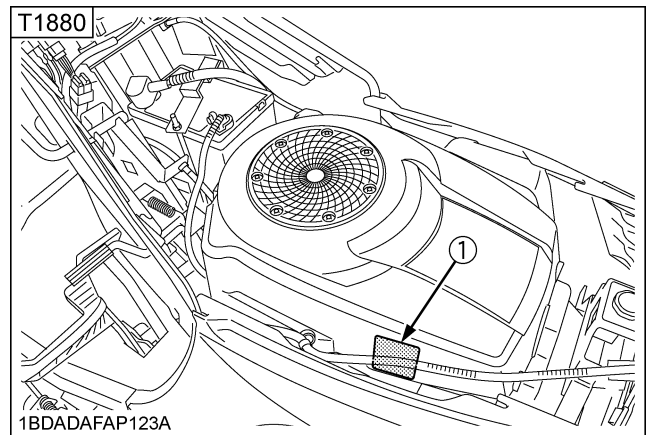
This machine is warranted under the Kubota Limited Express warranty, a copy of which may be obtained from your selling dealer. No warranty shall, however, apply if the machine has not been handled according to the instruction given in the Operator's Manual even it is within the warranty period.

◆ Scrapping the machine and its procedure

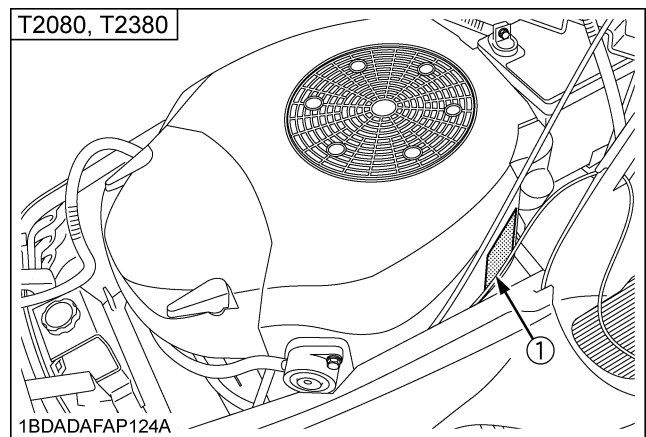
To put the machine out of service, correctly follow the local rules and regulations of the country or territory where you scrap it. If you have questions, consult your local KUBOTA Dealer.



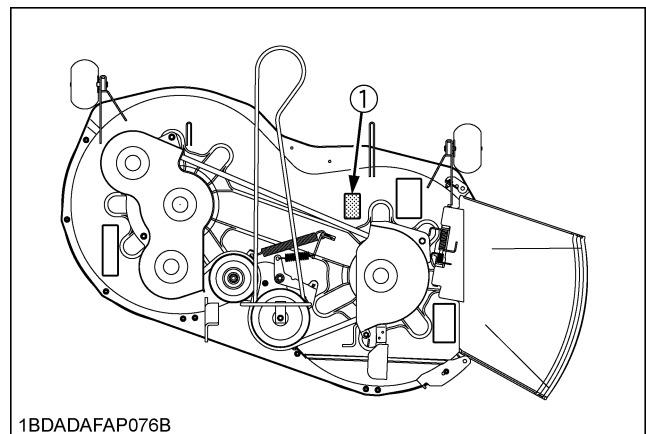
(1) Machine serial No.



(1) Engine serial No.



(1) Engine serial No.



(1) Mower serial No.

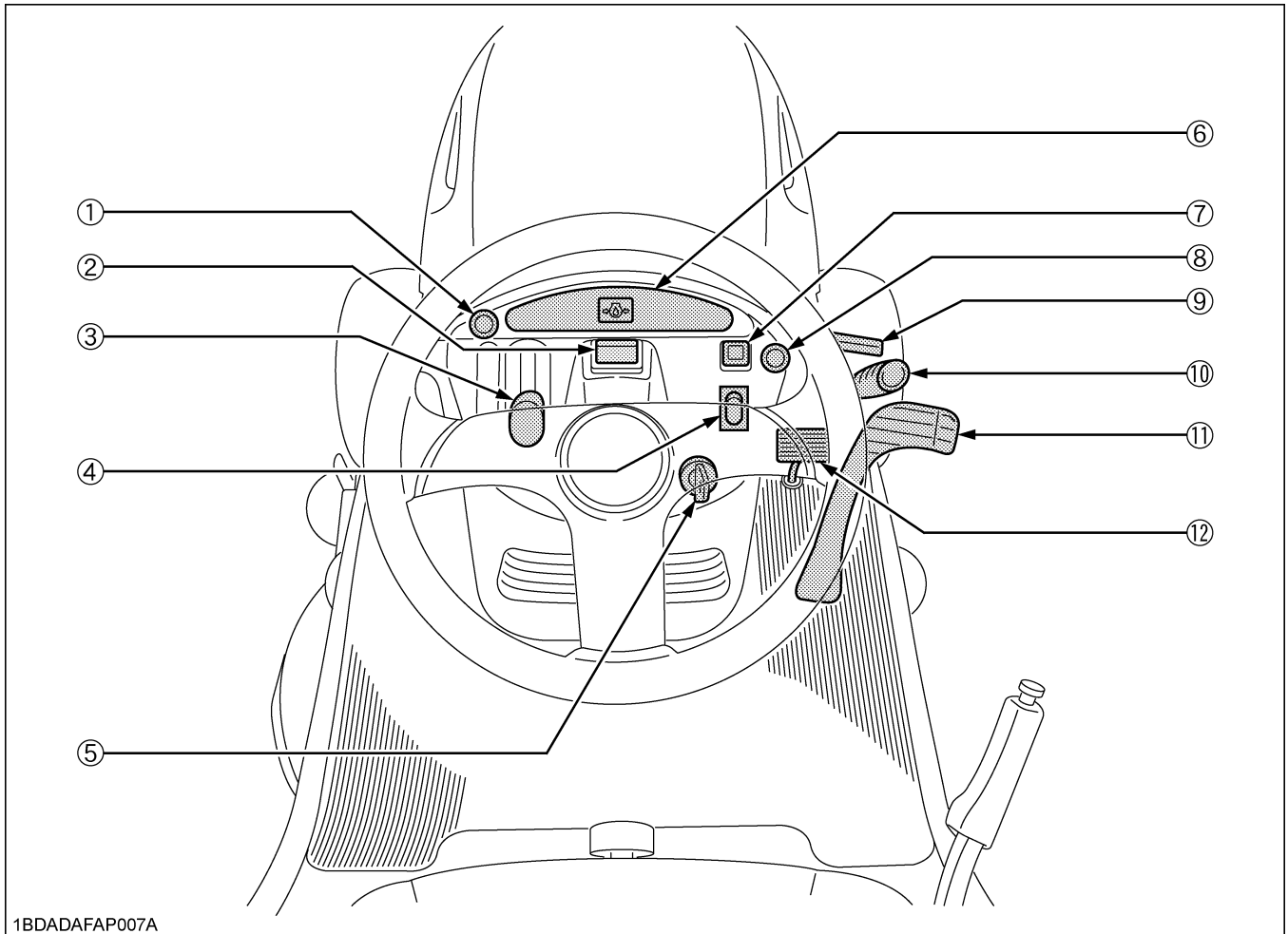
SPECIFICATIONS

Model				T1880	T2080	T2380
Engine	Model			GH540V	GH737V	GH738V
	Type			OHV air cooled gasoline engine		
	Number of cylinders			1	2	
	Total displacement cm ³ (cu. in.)			597 (36.4)	725 (44.2)	
	Max.horse power kW (HP)			13.4 (18)	14.9 (20)	16.4 (22)
	Cylinder bore and stroke mm (in.)			89 x 86 (3.50 x 3.38)	83 x 67 (3.27 x 2.64)	
	Fuel			Automobile unleaded or regular gasoline		
	Starter			Electric starter with battery		
	Lubrication			Full pressure lubrication		
	Cooling			Forced air cooled		
	Battery type			10U1L (12V, 300CCA)		
	Spark plug			Champion RC12YC		
Capacities	Fuel tank L (U.S. gals.)			13.5 (3.6)		
	Engine crankcase L (U.S. qts.)			1.5 (1.6)	1.8 (1.9)	
	Hydrostatic transmission case L (U.S. qts.)			2.75 (2.9)		
Machine	PTO			Belt		
	Direction of revolution			Clockwise viewed from top		
	Revolution (PTO speed) rpm			3200		
	PTO clutch			Belt tension		
	Transmission			Hydrostatic transmission		
	Traveling speeds	Forward	km/h (mph)	0 to 9.0 (0 to 5.6)		
		Reverse	km/h (mph)	0 to 5 (0 to 3.1)		
	Brake			External disktype		
	Tires	Front		15 x 6.00-6		
Rear			22 x 11.00-10			
Dimensions	Overall length mm (in.)			1955 (77.0)		
	Overall width (with mower) mm (in.)			1392 (54.8)		1544 (60.8)
	Overall height mm (in.)			1090 (42.9)	1125 (44.3)	
	Wheelbase mm (in.)			1290 (50.8)		1380 (54.3)
	Treads	Front	mm (in.)	783 (30.8)		
		Rear	mm (in.)	727 (28.6)		
	Weight (with mower) kg (lbs.)			290 (639)	295 (650)	300 (661)

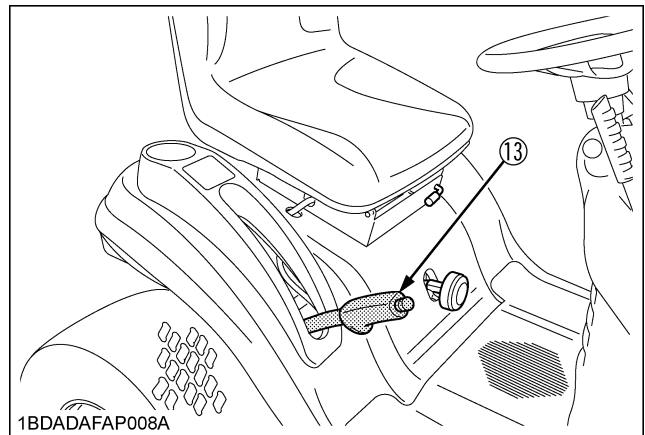
Model				T1880	T2080	T2380
Mower	Type			RCK42-LT20		RCK48-LT23
	Mounting method			Parallel Linkage		
	Adjustment of cutting height			Dial gauge		
	Cutting width		mm (in.)	1067(42)		1219 (48)
	Cutting height		mm (in.)	25 to 102 (1.0 to 4.0)		
	Weight (Approx.)		kg (lbs.)	51 (112.5)		58 (127.9)
	Number of blades			2		
	Dimensions	Total length	mm (in.)	868 (34.2)		957 (37.7)
		Total width	mm (in.)	1358 (53.5)		1521 (59.9)
		Total height	mm (in.)	295 (11.6)		
	Discharge			Right Side		

NOTE: *Manufacturer's estimate. The company reserves the right to change the specifications without notice.

INSTRUMENT PANEL AND CONTROLS



- (1) Choke knob
- (2) Hour meter (option)
- (3) Throttle lever
- (4) Light switch
- (5) Key switch
- (6) Easy checker (TM)
- (7) KRA system switch
- (8) Cruise control knob (T2080, T2380)
- (9) Parking brake lock pedal
- (10) PTO lever
- (11) Speed control pedal
- (12) Brake pedal
- (13) Lift lever



MOWER MOUNTING

ATTACHING THE MOWER

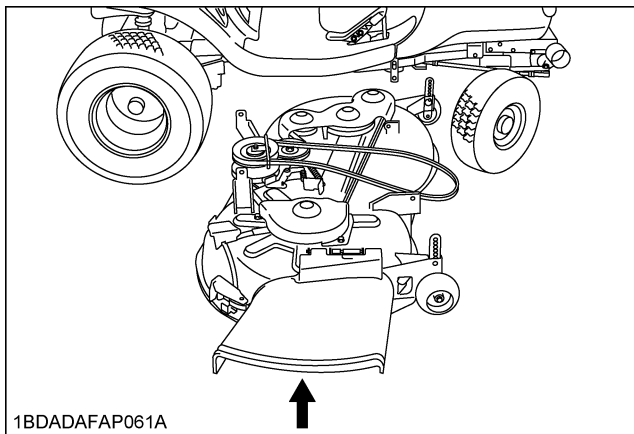


WARNING

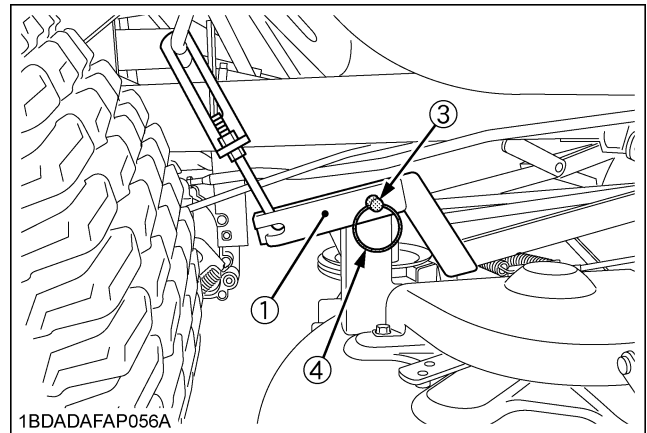
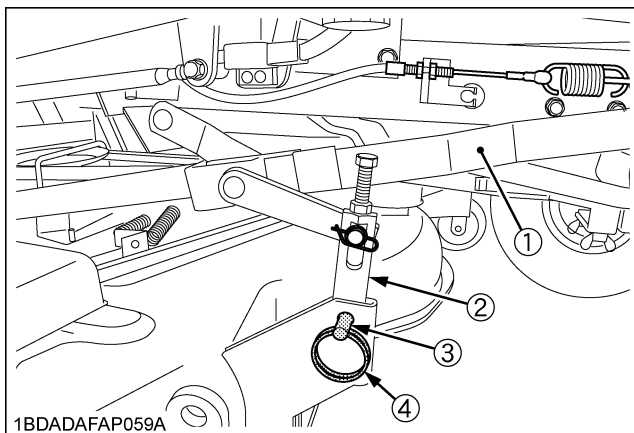
To avoid serious injury:

- Shut off the engine and remove the key before attaching the mower.

1. Park the machine on level ground and place the mower deck at the right side of machine. Raise mower lift lever and lock in raised position.
2. Turn the front wheels to the left. Slide the mower under the machine, then return wheels to straight ahead position. Adjust height control dial to 1" and lower mower lift lever and lock in lower position.

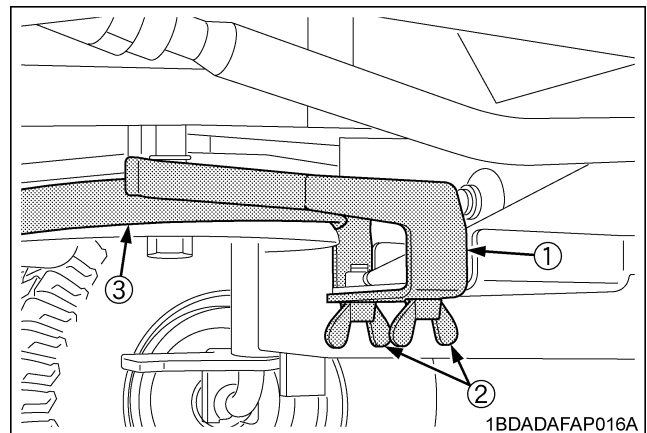


3. Attach the mower deck to the link and mower link with 4 clevis pins and snap rings.



- (1) Mower link
- (2) Link
- (3) Clevis pin
- (4) Snap ring

4. Attach the PTO belt to the engine pulley then attach the belt support bracket.



- (1) Belt support bracket
- (2) Wing bolt
- (3) PTO belt

[Belt support bracket attaching and adjustment]

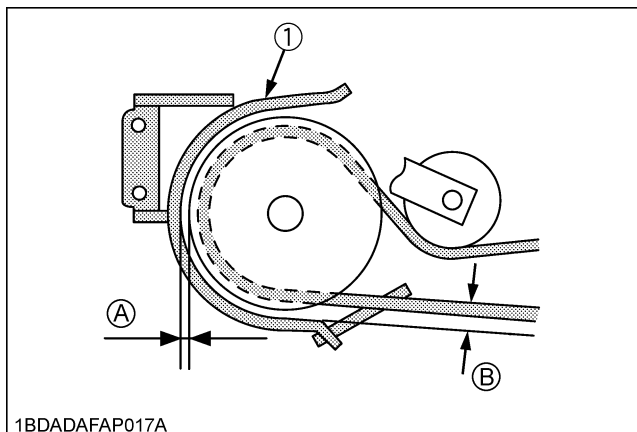
Adjust the belt support bracket to the following specification with the PTO lever in the "ENGAGED" position and tighten the belt support bracket.



WARNING

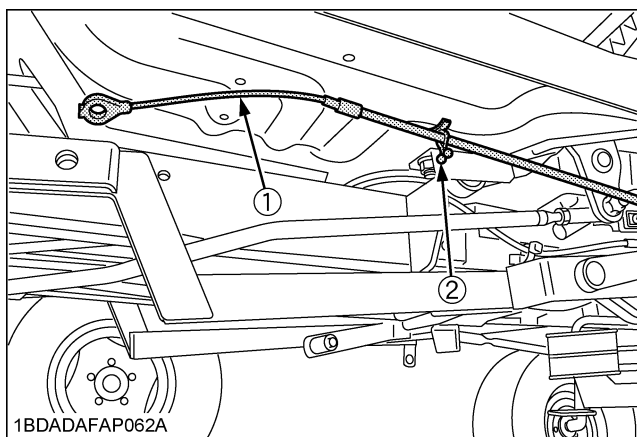
To avoid serious injury:

- Make sure engine is not running.



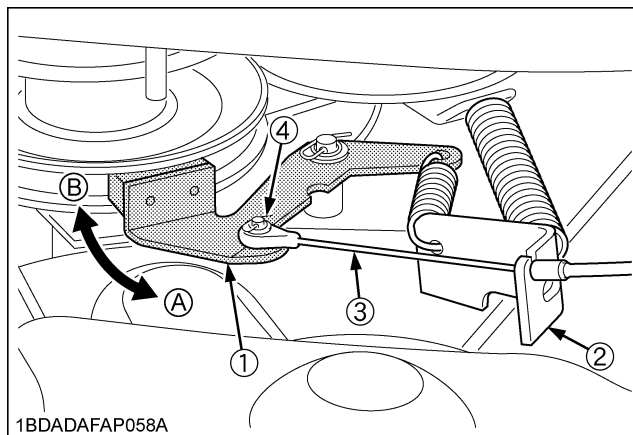
- (1) Belt support bracket (A) Clearance between belt support bracket and pulley. 1 to 2 mm (3/64" to 5/64")
(B) Clearance between belt support bracket and belt. 6 to 7 mm (15/64" to 9/32")

5. Remove the mower brake wire clamped under the step.



- (1) Mower brake wire
(2) Clamp

6. After passing the mower brake wire through the wire holder, attach it to the mower brake with the rue ring cotter pin.
7. The mower brake is a safety device to stop the blades. When the PTO lever is in the "DISENGAGED" position, the brake is applied to the pulley groove and the blade stops turning within 5 seconds. With the PTO lever at the "ENGAGED" position, the brake is off the pulley groove and the pulley is allowed to turn.



- (1) Mower brake (A) PTO lever "ENGAGED"
(2) Wire holder (B) PTO lever "DISENGAGED"
(3) Mower brake wire
(4) Rue ring cotter pin

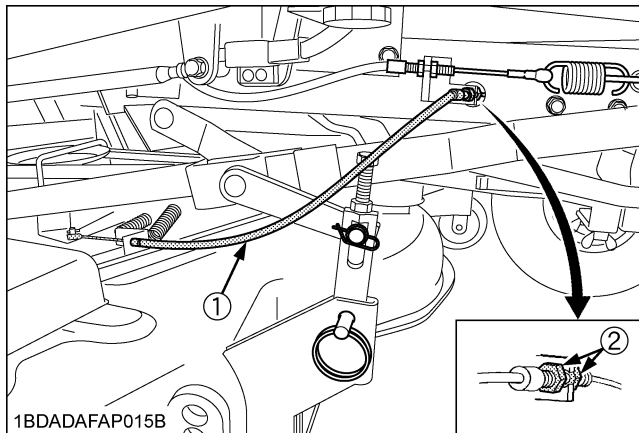


WARNING

To avoid serious injury:

- Make sure engine is not running when adjusting the brake.
- Do not operate mower when the brake is not properly adjusted.

8. Check mower brake performance by repeatedly switching the PTO lever from "ENGAGED" to "DISENGAGED". Adjust the mower brake wire if necessary.



(1) Mower brake wire
(2) Adjustment nuts

ADJUSTING THE MOWER DECK (FOR BEAUTIFUL FINISH CUT)

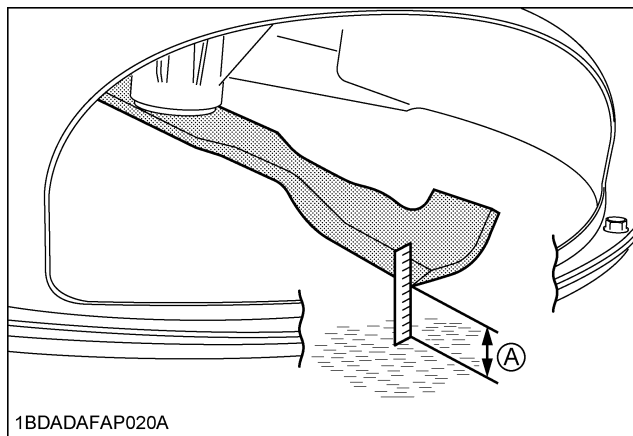


WARNING

To avoid serious injury:

- Shut off the engine and remove the key.
- Set parking brake.
- Allow the blades to stop before making adjustments.
- Blades may be sharp. When you handle blades, wear heavy gloves or wrap end of blade with a rag.

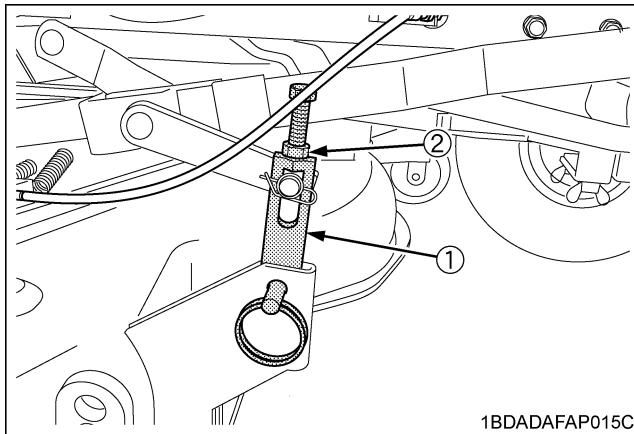
1. Park the machine on a level surface.
2. Tire inflation pressure must be correct. (See "EVERY 50 HOURS" in "PERIODIC SERVICE" section.)
3. Raise the lift lever to the top position. Turn the cutting height control dial to adjust height to the desired height.
4. Lower the mower deck by pushing the lift lever downward.
5. Turn left blade so that it is parallel to rear axle. Hold drive belt and turn right blade so that it is parallel to axle.
6. Measure from each outside blade tip (Left) to (Right) to the level surface. The difference between measurements should be less than 3 mm (1/8 in.).



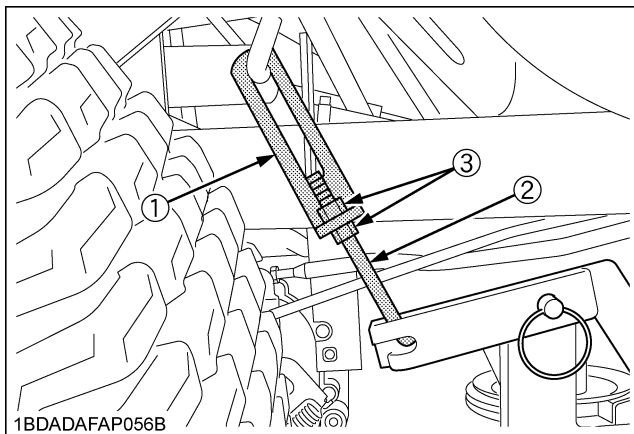
(A) Blade tip height

7. Loosen the nuts.

Adjust the link, lift link and lift rod length so that the difference between measurements (Left) and (Right) is less than 3 mm (1/8 in.).



- (1) Link
(2) Nut

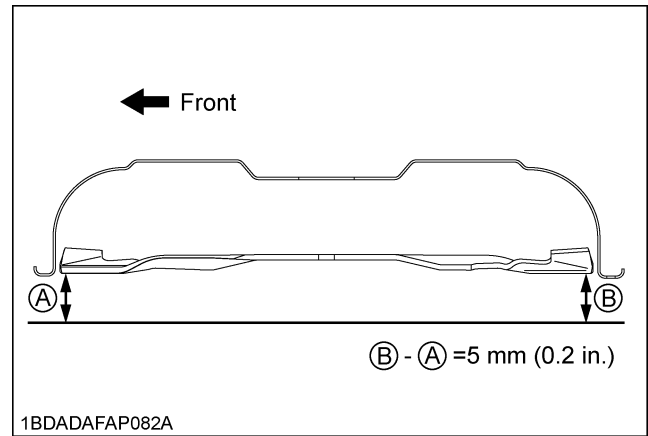


- (1) Lift link
(2) Lift rod
(3) Nut

8. Adjust the blade height so that the rear blade is 5 mm (0.2 in.) higher than the front blade.

NOTE :

- Make sure the rear blade is higher than the front blade; otherwise beautiful finish cut can't be obtained.

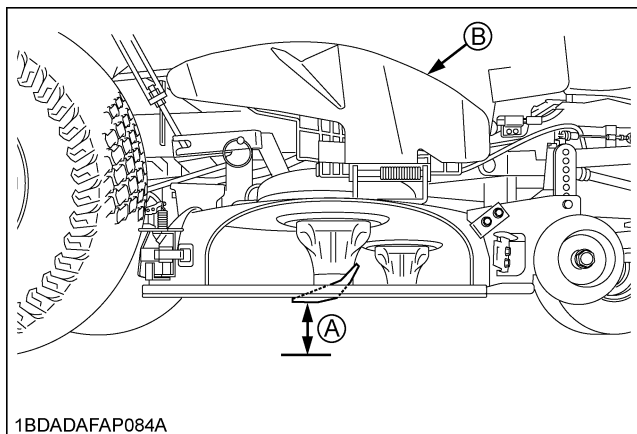


- (A) Front
(B) Rear

9. Tighten the nuts.

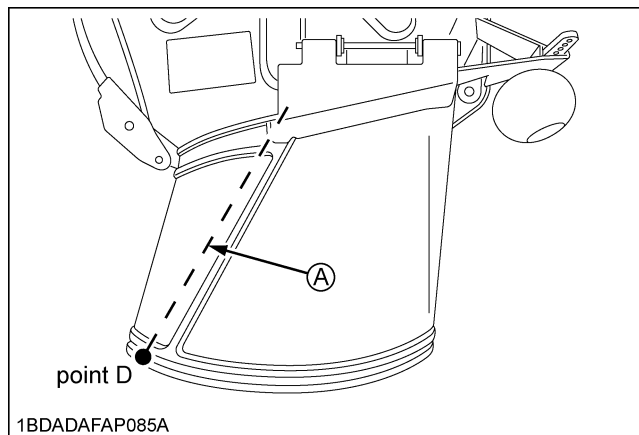
[For the mower with serial number below]
 (RCK42-LT20) 14218 and above
 (RCK48-LT23) 11927 and above

10. Measure from the outside tip of the right blade to the level surface (while the blade is parallel to the rear axle). This will be measurement C.

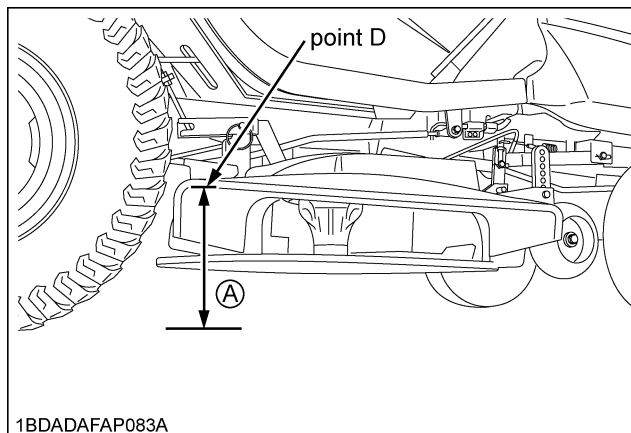


(A) Measurement C
 (B) Mower cover

11. Measure from the level surface to the bottom of the discharge cover at point D as shown in the picture below. This will be measurement D.



(A) Bent mark line



(A) Measurement D

12. The difference between measurement D and C should be 88 mm.

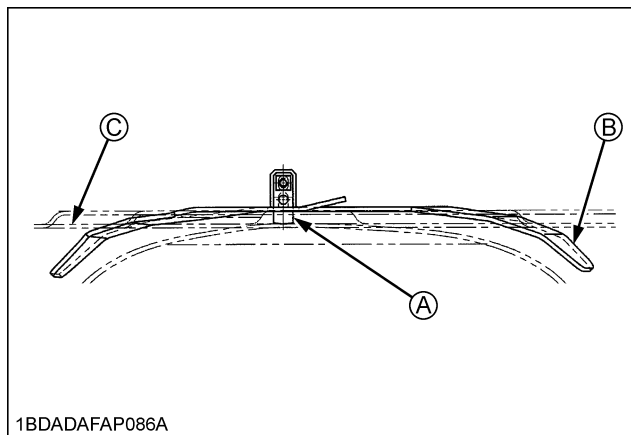
If not, adjust by loosening the bolt and moving the Plate Discharge Stopper.



WARNING

To avoid serious injury:

- Make sure D-C is not more than 88 mm.



(A) Plate discharge stopper
 (B) Mower cover
 (C) Mower deck upper surface

OPERATING THE ENGINE



WARNING

To avoid serious injury:

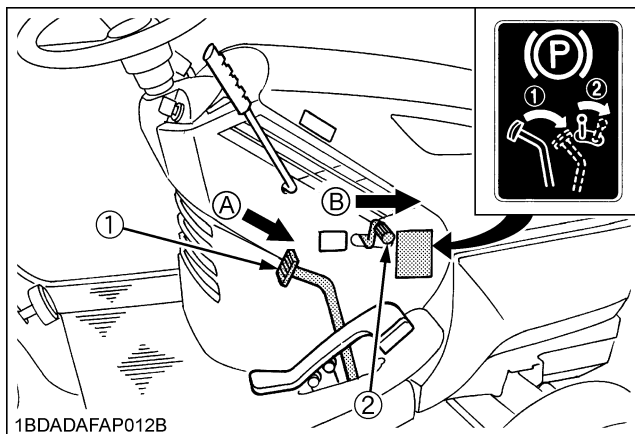
- Read "SAFE OPERATION" in the front of this manual.
- Read the danger, warning and caution labels located on the machine.
- To avoid danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.
- Never start the engine while standing on the ground. Start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

STARTING THE ENGINE

1. Apply the parking brake.

■ Parking Brake Lock Pedal

- To apply the parking brake, depress the brake pedal and the parking brake lock pedal simultaneously with your right foot. Then release the brake pedal while holding the parking brake lock pedal down.
- To release the parking brake, depress the brake pedal and release slowly with your right foot.



(1) Brake pedal

(2) Parking brake lock pedal

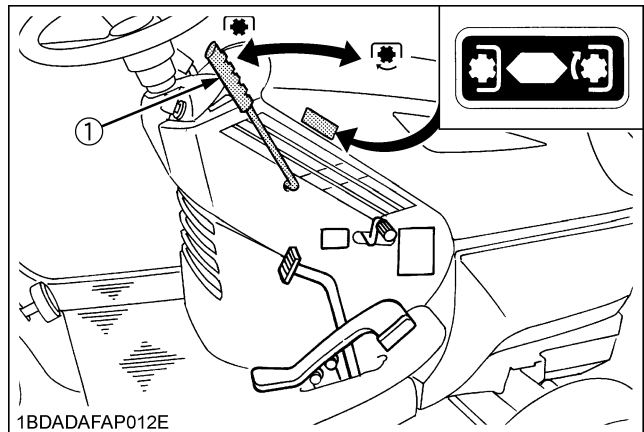
(A) "DEPRESS"

(B) "PUSH FORWARD WHILE DEPRESSING (1)"

NOTE :

- This machine is equipped with safety devices. If you dismount from the seat and the parking brake is not applied, the engine will stop automatically. (Operator presence control)

2. Make sure that the PTO lever is in the "DISENGAGED" position.



1BDADAFAP012E

(1) PTO lever

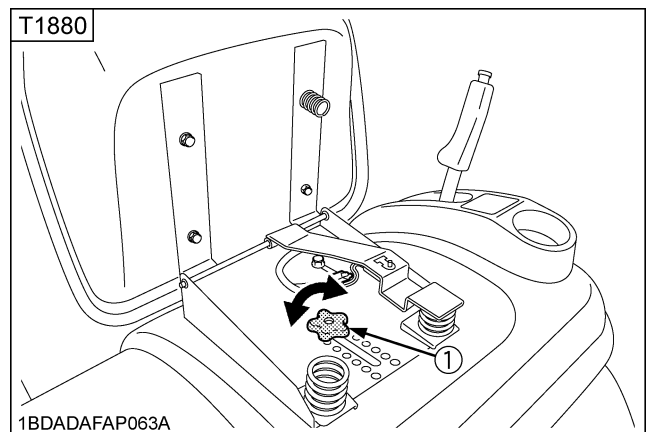
☛ : "ENGAGED"

☛ : "DISENGAGED"

3. Adjusting the operator's position.

[T1880]

The operator's seat position can be adjusted forward and rearward. Loosen the seat adjustment knob, slide the seat to the desired position and then retighten the knob.



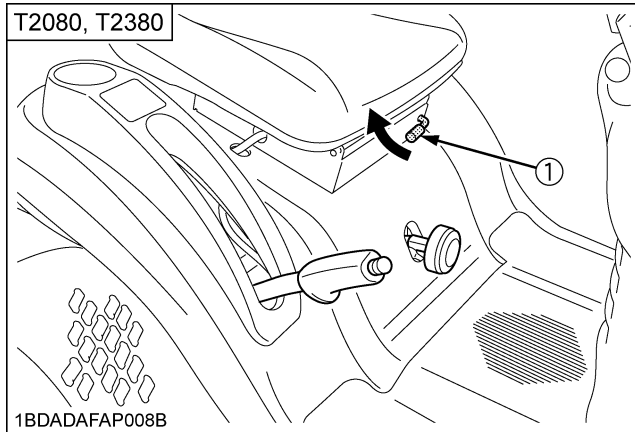
T1880

1BDADAFAP063A

(1) Seat adjustment knob

[T2080, T2380]

The operator's seat position can be adjusted forward and backward by pulling the seat sliding lever.



(1) Seat sliding lever

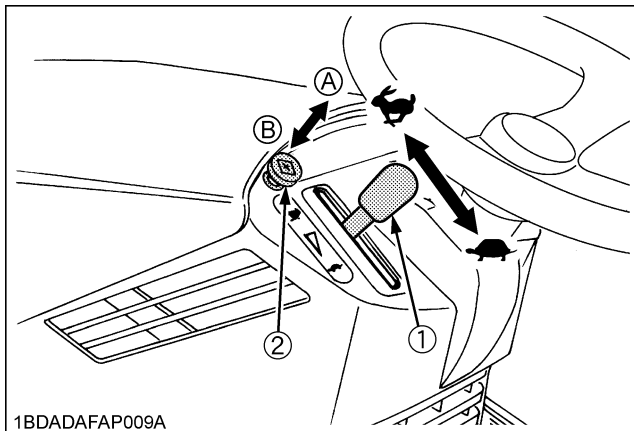
4. Set the throttle lever as follows.

- If engine is cold,
Pull the choke knob out.
- If engine is warm,
Move the throttle lever to "HALF SPEED" position.

■ Throttle Lever & Choke Knob

Pulling the throttle lever downward decreases the engine speed and pushing it upward increases the engine speed. Always pull the choke knob out to the "ON" position to start the engine in cold conditions.

Always push choke knob in to the "OFF" position after the engine has started.



(1) Throttle lever
(2) Choke knob

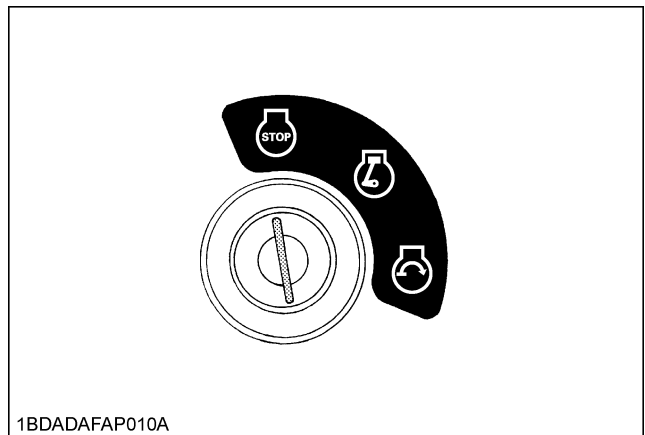
↑: "FAST"
↓: "SLOW"

(A) Pull out: "ON" position
(B) Push in: "OFF" position

5. Insert the key into the key switch. Turn the key switch to "START" position and release key to "ON" position when the engine starts.

■ Key Switch

- ⏻ OFF... The position where the key can be inserted into or removed from the key switch. [When the key is turned to this position, the engine shuts off.]
- ⏻ ON..... The engine is running.
- ⏻ Start... Depress the brake pedal fully and pull the PTO lever to the "DISENGAGED" position, turn the key switch to this position to start the engine.



⏻ "OFF"
⏻ "ON"

⏻ "START"

IMPORTANT :

- To avoid damage to the starter, do not operate starter more than 5 seconds at a time. If engine does not start, wait 10 seconds before trying again.
- Do not turn the key to the "START" position while the engine is running.
- Do not operate the machine under full load condition until it is sufficiently warmed up 2 or 3 minutes for temperatures above 0 °C (32 °F).

COLD WEATHER STARTING

If the ambient temperature is below 0 °C (32 °F) and the engine is very cold, start it in the following manner:

1. Pull the choke knob out.
2. Turn the key switch to the START ("S") position.
 - Operate starter 5 seconds.
 - If engine does not start, wait 10 seconds.
 - Repeat this procedure until engine starts.
3. When the engine starts, release key to ON ("I") position.
4. Move the throttle lever to "HALF SPEED" position.

IMPORTANT :

- When the temperature is below 0 °C (32 °F). Keep the engine at medium speed to warm up the lubricant of engine and transmission at least 10 minutes. If the machine is operated before the lubricant of engine and transmission is warmed sufficiently, the machine life will be shortened.
- Do not operate the machine under full load condition until it is sufficiently warmed up.

CHECKING SAFETY SYSTEMS

■Checking Engine Start System

The Engine Start System in your machine are designed to protect you while operating. Please check these Engine Start System periodically. It is recommended to check the Engine Start System before daily operation.



WARNING

To avoid serious injury:

- Do not allow anyone near the machine while testing.
- If the machine does not pass one of the following tests, do not operate the machine. See your local KUBOTA Dealer.
- Sit on operator's seat for all tests.

IMPORTANT :

- Check the following tests before operating the machine.

TEST 1 (OPERATOR ON THE SEAT)

1. Depress the brake pedal fully.
2. Engage the PTO lever.
3. Turn the key switch to the "START" position.
4. The engine should not crank.

TEST 2 (OPERATOR ON THE SEAT)

1. Disengage the PTO lever.
2. Release the brake pedal.
3. Turn the key to "START" position.
4. The engine should not crank.

■Checking OPC System

The OPC (Operator Presence Control) system in your machine are designed to protect you while operating. Please check these OPC system periodically. It is recommended to check the OPC system before daily operation.



WARNING

To avoid serious injury:

- Do not allow anyone near the machine while testing.
- If the machine does not pass one of the following tests, do not operate the machine. See your local KUBOTA Dealer.
- Sit on operator's seat for all tests.

IMPORTANT :

- Check the following tests before operating the machine.

TEST 1 (OPERATOR ON THE SEAT)

1. Run the engine at half throttle.
2. Engage the PTO lever.
3. Stand up. (DO NOT GET OFF THE MACHINE.)
4. Engine should shut off.

TEST 2 (OPERATOR ON THE SEAT)

1. Run the engine at half throttle.
 2. Disengage PTO lever.
 3. Release the brake pedal.
 4. Stand up. (DO NOT GET OFF THE MACHINE.)
 5. Engine should shut off.
-

■ Checking PTO Control System

The PTO control system in your machine are designed to protect you while operating. Please check these PTO control system periodically - daily is best - to test function of the PTO control system before operation.



WARNING

To avoid serious injury:

- Do not allow anyone near the machine while testing.
- If the machine does not pass one of the following tests, do not operate the machine. Contact your KUBOTA Dealer.
- Sit on operator's seat for all tests.

IMPORTANT :

- Check the following tests before operating the machine.

KUBOTA Reverse Awareness system

[KRA system] TEST 1 (OPERATOR ON THE SEAT)

1. Start and run the engine at half throttle.
2. Engage the PTO lever.
3. Press slightly on reverse side of speed control pedal.
4. Engine should shut off.

KUBOTA Reverse Awareness system

[KRA system] TEST 2 (OPERATOR ON THE SEAT)

1. Start and run the engine at 1/4 throttle.
2. Engage the PTO lever.
3. Press the KRA system override switch.
4. The KRA indicator light should flash.
5. Press slightly on the reverse side of speed control pedal.
6. Engine should not shut off.

Remove the fuse from under the seat before test 3

KUBOTA Reverse Awareness system

[KRA system] TEST 3 (OPERATOR ON THE SEAT)

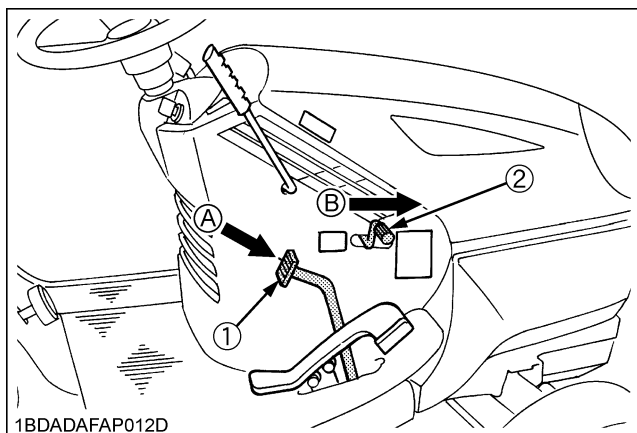
1. Start and run the engine at 1/4 throttle.
2. Engage the PTO lever.
3. Press the KRA system override switch.
4. The KRA indicator light should not flash.
5. Press slightly on reverse side of speed control pedal.
6. Engine should shut off.

CHECK WHILE OPERATING THE ENGINE

- Check color of the exhaust fumes.
- Check the headlights.
- Check performance of the PTO clutch.
- Check safety switch, seat safety control, and PTO safety control.
If one of these do not operate properly, contact your KUBOTA Dealer immediately.
- Check for abnormal noise and vibration.
- Check Easy Checker (TM).

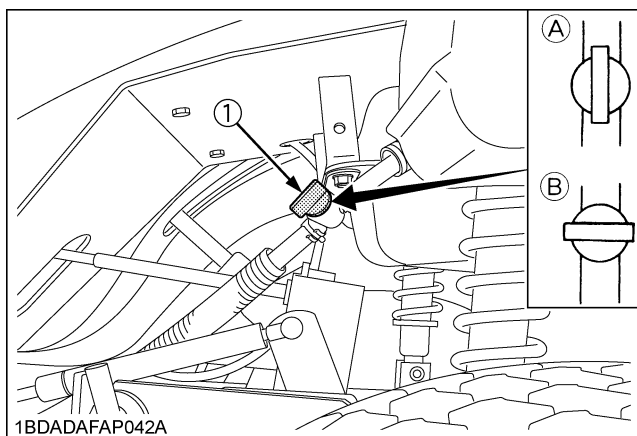
STOPPING THE ENGINE

1. Keep the engine at 1/2 to 3/4 throttle and turn the key switch to the "OFF" position.
2. Remove the key.
3. Do not leave the key switch "ON" (key in the "ON" position) as the battery will discharge when the engine is not running.
4. Set the parking brake.



- (1) Brake pedal (A) "DEPRESS"
 (2) Parking brake lock pedal (B) "PUSH FORWARD WHILE DEPRESSING (1)"

5. Close the fuel valve.



- (1) Fuel valve (A) "OPEN"
 (B) "CLOSE"

WARMING UP



WARNING

To avoid serious injury:

- Be sure to apply the parking brake during warm-up.

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

■ Warm-up and Transmission Oil in the Low Temperature Range

Hydraulic oil serves as transmission fluid. In cold weather, the oil may be cold with increased viscosity.

This can cause delayed oil circulation or abnormally low hydraulic pressure for some time after engine start-up. This in turn can result in trouble in the hydraulic system.

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

Ambient temperature	Warm-up time requirement
Higher than 0 °C (32 °F)	Approx. 5 minutes
-10 to 0 °C (14 to 32 °F)	5 to 10 minutes
-20 to -10 °C (-4 to 14 °F)	10 to 15 minutes
Below -20 °C (-4 °F)	More than 15 minutes

IMPORTANT :

- Do not operate the machine under full load condition until it is sufficiently warmed up.

JUMP STARTING



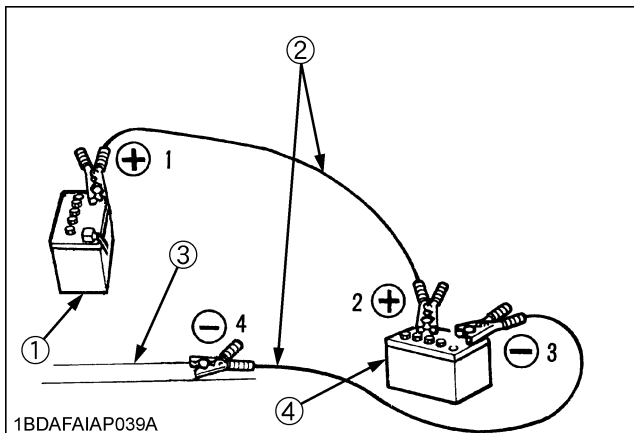
WARNING

To avoid serious injury:

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

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

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



- | | |
|---------------------------|--|
| (1) Dead battery | Connect cables in numerical order. |
| (2) Jumper cables | Disconnect in reverse order after use. |
| (3) Engine block or frame | |
| (4) Helper battery | |

IMPORTANT :

- This machine has a 12 volt negative (-) ground starting system.
- Use only same voltage for jump starting.

- Use of a higher voltage source on a machine could result in severe damage to the machine electrical system.
Use only matching voltage source when "jump-starting" a low or dead battery condition.

OPERATING THE MACHINE

OPERATING NEW MACHINE

How a new machine is operated and maintained determines the life of the machine.

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

■ Changing Lubricating Oil for New Machines

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

For further details of change interval hours, see "SERVICE INTERVALS" in "MAINTENANCE" section.

- To avoid tip over, operate up and down slopes, not across. Avoid sudden starts and stops on slopes. Slow down, and use extra caution when changing direction on a slope. Do not use the machine on steep incline.

Park the machine on a firm, level surface.

- Watch where you are going at all times. Watch for and avoid obstacles. Be alert at curbs, near trees, and other obstructions and hidden hazards.
- Do not drive a machine on streets or highways. Watch for traffic when you cross roads or operate near roads.
- Look to the rear before and when backing. Make sure the area immediately behind you is clear of obstructions or holes and small children. Use extra caution when a machine is equipped with Grass Catcher.
- Clear the work area of objects which might be picked up and thrown by blades.
- Do not direct the opening of the chute at bystanders or animals. Ejected objects may cause injury. Plan your mowing carefully before starting operation.
- Keep bystanders especially children and animals away from the mowing area.
- Be sure to disengage the PTO and sit on the operator's seat before starting the engine.



DANGER

To avoid serious injury or death:

- Do not operate the mower without the deflector shield in the down position nor the mulching cover in front.



WARNING

To avoid serious injury:

- Do not allow any person other than the driver to ride on the machine.
- Do not drive the machine close to the edges of ditches or banks which may collapse under the weight of the machine, especially when the ground is loose or wet.
- Slow down before turning.

STARTING

1. Adjust the operator's position.

■ Seat



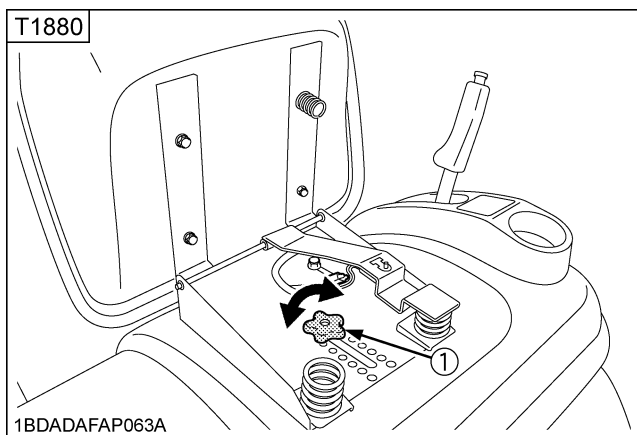
WARNING

To avoid serious injury:

- Make sure that the seat is completely secured after each adjustment.
- Do not allow any person other than the driver to ride on the machine.

[T1880]

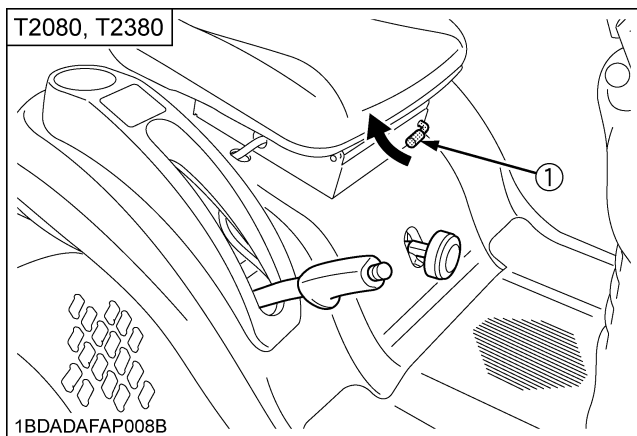
The operator's seat position can be adjusted forward and rearward. Loosen the seat adjustment knob, slide the seat to the desired position and then retighten the knob.



(1) Seat adjustment knob

[T2080, T2380]

The operator's seat position can be adjusted forward and backward by pulling the seat sliding lever.

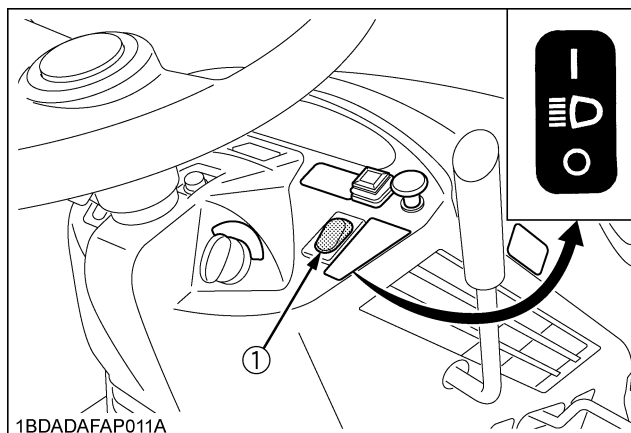


(1) Seat sliding lever

2. Select Light Switch Positions.

■ Light Switch

Pushing the light switch upward illuminates the headlights and pushing it downward turns the lights off.



(1) Light switch

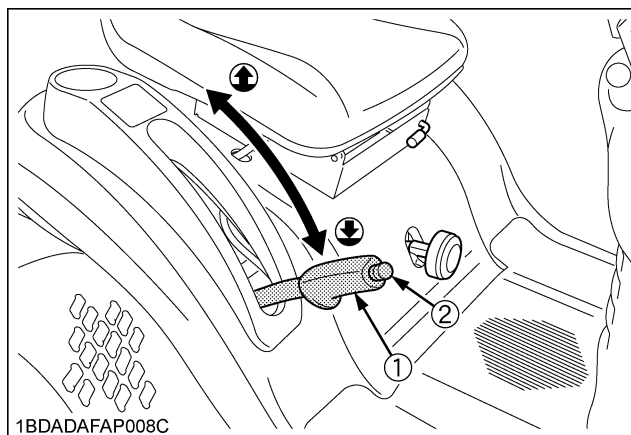
↑ : "ON"
↓ : "OFF"

3. Raise the implement.

■ Lift Lever

The lift lever is used to raise and lower the mower deck. To raise the mower deck, lift the lever slightly, then push the button at the top of the lift lever, and pull the lever upward.

To lower the mower deck, lift the lever slightly, then push the button at the top of the lift lever, hold the button in and lower the lever down.



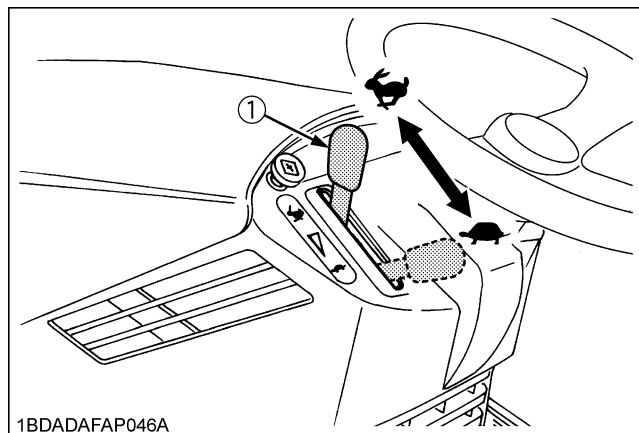
(1) Lift Lever
(2) Button

↑ "RAISE"
↓ "LOWER"

4. Accelerate the Engine.

■ Throttle Lever

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



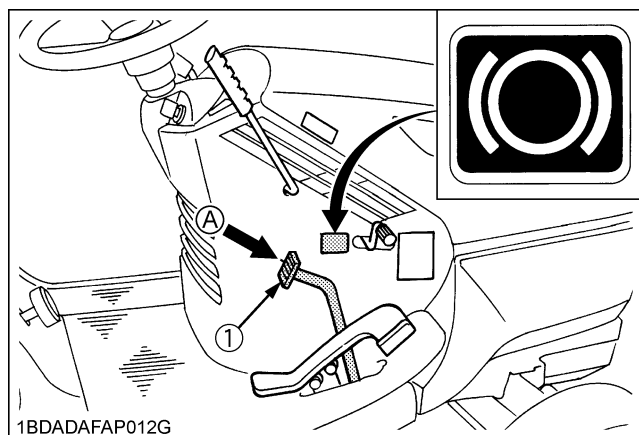
(1) Throttle lever

↖: "FAST"
↗: "SLOW"

5. Unlock the Parking Brake.

■ Parking Brake

To release the parking brake, depress the brake pedal again.



(1) Brake pedal

(A) "DEPRESS"

6. Depress the Speed Control Pedal.

■ Speed Control Pedal

"FORWARD" ⤴

Depress the speed control pedal with the toe of your right foot to move forward.

"REVERSE" ⤵

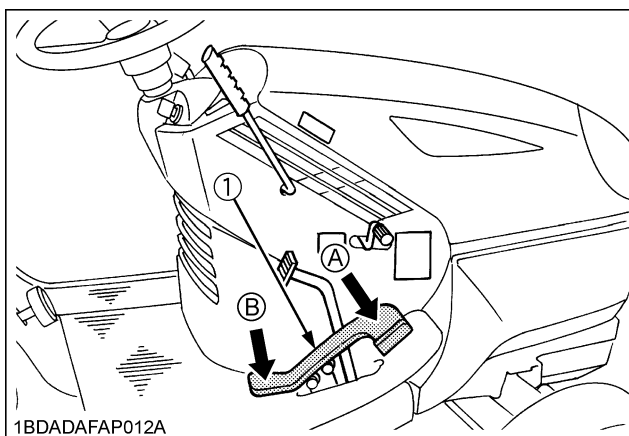
Depress the speed control pedal with the heel of your right foot to move in reverse.

Depress the speed control pedal a little and you can drive slowly.

To increase travel-speed, depress the speed control pedal more until the desired speed is reached.

NOTE :

- When the parking brake is applied, the speed control pedal is locked in the neutral position.



(1) Speed control pedal

(A) "FORWARD"
(B) "REVERSE"

■Cruise Control Device

[T2080, T2380]

The cruise control device is designed for machine 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.

◆ To engage cruise control device

1. Accelerate speed to desired level using speed control pedal.
2. Pull the cruise control knob.
3. Release the speed control pedal while pulling the cruise control knob.
4. Release the cruise control knob and desired speed will be maintained.

◆ To disengage speed set device

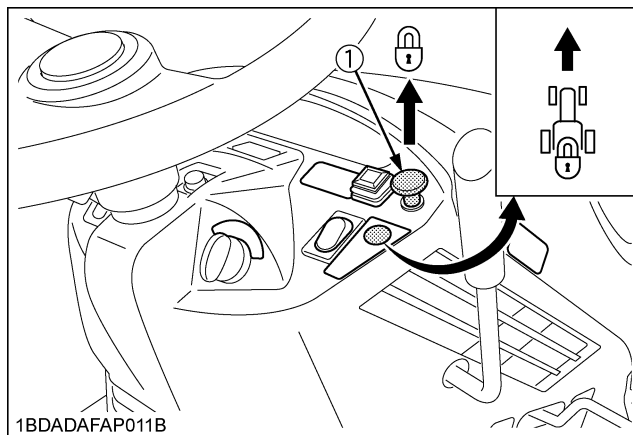
- Step on the forward acceleration side of the pedal or depress the brake pedal.

NOTE :

- Cruise control device will not operate in reverse.

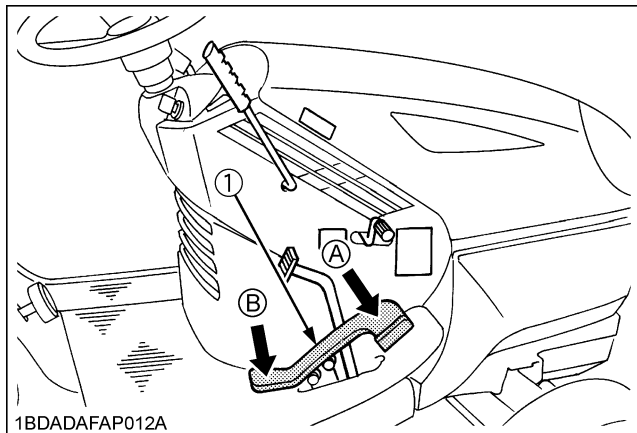
IMPORTANT :

- To prevent the damage of cruise control device, do not depress the reverse pedal when the cruise control device is engaged.



(1) Cruise control knob

B: "ENGAGED"



(1) Speed control pedal

(A) "FORWARD"

(B) "REVERSE"

STOPPING

1. Release the speed control pedal and depress the brake pedal to stop the machine.
2. Pull the PTO lever to the "DISENGAGED" position.
3. Slow the engine down.

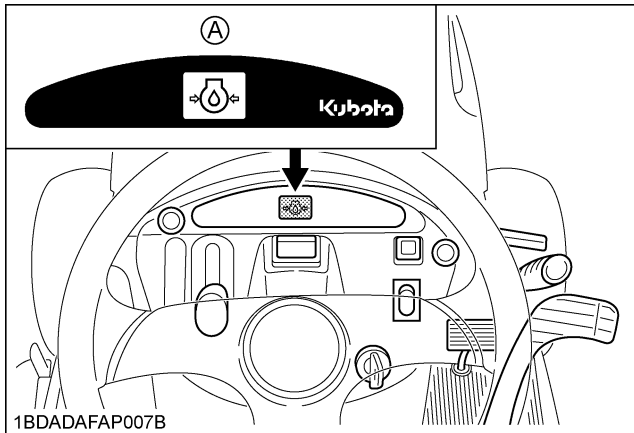
CHECK DURING DRIVING

■Immediately Stop the Engine if:

- The engine suddenly slows down or accelerates.
- Unusual noises are suddenly heard.
- Exhaust fumes suddenly become discolored.

While driving, make the following checks to see that all the parts are functioning normally.

■Easy Checker (TM)



(A) If this warning light comes on during operation, stop the engine immediately and check level of engine oil.
(See "Checking Engine Oil Level" in "DAILY CHECK" in "PERIODIC SERVICE" section.)

NOTE :

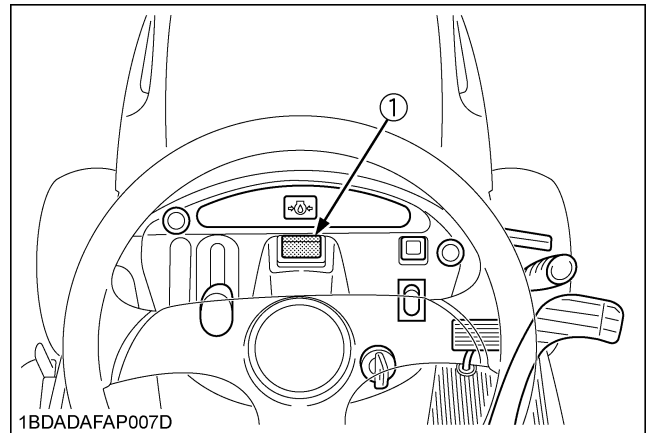
- To avoid inaccurate accumulation of indicated operating hours, turn the key switch to "OFF" when the engine is not running.

■Hourmeter (option)

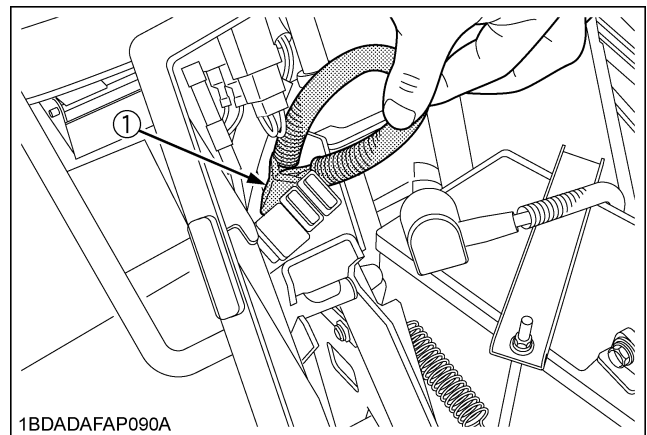
The hourmeter indicates in 5 digits the hours the machine has been used; the last digit indicates 1/10 of an hour.

NOTE :

- As the hour meter works electrically, it starts to work when the key switch is turned to "ON", regardless of the engine running or not.



(1) Hour meter



(1) Connector for the hourmeter

PARKING

■ Parking



WARNING

To avoid serious injury:

Before leaving the operator's position:

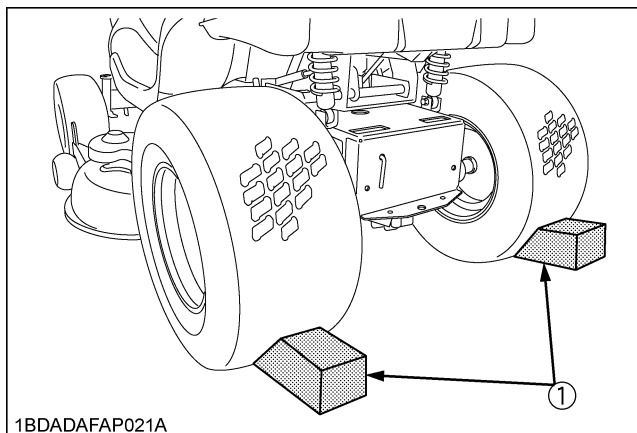
- Apply parking brake.
- Lower all implements to the ground.
- Shut off the engine.
- Remove the key.

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

To apply the parking brake;

Depress the brake pedal firmly and the parking brake lock pedal simultaneously with your right foot. Then release the brake pedal while holding the parking brake lock pedal down.

2. Before getting off the machine, disengage the PTO, lower all implements to the ground, set the parking brake, stop the engine and remove the key.
3. If it is necessary to park on an incline, be sure to chock the wheels to prevent accidental rolling of the machine.



(1) Chocks

TRANSPORTING

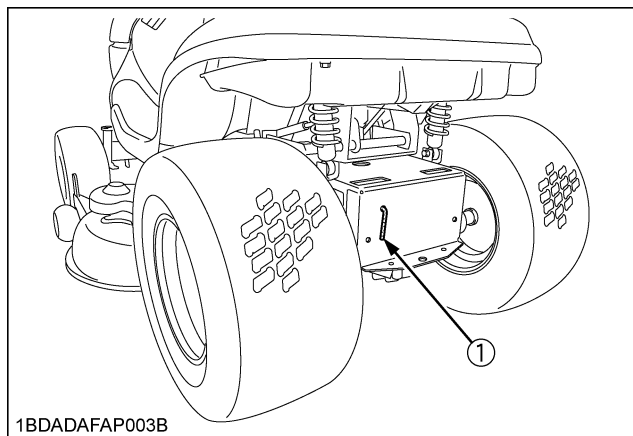
IMPORTANT :

1. Transport the machine on a trailer.
 - Fasten the machine to the trailer.
 - To prevent the hood from opening by wind while in transit, it is necessary to either load the machine forward or use a suitable tie down for the hood.
2. Do not attempt to tow this machine, or damage to the transmission may result.

■ Hydrostatic Transaxle Bypass Rod

IMPORTANT :

- Do not push the machine without pulling the bypass rod or transmission damage may occur.
 - Never pull the rod with the engine running.
1. To push the machine, pull the HST bypass rod and hold it.
 2. After moving the machine, release the rod and it will return automatically to normal position.



(1) HST bypass rod

OPERATING THE MOWER

MAKING THE MOST OF YOUR MOWER

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



WARNING

To avoid serious injury:

- Clear the work area of objects which might be picked up and thrown by blades.
- Keep bystanders and animals away from the mowing area.
- Be sure to disengage the PTO and sit on the operator's seat before starting the engine.

ADJUSTING CUTTING HEIGHT



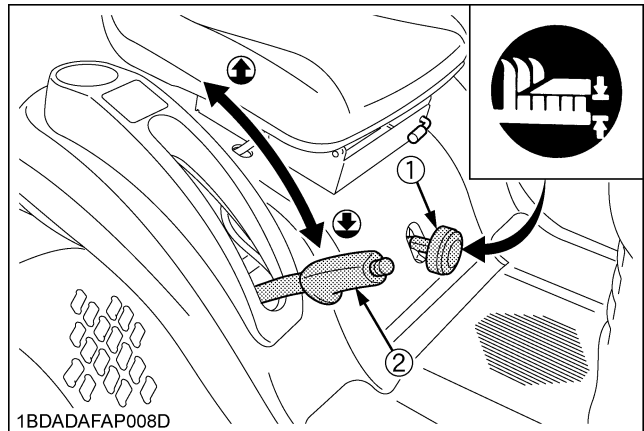
DANGER

To avoid serious injury or death:

- Do not operate mower in the "TOP" position.

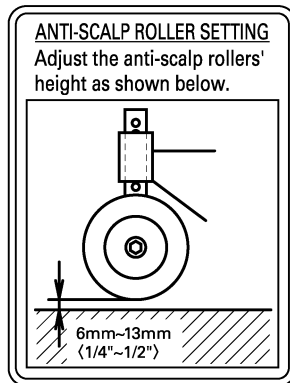
■ Cutting Height Control Dial

Raise the lift lever to the top position. Turn the cutting height control dial to the desired cutting height. Then lower the lift lever and the mower deck will be set to the cutting height.



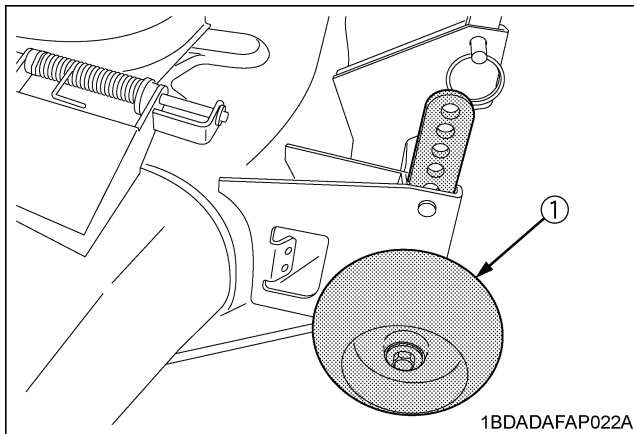
- (1) Cutting height control dial ⬆ "RAISE"
(2) Lift lever ⬇ "LOWER"

1. Before adjusting the cutting height, check that all tire pressures are correct. If necessary, adjust to the correct tire pressure.
2. To set the cutting height, pull the mower lift lever up to raise the mower deck to the "TOP" position.
3. Turn the cutting height control dial to adjust the height.
4. Set the anti-scalp rollers' height as shown to keep clearance between rollers and ground more than 6 mm (0.25 in.).



1BDAHADAP069A

5. Lower the mower deck by pushing the mower lift lever downward. This lowers the mower deck from the "TOP" position to the "OPERATING" position.
6. Use the higher settings for mowing in a rough area or when mowing tall grass. Lower settings should be used only for smooth lawns where short grass is desired.



(1) Anti-scalp roller

OPERATING THE MOWER

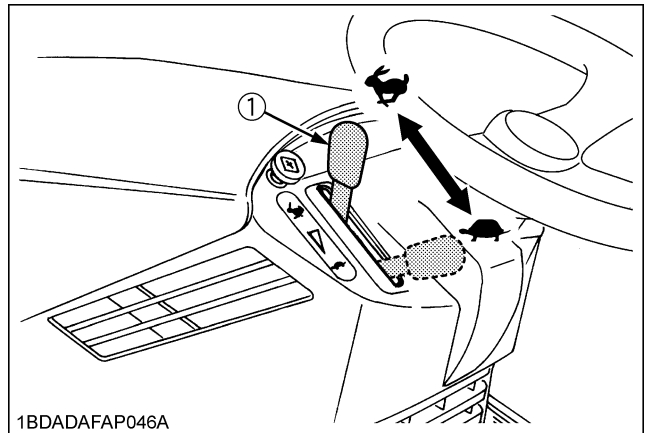
NOTE :

- This machine is equipped with the KRA (KUBOTA Reverse Awareness) system.

This feature shuts down the engine if the operator attempts reverse travel while any PTO driven implement is engaged. The purpose of the KRA system is to increase operator awareness of the risk of back-over accidents. The KRA system incorporates an override switch on the dash that allows the operator to override the system and keep the PTO engaged during reverse travel. KUBOTA strongly recommends against overriding the KRA system, but if the operator deems it absolutely necessary and safe to do so, he may activate the override switch. The override switch light flashes while activated as a reminder to the operator that the PTO (i.e. mower, grass catcher, snowblower, etc.) remains engaged during reverse travel. The operator should return the KRA system to normal operating mode as soon as possible by momentarily disengaging the PTO.

■ KRA system Normal Operating Mode

1. Start the engine.
2. Set the throttle lever to the "FAST" position.



(1) Throttle lever

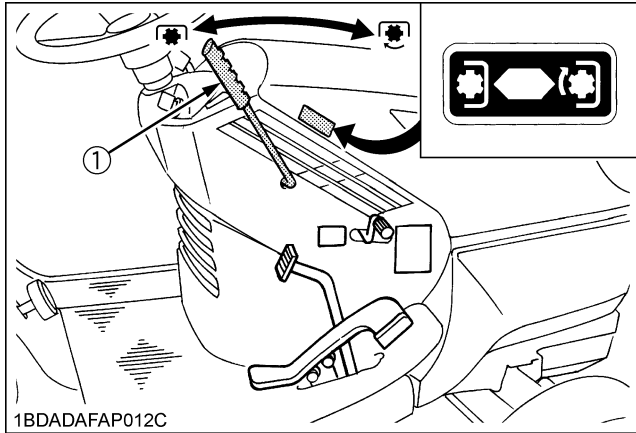
⬆ : "FAST" position

⬇ : "SLOW" position

3. Push down the PTO lever to the "ENGAGED" position.

■PTO Lever

To engage mower blades, push the PTO lever to the "ENGAGED" position. To stop the mower blades, pull the PTO lever to the "DISENGAGED" position.



(1) PTO lever

☛ : "ENGAGE"

☛ : "DISENGAGE"

NOTE :

- When attempting to operate the machine in reverse with the PTO engaged, the engine will shut down.
- If you dismount from the seat while the PTO is running, the engine will stop automatically. (Operator Presence Control)
- Before starting the engine, pull the PTO lever to the "DISENGAGED" position and depress brake pedal, otherwise, the starter will not operate.
- For best cut quality and performance, always mow with the throttle lever in "FAST" position.

Use the speed control pedal to select the desired mowing speed range.

- (1) During heavy duty use, operate the machine at a slower ground speed or go over the area twice. The first pass should be with the deck at the highest cutting position, then mow to desired height.
- (2) The mower will not cut cleanly if the ground speed is too high or if the blade speed drops due to an overload.

1. Control ground speed by using the speed control pedal of the machine.

NOTE :

- Keep the mower deck in the fully raised position when the mower is not engaged.

■KRA system Override Mode



WARNING

To avoid serious injury:

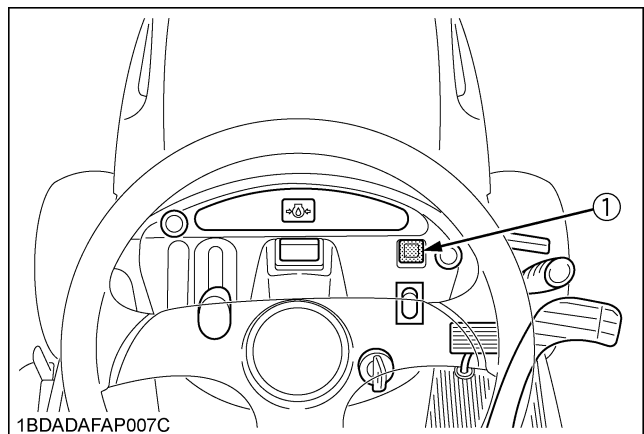
- Before and when backing, look down and behind the machine to be sure no bystanders, especially children, have entered the area.

NOTE :

- K.R.A. System override switch allows the operator to mow or operate attachments while in reverse if the operator deems it absolutely necessary and safe to do so. (i.e. the operator should make sure that no bystanders, especially children, have entered the area.)

If the owner does not wish certain operators to utilize the override switch allowing mowing or implement operation in reverse, then he or she may remove the fuse from the system to prevent override. (See NOTE (4) below)

1. Start the engine.
2. Set the throttle to the "FAST" position.
3. Push the PTO lever to the "ENGAGED" position.
4. Stop the machine (Set the speed control pedal to NEUTRAL) or depress the speed control pedal forward.
5. Push the K.R.A. System override switch.

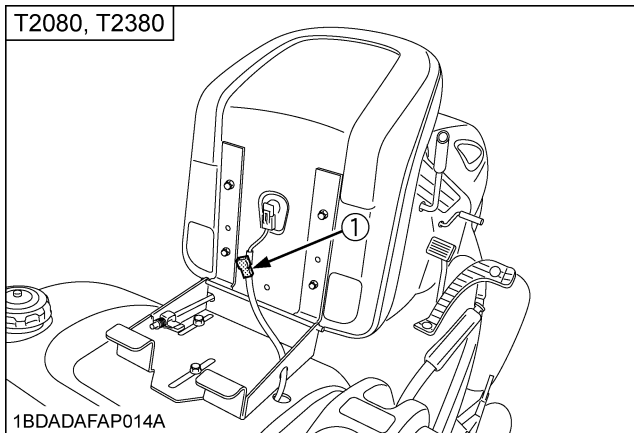
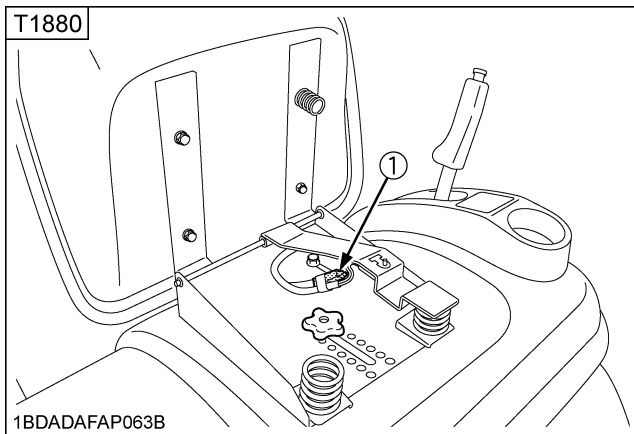


(1) K.R.A. System switch

6. Look down and behind the machine to be sure that no bystanders, especially children have entered the area.
7. Depress the speed control pedal with the heel of your right foot to move in the reverse direction.

NOTE :

- (1) The K.R.A. System Override Mode can not be activated by pushing the switch while the speed control pedal is depressed to initiate rearward movement.
- (2) The override switch light flashes while activated as a reminder to the operator that PTO (i.e. mower, grass catcher, snow blower, etc.) remains engaged during reverse travel.
- (3) The K.R.A. System Override Mode will remain activated until the PTO lever is returned to the "DISENGAGED" position.
- (4) To prevent use of the K.R.A. System Override Mode, remove the fuse located under the seat:
 - The engine can be started.
 - The machine PTO can be engaged if the speed control pedal is in the neutral or forward position.
 - Selection of PTO operation (i.e. mower, grass catcher, snow blower, etc.) during reverse travel is not possible.



(1) Fuse

**WARNING**

To avoid serious injury or death:

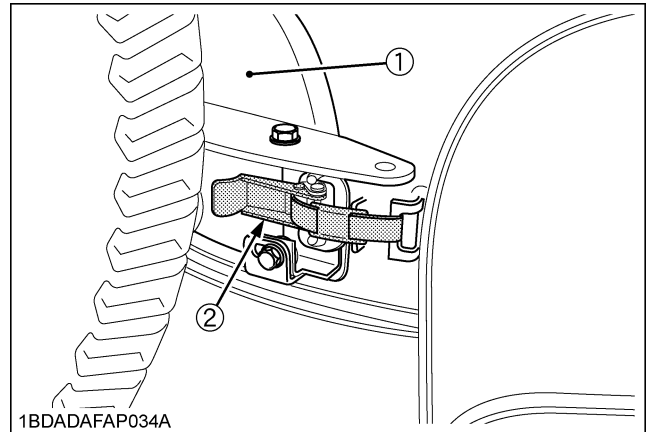
- Engine components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running, or immediately after it is turned off. Never operate the engine with heat shields or guards removed.

WHEN OPERATING MULCHING FUNCTION**WARNING**

To avoid serious injury:

- Shut off the engine and remove the key.

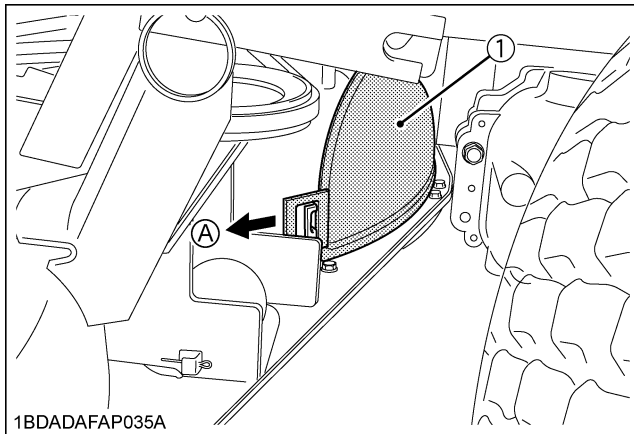
1. Park the machine on the firm and level surface.
2. Unlatch the clamp holding the mulching cover.



(1) Mulching cover

(2) Clamp

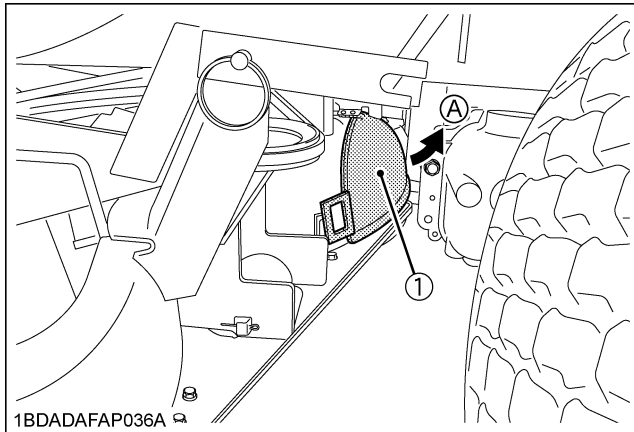
3. Unhook the mulching cover in the back.
(1) Slide the mulching cover a little backward.



(1) Mulching cover

(A) "SLIDE"

- (2) Lift the mulching cover slightly and unhook it.

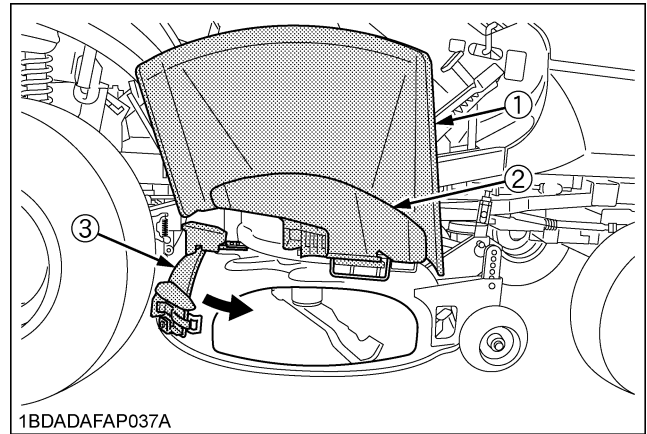


(1) Mulching cover

(A) "LIFT"

4. Lift the discharge deflector and the mower cover.

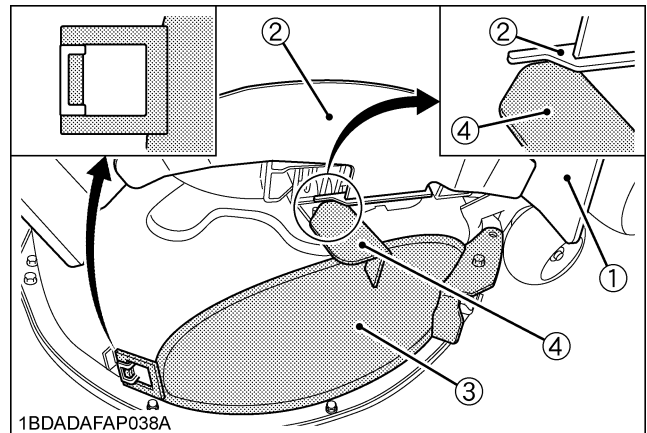
5. While lifting the mulching cover a little, move the mulching cover forward and hook the rear of the cover onto the deck.
Release the mower cover and discharge deflector then place them on the stay of mulching cover.



(1) Discharge deflector

(2) Mower cover

(3) Mulching cover



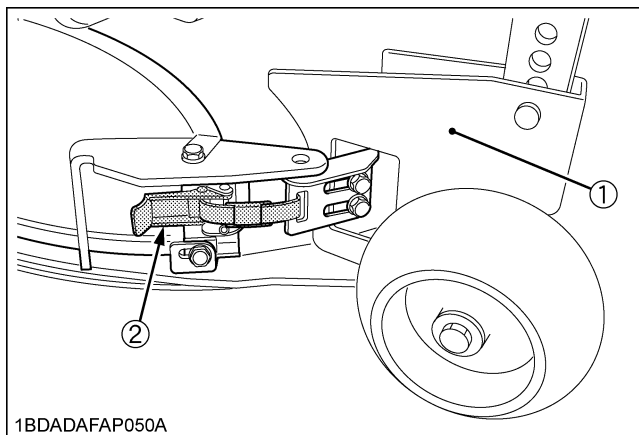
(1) Discharge deflector

(2) Mower cover

(3) Mulching cover

(4) Stay of mulching cover

6. Fasten the clamp of the mulching cover and make sure the cover is fixed to the mower deck securely with no gap for discharge.



(1) Mower deck
(2) Clamp



WARNING

To avoid serious injury:

- Do not operate the mower with the mulching cover not certainly hooked.

TO CHANGE THE OPERATING MODE FROM MULCHING TO SIDE DISCHARGE



WARNING

To avoid serious injury:

- Shut off the engine and remove the key.

To change the mode, reverse the procedures in "WHEN OPERATING MULCHING FUNCTION".

1. Park the machine on the firm and level surface.
2. Lift the discharge deflector and the mower cover.
3. Unlatch the clamp of the mulching cover.
4. While lifting the mulching cover a little, move the mulching cover backward and hook in the back securely.
5. Put back the discharge deflector and the mower cover to the original position.
6. Fasten the clamp of the mulching cover and make sure it is fixed to the mower deck securely.



WARNING

To avoid serious injury:

- Do not operate the mower with the mulching cover not certainly hooked.

ADJUSTING THE CLAMP



WARNING

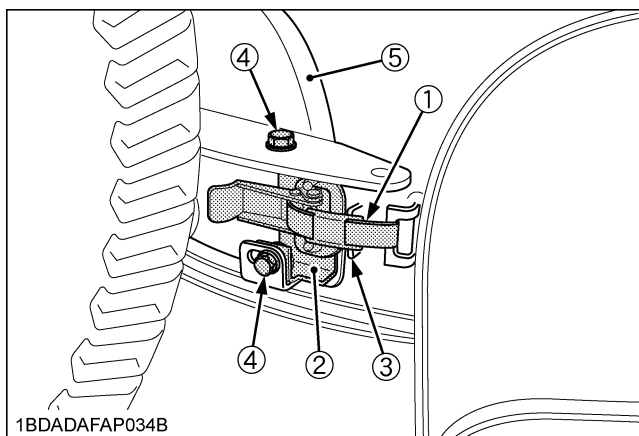
To avoid serious injury:

- Shut off the engine and remove the key.

Make sure the mulching cover is fixed securely. If not, adjust the clamp stay and the hook plate to fix it.

■ Side Discharge Position

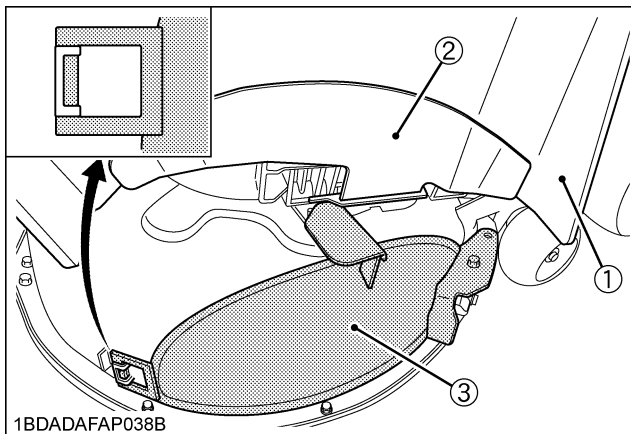
1. Hang the rear part of the mulching cover on the hook in the rear of the mower deck.
2. Loosen the bolts of the clamp stay.
3. While pushing the mulching cover to the mower deck stopper, fasten the clamp.
4. Adjust the clamp stay so that the clamp would not be loosen, and then fasten the bolts securely.



- (1) Clamp
- (2) Clamp stay
- (3) Stopper
- (4) Bolt
- (5) Mulching cover

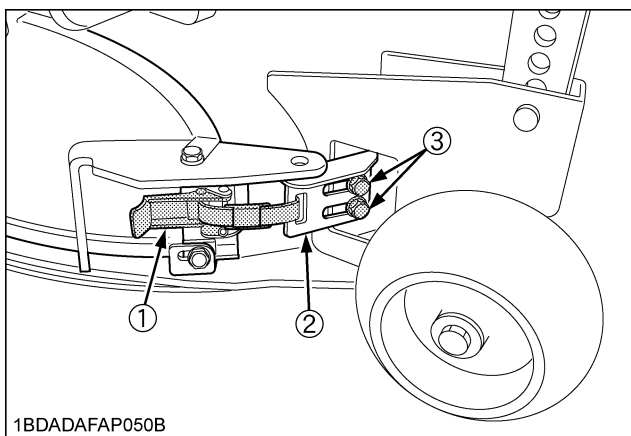
■ Mulching Position

1. Put the mulching cover in the mulching position.



- (1) Discharge deflector
- (2) Mower cover
- (3) Mulching cover

2. Loosen the bolts of the hook plate.
3. While pushing the mulching cover to the front fully, fasten the clamp.
4. Adjust the hook plate so that the clamp would not be loosen, and then fasten the bolts securely.



- (1) Clamp
- (2) Hook plate
- (3) Bolt

IMPORTANT :

- Do not touch the clamp stay for adjusting the clamp in the mulching position.

MAINTENANCE

SERVICE INTERVALS

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

No.	Items		Used hours (Hr)														Ref. page	
			25	50	100	150	200	250	300	350	400	450	500	550	600	After since		
1	Belt tension	Adjust	☉	○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hrs	39	*2
2	Mower brake	Check Adjust		○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hrs	41	*2
3	Brake	Check	☉	○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hrs	41	*2
4	Greasing	-	☉	○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hrs	42	
5	Air cleaner [T2080, T2380]	Precleaner element	Clean	○	○	○	○	○	○	○	○	○	○	○	○	every 25 Hrs	38	*1
			Replace			○		○		○		○		○	every 100 Hrs	49		
		Air cleaner element	Check		○	○	○	○	○	○	○	○	○	○	○	every 50 Hrs	43	*3
			Replace			○		○		○		○		○	every 100 Hrs	49		
	Air cleaner [T1880]	Precleaner element	Clean	○	○	○	○	○	○	○	○	○	○	○	○	every 25 Hrs or 2 months	38	*1
		Air cleaner element	Replace			○		○		○		○		○	every 100 Hrs or annually	49		
6	Carbon canister air filter	Check		○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hrs	43	*3
7	Tire	Check		○	○	○	○	○	○	○	○	○	○	○	○	every 50 Hrs	42	
8	Engine oil	Change			○		○		○		○		○		○	every 100 Hrs or annually	43	
9	Engine shroud	Clean			○		○		○		○		○		○	every 100 Hrs	44	
10	Spark plug condition and gap	Check			○		○		○		○		○		○	every 100 Hrs	45	
11	Engine oil filter	Replace			○		○		○		○		○		○	every 100 Hrs or annually	51	
12	Transaxle fluid	Change													○	every 600 Hrs	53	
13	Transaxle oil filter	Replace													○	every 600 Hrs	52	
14	Fuel line	Check			○		○		○		○		○		○	every 100 Hrs or annually	45	
		Replace														every 2 years	53	*2
15	Fuel filter	Replace			○		○		○		○		○		○	every 100 Hrs or annually	51	

No.	Items		Used hours (Hr)													Ref. page		
			25	50	100	150	200	250	300	350	400	450	500	550	600			After since
16	Cable	Check Adjust			○		○		○		○		○		○	every 100 Hrs	47	
17	Battery condition	Check			○		○		○		○		○		○	every 100 Hrs	47	
18	Bendix starter [T1880]	Clean					○				○				○	every 200 Hrs	52	*2
	Solenoid shift starter [T2080, T2380]	Clean											○			every 500 Hrs	52	*2
19	Fuse	Replace														Service as required	53	
20	Light bulb	Replace															54	
21	Mower blade	Check Replace															54	

IMPORTANT :

- The jobs indicated by ○ must be done initially.
 - *1 Precleaner element should be cleaned more often in dusty conditions than in normal conditions.
 - *2 Consult your local KUBOTA Dealer for this service.
 - *3 Clean or replace as necessary.
- GASOLINE ENGINE EMISSION RELATED MAINTENANCE INSTRUCTIONS:
 1. Non-warranty maintenance, repair, or replacement of the emission control devices and systems should be performed by a qualified repair establishment or individual which has the experience and equipment to perform such work.
See the Emissions Warranty Statement.
 2. To ensure the best quality and reliability, use new KUBOTA Genuine parts or their equivalents for repair and replacement, whenever you have maintenance done.

LUBRICANTS AND FUEL

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

Place	Capacities	Lubricants
Engine crankcase [T2080, T2380]	1.6 to 1.8 L (1.7 to 1.9 U.S.qts.)	- Engine oil: API service classification SG, SH, SJ or higher - Below 0 °C (32 °F): SAE 5W-20 or 5W-30 - Above -18 °C (0 °F): SAE 10W-30
Engine crankcase [T1880]	1.5 L (1.6 U.S.qts.)	- Engine oil: API service classification SG, SH, SJ or higher - Below 0 °C (32 °F): SAE 5W-20 or 5W-30 - Above 0 °C (32 °F): SAE 10W-30
Hydrostatic transmission	2.7 to 2.75 L (2.85 to 2.9 U.S.qts.)	- Engine oil: API service classification SL - SAE 20W-50
King pins	Until grease over flows	Multipurpose EP2 Grease (NLGI Grade No. 2)
Front axle pivot pin Brake pedal shaft Seat adjuster Speed control pedal shaft Throttle cable PTO clutch cable Mower brake cable Mower link	Moderate Amount	Oil or Spray type grease
Fuel tank	13.5 L (3.6 U.S.gals.)	- Automobile unleaded or regular gasoline - Unleaded gasoline 87 octane or higher

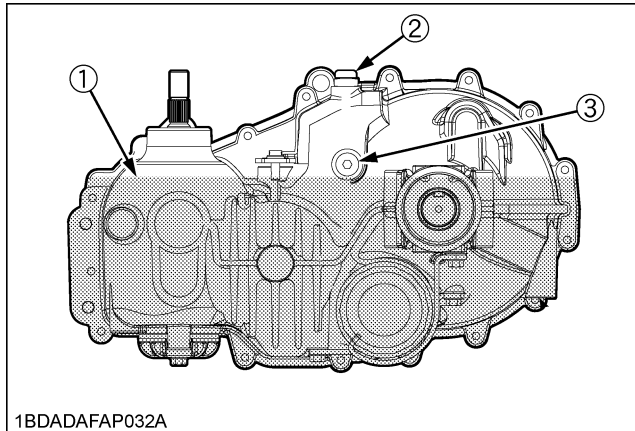
NOTE :

- Engine Oil:
Oil used in the engine should have an American Petroleum Institute (API) service classification and proper SAE Engine Oil according to the ambient temperatures as shown above.
- Indicated capacity of oil are manufacture's estimate.
- Gasohol (up to 10% ethyl alcohol, 90% unleaded gasoline by volume) or Methyl Tertiary Butyl Ether (MTBE) and unleaded gasoline blends (up to a maximum of 15% MTBE by volume) are approved for the engine. Other gasoline/ alcohol blends are not approved.

■Hydrostatic Transmission

Checking oil level: Be sure to check the oil level when the transmission is cold. Remove the oil level check port.

The correct level should be even with the bottom of the port. If necessary to add oil, remove breather tube and add from top port plug. Be sure to use correct oil which is specified in the table in "LUBRICANTS AND FUEL" in "MAINTENANCE" section.



- (1) Oil level
- (2) Top port plug
- (3) Oil level check port

PERIODIC SERVICE

HOW TO OPEN THE HOOD



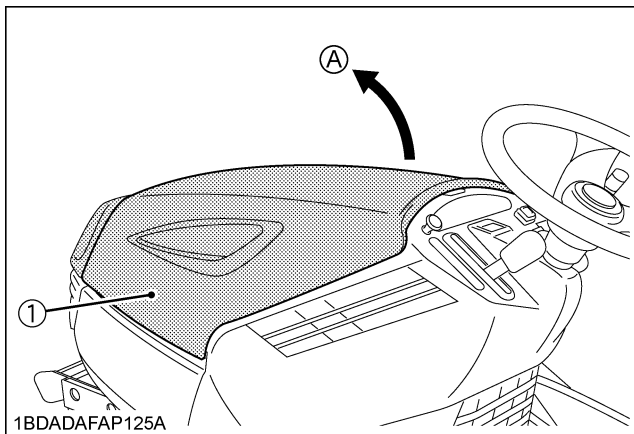
WARNING

To avoid serious injury from contact with moving parts:

- Never open the hood while the engine is running.
- Do not touch muffler or exhaust pipes while they are hot; Severe burns could result.

■ Hood

To open the hood, lift the hood as shown in the figure below.

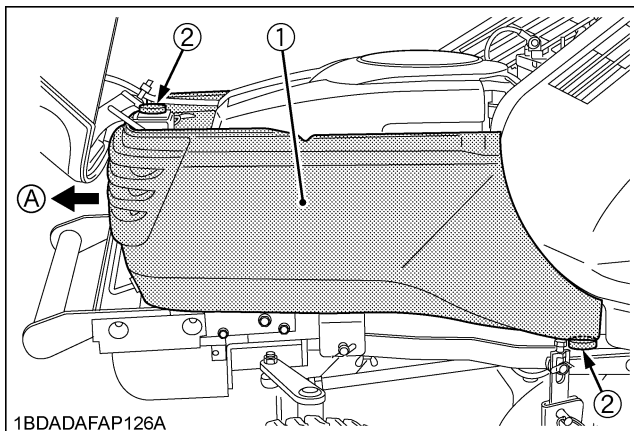


(1) Hood

(A) "PULL"

■ Engine Cover

Open the hood, loosen the knob bolts and then pull engine cover forward to remove.



(1) Engine cover

(2) Knob bolt

(A) "PULL"

DAILY CHECK

To prevent trouble from occurring, it is important to know the condition of the machine. Check it before starting.



WARNING

To avoid serious injury:

- Be sure to check and service the machine on a level surface with the engine shut off, the key removed and the parking brake securely set.

	No.	Check item	Ref. Page
Walking around the machine	1	The tire, pressure, wear and damage	42
	2	Fuel and Oil leak	-
	3	Engine oil level	35
	4	Fuel level	34
	5	Damage of machine body, tightness of all bolts and nuts	-
	6	Cooling air intake screen	36
	7	Oiling	36
Mower	1	Make sure blade bolts are tight.	54
	2	Check blades for wear or damage.	54
	3	Check all hardware.	-
	4	Make sure all pins are in place.	-
Others	1	Check the areas where previous trouble was experienced.	-
While sitting in the operator's seat	1	Speed control pedal, Brake pedal	-
	2	Parking brake	-
Turning the key switch "ON"	1	Headlights	-

	No.	Check item	Ref. Page
Starting the engine	1	Color of the exhaust fumes	-
	2	Safety systems. If either of these do not operate properly, contact your local KUBOTA Dealer immediately.	12 12 13
	3	Check for abnormal noise and vibration.	-
	4	Check Easy Checker(TM)	20
	5	Check the air cleaner	38

■ Checking Amount of Fuel and Refueling



WARNING

To avoid serious injury:

- Handle fuel carefully. If the engine is running, do not fill the fuel tank. If engine is hot, let engine cool several minutes before adding fuel. Do not smoke while filling the fuel tank or servicing the fuel system. Fill fuel tank only to bottom of filler neck. Do not fill completely full. The empty space in the tank allows gasoline to expand, when it heats up. Never remove the fuel tank cap or add fuel when the fuel tank is hot.



1BDABARAP121A

Check the fuel level. Take care that the fuel tank does not become empty. When refueling it, park the machine on a level surface.

Fuel tank capacity	13.5 L (3.6 U.S.gals.)
--------------------	------------------------

IMPORTANT :

- Do not mix oil with gasoline.

Unleaded fuel is recommended. Regular leaded gasoline with an octane rating index of 87 or higher may be used. Avoid switching from unleaded to regular gasoline to prevent engine damage.

NOTE :

- Use fuel within approximately 30 days after purchase to avoid deterioration in fuel quality, or add fuel stabilizer to keep fuel fresh and stabilized.
- Fuel blend differs from season to season for the best seasonal engine performance. To prevent engine performance troubles such as vapor lock or hard starting, use fuel within the season in which the fuel is purchased.
- Infrequent use of the engine during a season can make fuel stale in the fuel tank of the machine. Stale fuel condition can cause engine performance troubles by varnish and plugged carburetor components.
- Seal the fuel storage container tightly and store it out of sunlight and heat to prevent fuel degradation.
- Condensation in the fuel tank may occur because of various operating or environmental conditions. To reduce condensation and avoid affecting machine operation, fill the fuel tank at the end of daily operation and store fuel in the plastic container.

IMPORTANT :

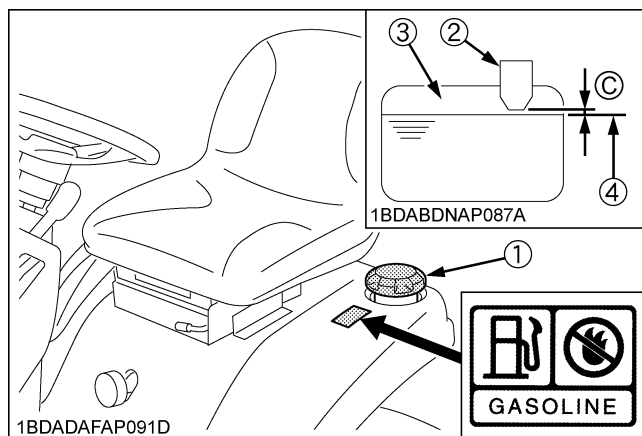
- Do not use stale fuel.
- Fill fuel tank at the end of daily operation to prevent condensation in the fuel tank.

Gasoline/Alcohol blends

Gasohol (up to 10% ethyl alcohol, 90% unleaded gasoline by volume) is approved as a fuel. Other gasoline/alcohol blends including E20 and E85 are not to be used and any failures resulting from use of these fuels will not be warranted.

Gasoline/Ether blends

Methyl Tertiary Butyl Ether (MTBE) and unleaded gasoline blends (up to a maximum of 15% MTBE by volume) are approved as a fuel. Other gasoline/ether blends are not approved.



- (1) Fuel tank cap
 (2) Fuel tank filler neck
 (3) Empty space
 (4) Max. fuel level
 (C) Clearance
 (Fuel level is under the filler neck.)

■ Checking Engine Oil Level



WARNING

To avoid serious injury:

- Always stop the engine and remove the key before checking oil.

◆ Oil level check

- Check engine oil before starting the engine or 5 minutes or more after the engine has stopped.
- Wipe dipstick area clean.
- To check the oil level.

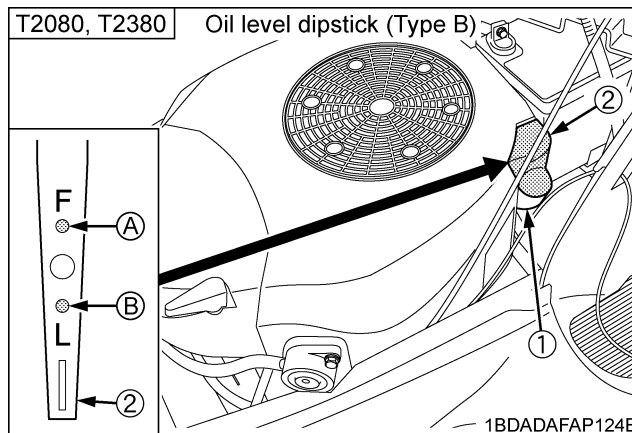
[T2080, T2380]

- Oil level dipstick (type A)

Remove the dipstick, wipe it clean, replace it SCREWING IT IN, and draw it out again. Check to see that the oil level is between the 2 marks.

- Oil level dipstick (type B)

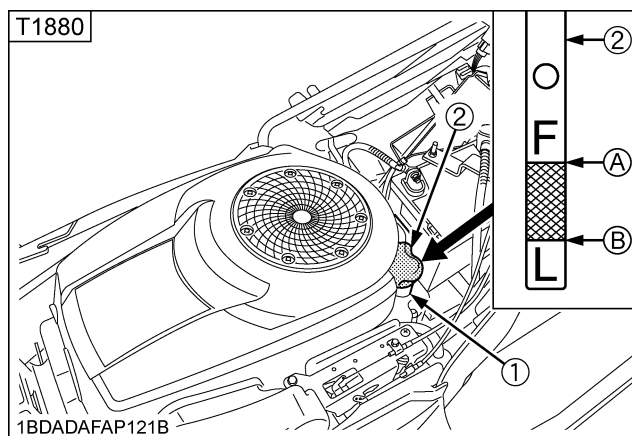
Remove the dipstick, wipe it clean, replace it, and draw it out again. Check to see that the oil level is between the 2 marks.



- (1) Engine oil port
 (2) Oil level dipstick
 (A) "UPPER LEVEL"
 (B) "LOWER LEVEL"

[T1880]

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



- (1) Engine oil port
 (2) Oil level dipstick
 (A) "UPPER LEVEL"
 (B) "LOWER LEVEL"

- Add new oil to the prescribed level at the oil port if necessary.
- When using a different brand or viscosity oil from the previous one, remove the old oil completely. Never mix 2 different types of oil.
- Use the proper Engine Oil (SAE grade) according to the ambient temperatures. (See "LUBRICANTS AND FUEL" in "MAINTENANCE" section.)

■ Checking Cooling Air Intake Screen



WARNING

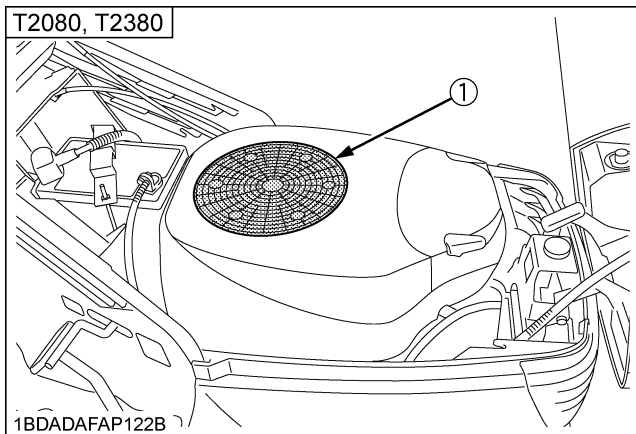
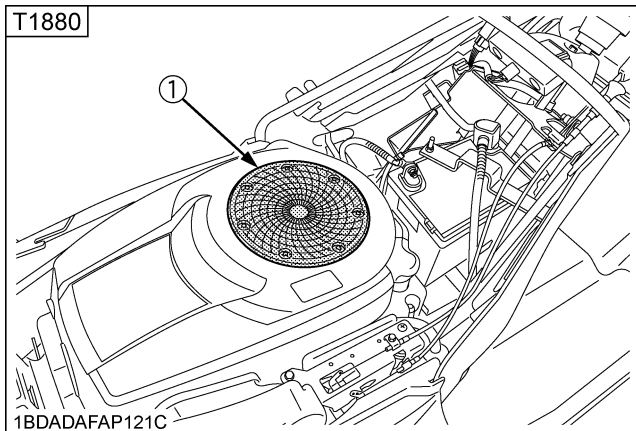
To avoid serious injury:

- Be sure to stop the engine before checking or cleaning air intake screens.

IMPORTANT :

- Air intake screens must be clear of debris to prevent engine from overheating.

1. Lift hood and check that the pedestal and air intake screens are clear of grass clippings and debris.
2. If screens are dirty, clean screens with a brush or cloth.
3. If the dust or chaff is accumulated inside of the panel, clean the inside of the panel completely.
After cleaning, place the air intake screen properly.



(1) Screen

■ Oiling

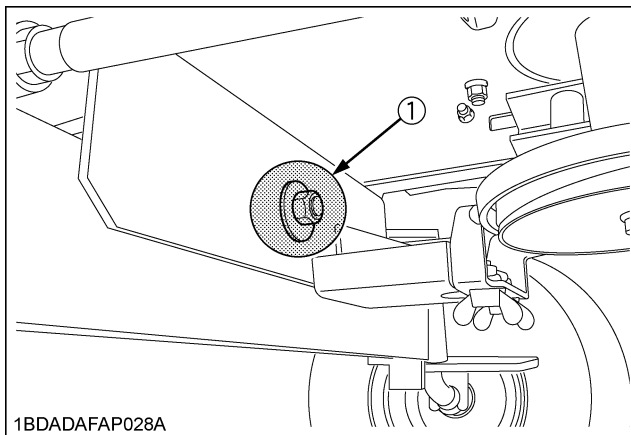


WARNING

To avoid serious injury:

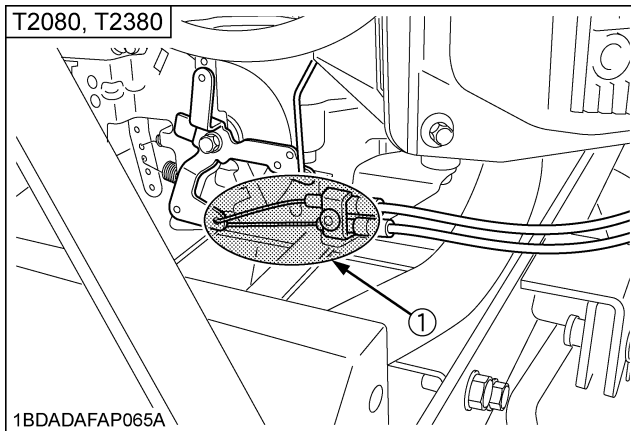
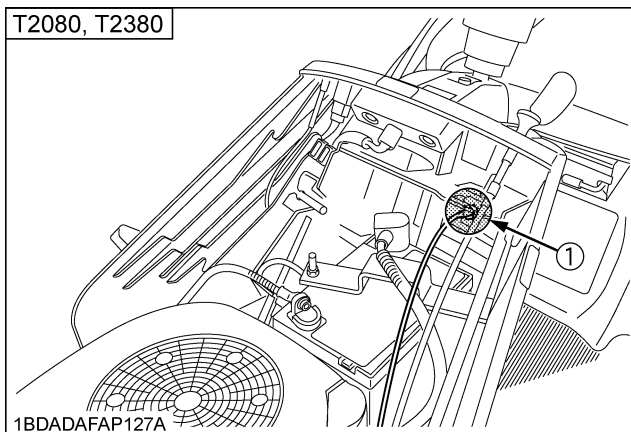
- Be sure to stop the engine and remove the key before oiling.

Oil the following points before starting.

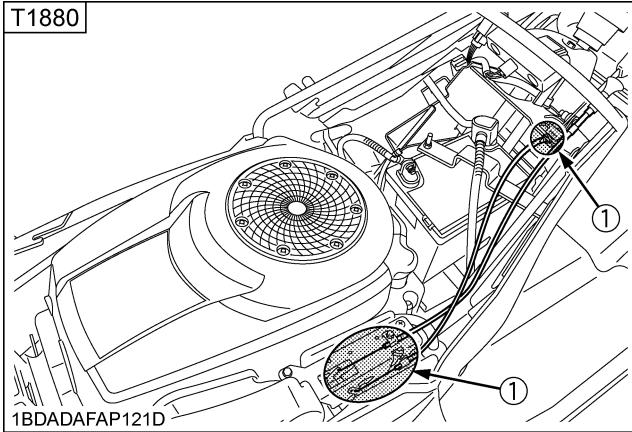


(1) Front axle pivot pin

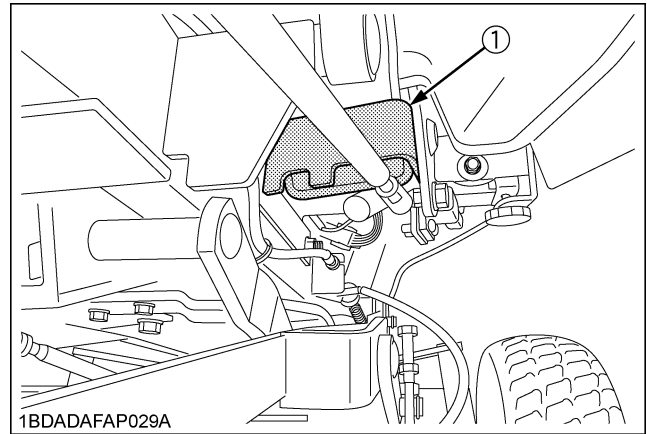
Oiling ends of outer wires.



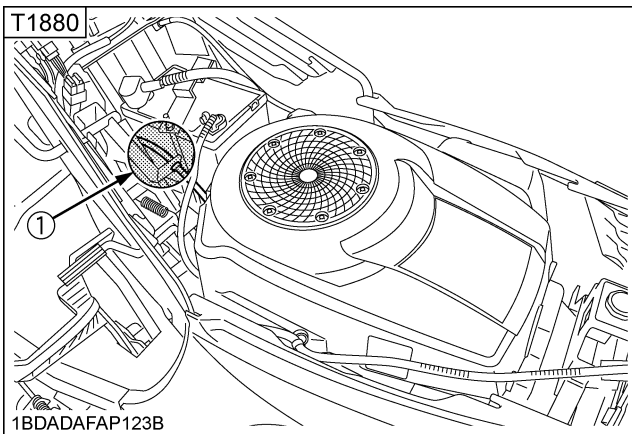
(1) Throttle cable



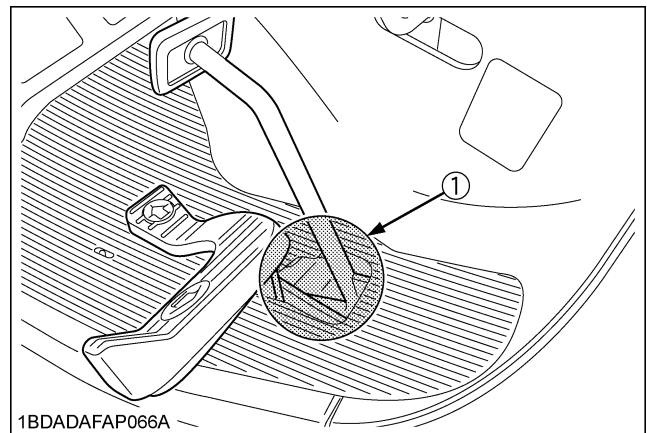
(1) Throttle cable



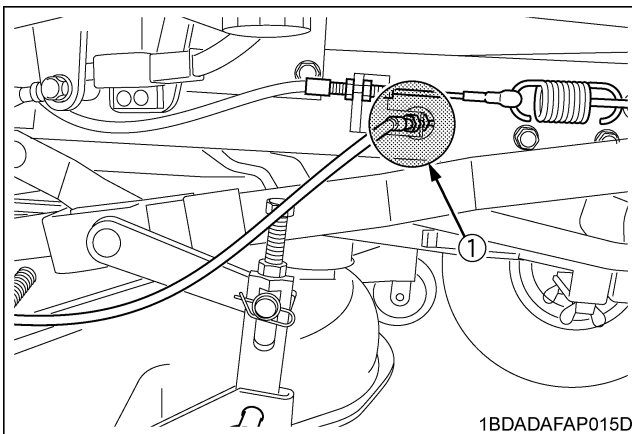
(1) Brake pedal



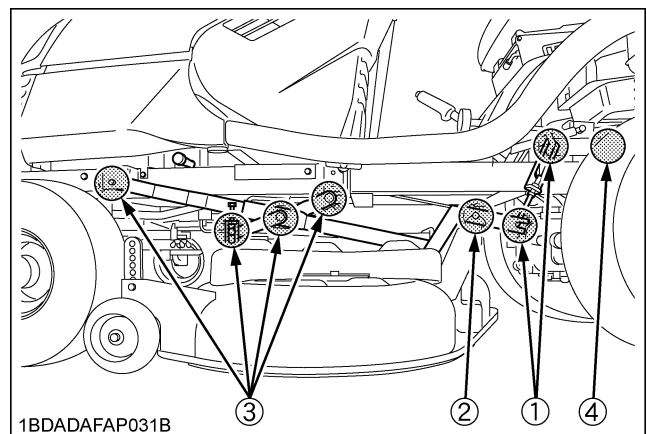
(1) PTO clutch cable



(1) Speed control pedal shaft



(1) Mower brake cable



- (1) Around the hole of the mower link
- (2) Around the pin
- (3) Pivot of mower link
- (4) Pivot of lift arm

NOTE :

- Oil these points on both sides of the machine.

EVERY 25 HOURS

■ Cleaning Air Cleaner

[T2080, T2380]

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

NOTE :

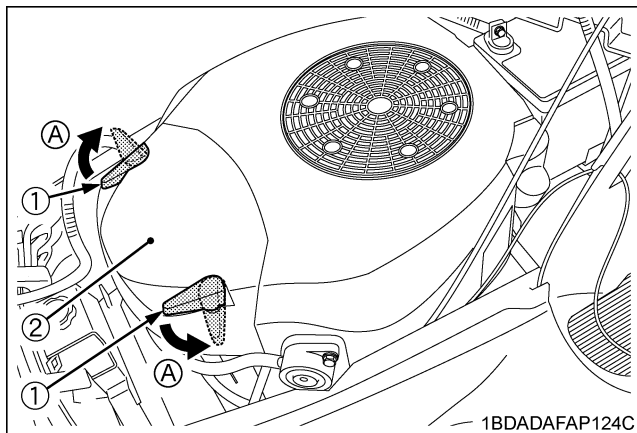
- Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine causing premature wear and failure.

◆ Clean precleaner

[T2080, T2380]

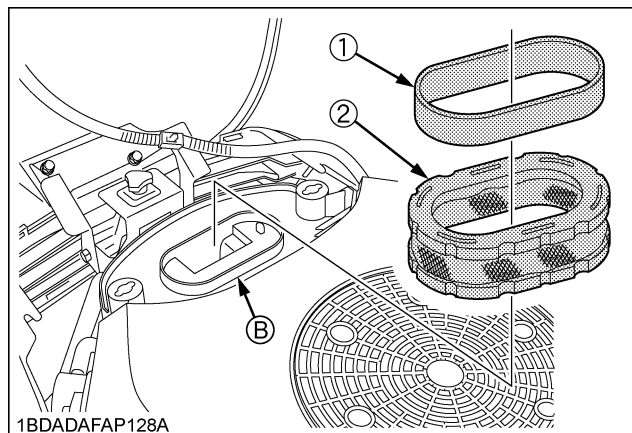
Wash and reoil the precleaner **every 25 hours of operation**. (more often under extremely dusty or dirty conditions.)

1. Rotate air cleaner cover levers outward to unlock cover, remove air cleaner cover.



(1) Air cleaner cover lever (A) "ROTATE"
(2) Air cleaner cover

2. Remove air cleaner element as an assembly for servicing, remove precleaner from the air cleaner element. Make sure the base and the sealing area is clean before reassembly is performed.



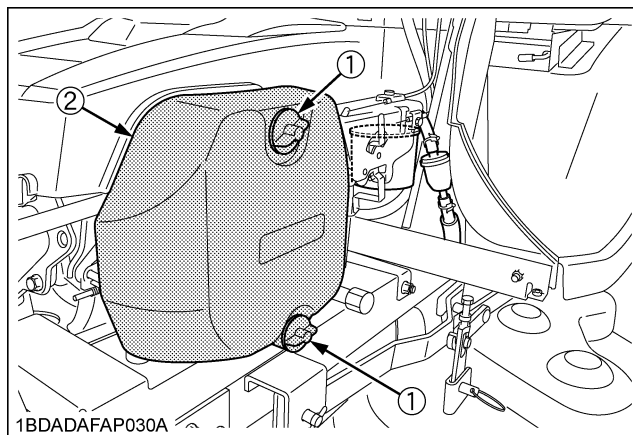
(1) Precleaner (B) Base
(2) Air cleaner element

3. Wash the precleaner in warm water with detergent. Rinse the precleaner thoroughly until all traces of detergent are eliminated. Squeeze out excess water. (do not wring.) Allow the precleaner to air dry.
4. Saturate the precleaner with new engine oil. Squeeze out all excess oil.
5. Reinstall the precleaner over the paper element and install the assembly on the base.
6. Position air cleaner cover with levers outward over air cleaner, and turn levers inward to lock.

[T1880]

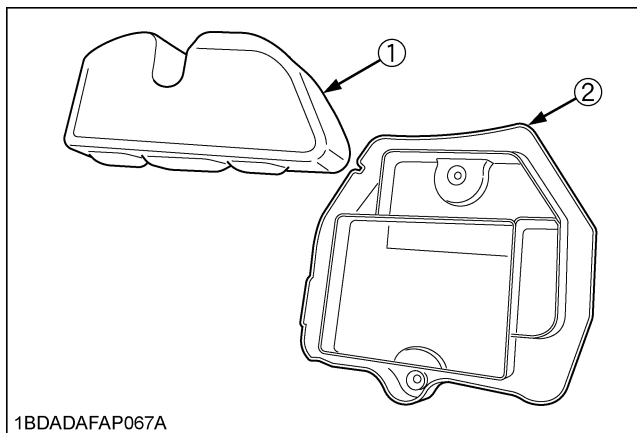
Wash and reoil the precleaner **every 25 hours or every 2 months of operation**. (more often under extremely dusty or dirty conditions.)

1. Loosen the air cleaner cover knobs and remove the air cleaner cover.



(1) Air cleaner cover knob
(2) Air cleaner cover

2. Remove the precleaner from the air cleaner cover.



(1) Precleaner
(2) Air cleaner cover

3. Wash the precleaner in warm water with detergent. Rinse the precleaner thoroughly until all traces of detergent are eliminated. Squeeze out excess water. (do not wring.) Allow the precleaner to air dry.
4. Saturate the precleaner with new engine oil. Squeeze out all excess oil.
5. Reinstall the precleaner into the upper section of the air cleaner cover. Make sure hole in precleaner is aligned with the upper mounting knob.
6. Reinstall the air cleaner cover and secure with the 2 knobs.

NOTE :

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

EVERY 50 HOURS

■ Adjusting Belt Tensions and Replacement

◆ PTO belt tension



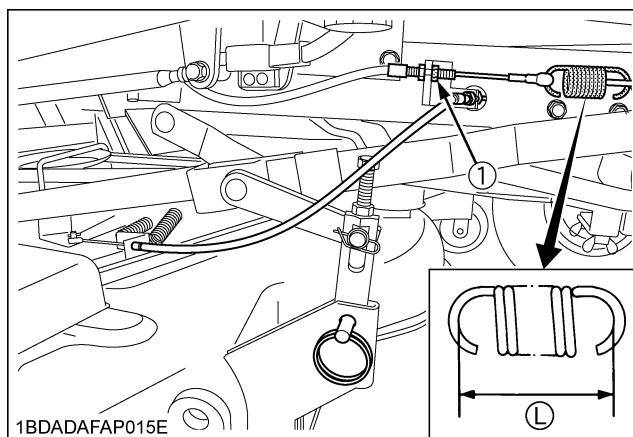
WARNING

To avoid serious injury:

- Always stop the engine, set the parking brake, remove the key, and disengage PTO.

If the PTO belt slips while the PTO is operating under load, check the PTO spring length and adjust the tension spring length, as explained below.

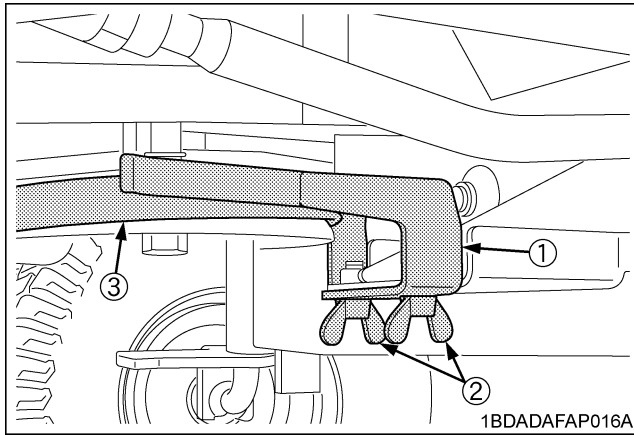
1. Push down the PTO lever to the "ENGAGED" position.
2. If (L) is shorter than 73 mm (2.87 in.) adjust it with the tension clutch cable adjusting nut.
(L) should be 75 to 78 mm. (2.95 to 3.07 in.)
3. After adjustment tighten the nut securely.
When replacing the PTO belt, (L) should be 78 to 81 mm (3.07 to 3.19 in.) at 51 mm (2 in.) cutting height.



(1) Tension clutch cable adjusting nut

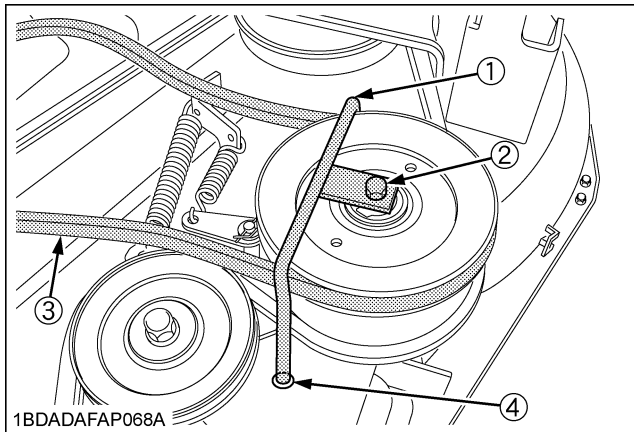
◆ PTO belt replacement

1. Remove the belt support bracket, the belt support and the PTO belt.



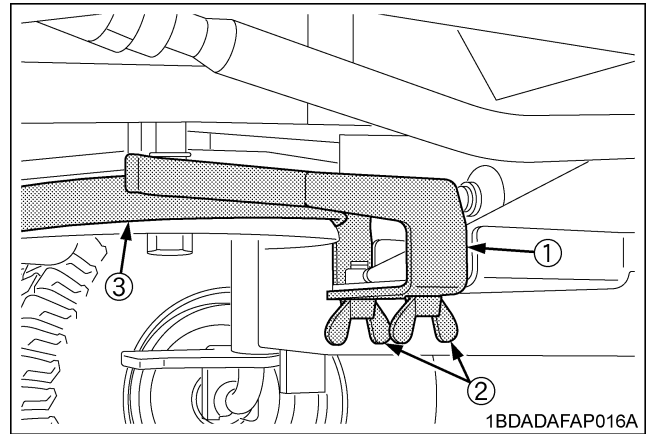
- (1) Belt support bracket
- (2) Wing bolt
- (3) PTO belt

2. Hang the PTO belt on the pulley.
While inserting the belt support into the hole of the mower deck, fasten the bolt.



- (1) Belt support
- (2) Belt support bolt
- (3) PTO belt
- (4) Hole of the mower deck

3. Attach the PTO belt to the engine pulley then attach the belt support bracket.



- (1) Belt support bracket
- (2) Wing bolt
- (3) PTO belt

[Belt support bracket attaching and adjustment]

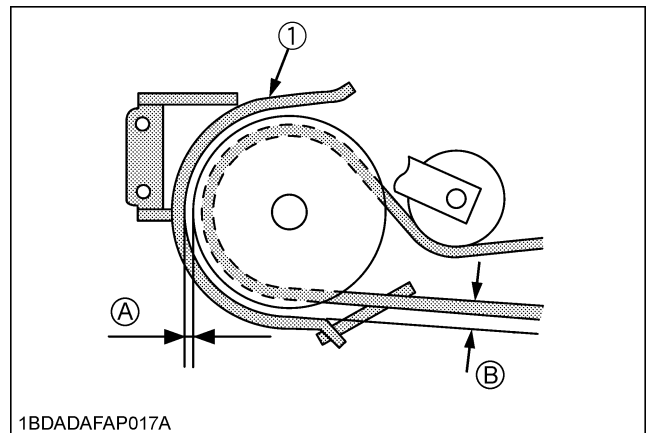
Adjust the belt support bracket to the following specification with the PTO lever in the "ENGAGED" position and tighten the belt support bracket.



WARNING

To avoid serious injury:

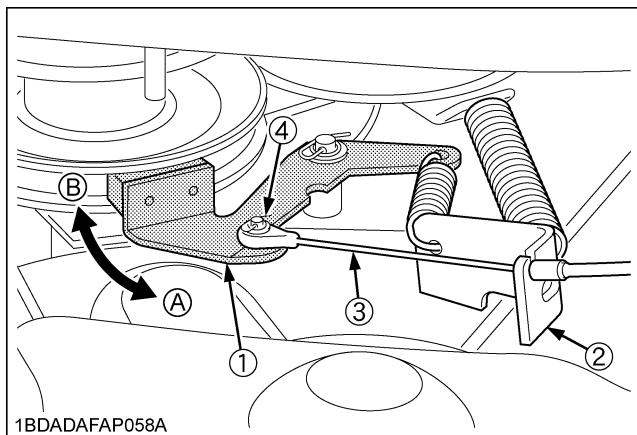
- Make sure engine is not running.



- (1) Belt support bracket
- (A) Clearance between belt support bracket and pulley. 1 to 2 mm (3/64" to 5/64")
- (B) Clearance between belt support bracket and belt. 6 to 7 mm (15/64" to 9/32")

■ Checking Mower Brake and Adjusting Mower Brake Wire

1. The mower brake is a safety device to stop the blades. When the PTO lever is in the "DISENGAGED" position, the brake is applied to the pulley groove and the blade stops turning within 5 seconds. With the PTO lever at the "ENGAGED" position, the brake is off the pulley groove and the pulley is allowed to turn.



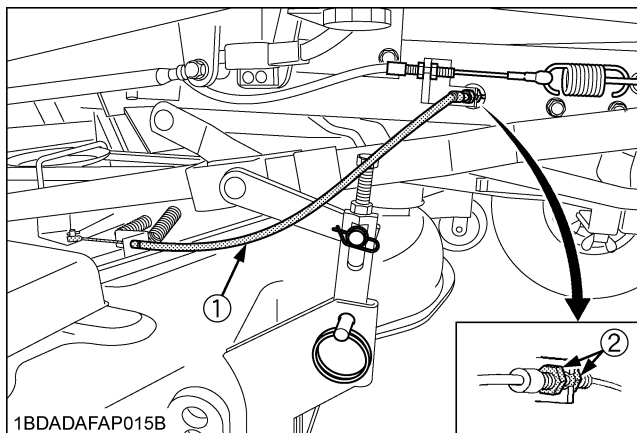
- (1) Mower brake
(2) Wire holder
(3) Mower brake wire
(4) Rue ring cotter pin
(A) PTO lever "ENGAGED"
(B) PTO lever "DISENGAGED"

⚠ WARNING

To avoid serious injury:

- Make sure engine is not running when adjusting the brake.
- Do not operate mower when the brake is not properly adjusted.

2. Check mower brake performance by repeatedly switching the PTO lever from "ENGAGED" to "DISENGAGED". Adjust the mower brake wire if necessary.



- (1) Mower brake wire
(2) Adjustment nuts

■ Checking Brake Pedal

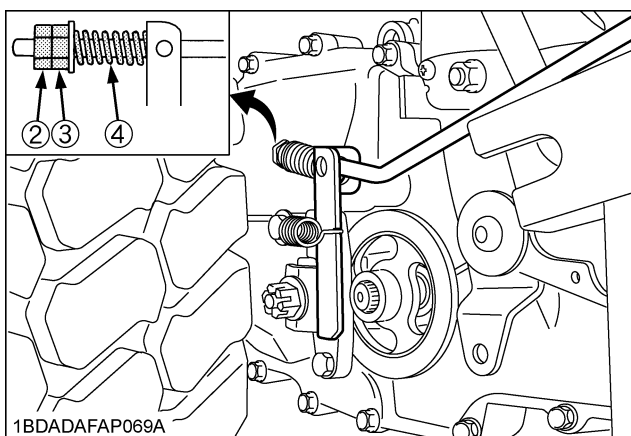
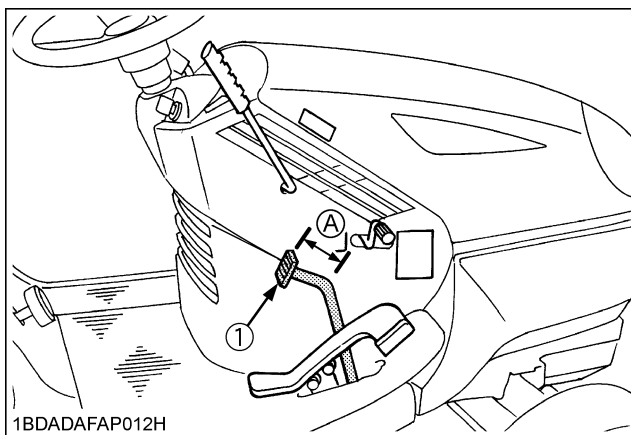


WARNING

To avoid serious injury:

- When making adjustments, park the machine on flat area, block wheels, stop engine and remove the key.

Correct play ranges from 40 to 50 mm (1.6 to 2.0 in.). If it is not correct, loosen the lock nut (2) and turn the nut (3) in the desired direction until the proper play is achieved. After adjustment, retighten lock nut securely.



- (1) Brake pedal
(2) Lock nut
(3) Nut
(4) Spring
(A) Play 40 to 50 mm (1.6 to 2.0 in.)

■ Lubricating All Grease Fittings

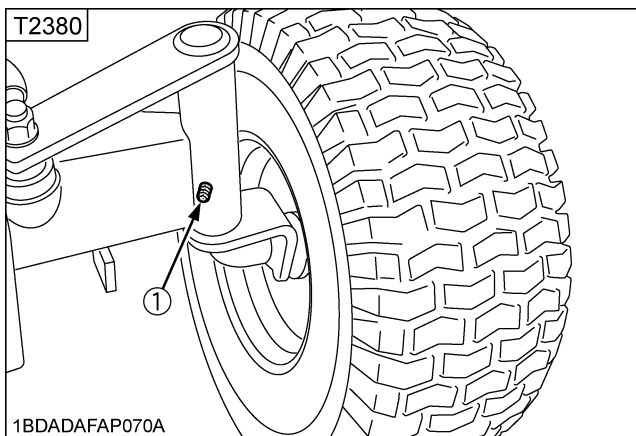
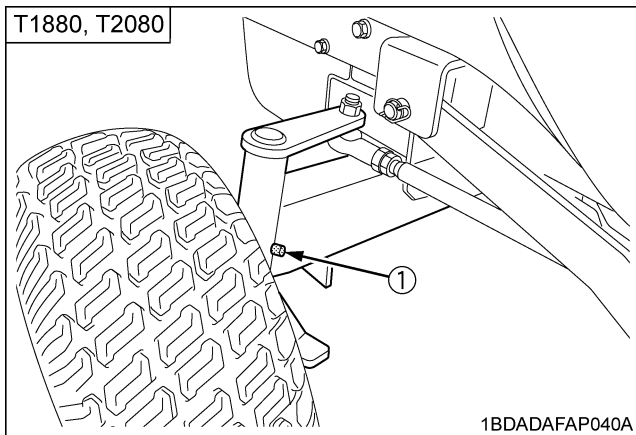


WARNING

To avoid serious injury:

- Be sure to stop the engine and remove the key before greasing.

Grease the following grease nipples.



(1) King pins (RH & LH)

■ Checking Tire Pressure



WARNING

To avoid serious injury:

- Do not attempt to mount a tire on a rim. This should be done by a qualified person with the proper equipment.
- Always maintain the correct tire pressure. Do not inflate tires above the recommended pressure shown in the Operator's Manual.

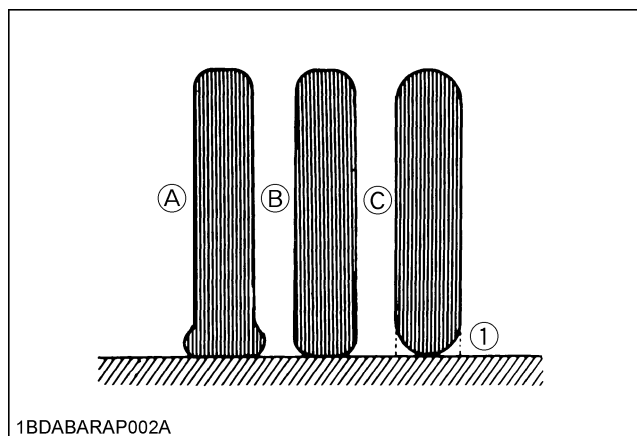
IMPORTANT :

- Do not use tires larger than specified.

■ Inflation Pressure

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

Normal wheel tire pressures cold	
Front	Rear
100 kPa 14 psi 1.0 kgf/cm ²	70 kPa 10 psi 0.7 kgf/cm ²



(1) Ground

(A) "INSUFFICIENT"
(B) "NORMAL"
(C) "EXCESSIVE"

IMPORTANT :

- When jacking up the rear tires, be sure
 1. To block the front tires.
 2. To position a jack inside beside either of the supporting plates.

■ Checking Air Cleaner Element [T2080,T2380]

(See "Cleaning Air Cleaner" in "EVERY 25 HOURS" in "PERIODIC SERVICE" section.)

■ Checking Carbon Canister Air Filter

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

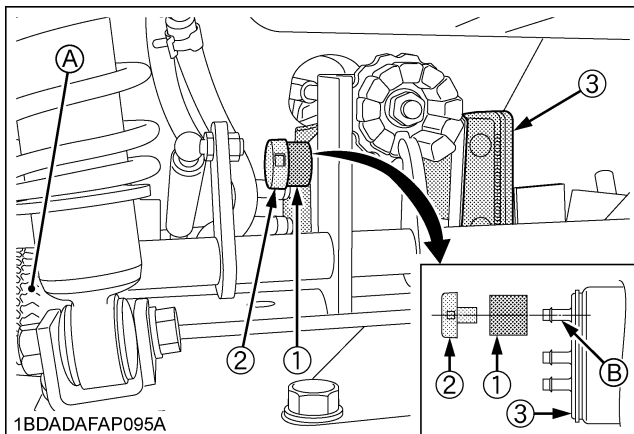


WARNING

To avoid serious injury:

- Always stop the engine, set the parking brake, remove the key, and disengage PTO.

1. Remove the cover and remove the carbon canister air filter.



- (1) Canister air filter
(2) Cover
(3) Carbon canister

- (A) Left rear tire
(B) Air port

2. Check to see if the carbon canister air filter is worn out, damaged or dirty.
3. If the air filter is dirty, wash the air filter in warm water with detergent. Then rinse the air filter thoroughly until all traces of detergent are eliminated. Squeeze out excess water. (do not wring.) Allow the air filter to air dry. Do not use high pressure air to clean filter.
4. If the air filter is worn out, damaged or too dirty to wash clean, replace it with a new one.
5. Reinstall the carbon canister air filter and secure it with the cover.

NOTE :

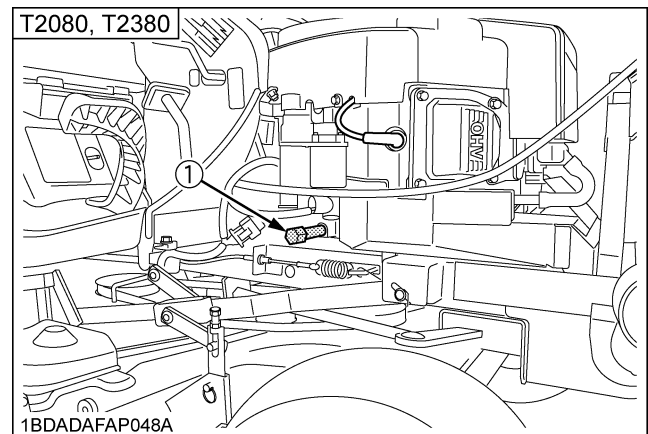
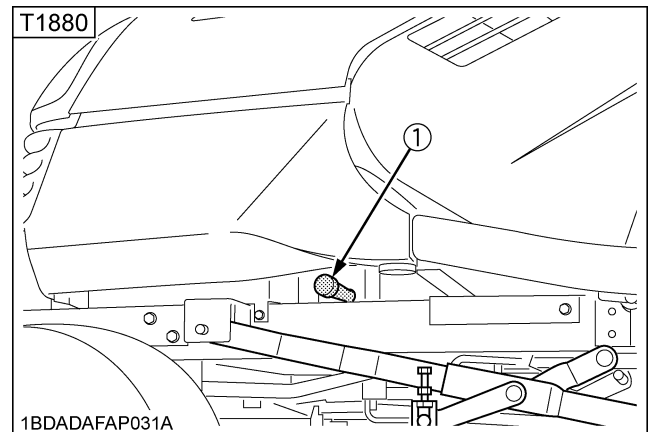
- Operating in dusty condition may require more frequent maintenance than above.

EVERY 100 HOURS

■ Changing Engine Oil

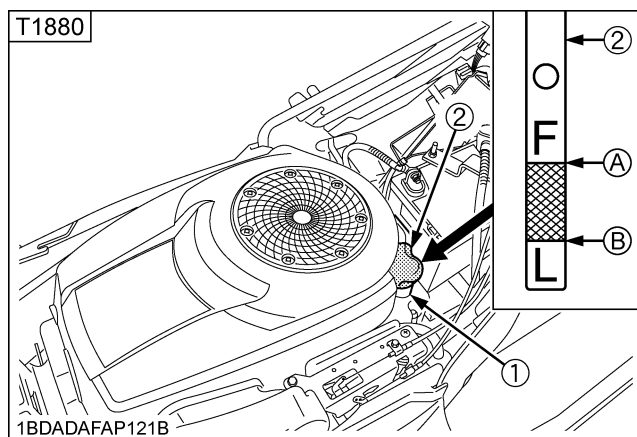
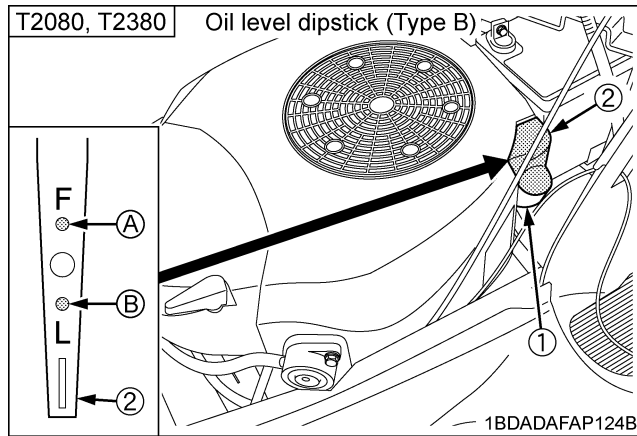
Every 100 hours of operation or annually change the engine oil.

1. To change the used oil, remove the drain plug at the side of the engine and drain the oil completely. The used oil can be drained out more easily if the engine is warm.



- (1) Drain plug

2. Fill with the new oil up to the full level on the dipstick. Do not overfill.



- (1) Engine oil port
(2) Oil level dipstick
(A) "UPPER LEVEL"
(B) "LOWER LEVEL"

3. To check the oil level.

[T2080, T2380]

- Oil level dipstick (type A)

Remove the dipstick, wipe it clean, replace it SCREWING IT IN, and draw it out again. Check to see that the oil level is between the 2 marks.

- Oil level dipstick (type B)

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

[T1880]

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

■ Cleaning Engine Shroud



WARNING

To avoid serious injury:

- Make sure engine is cool to the touch before removing shrouds.

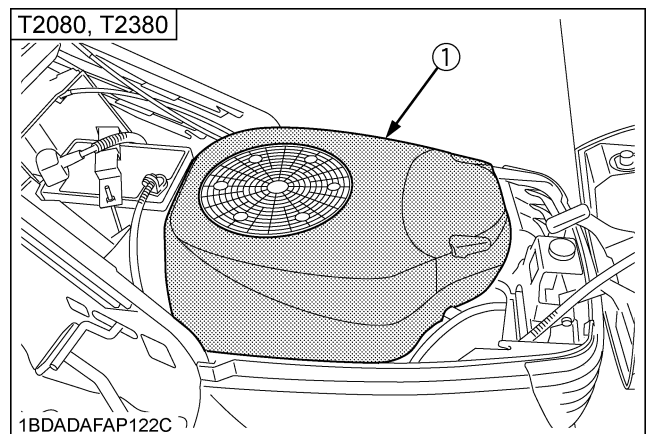
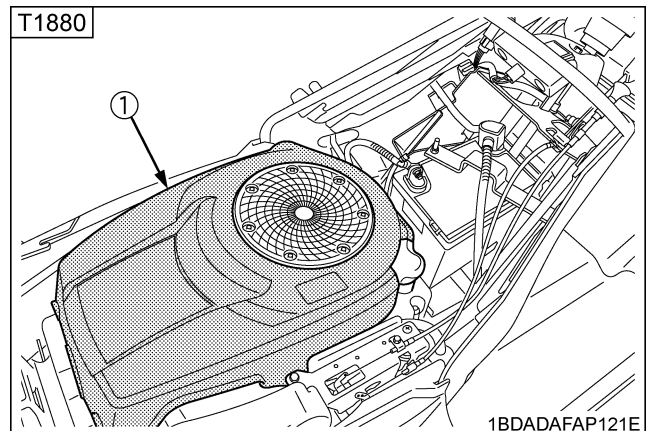
- Remove the engine shroud mounting bolts and detach the shroud.
- Check to see if the engine's cooling fins are blocked with dust and dirt. Clean them with compressed air if required.



WARNING

To avoid serious injury:

- Always shield eyes and face from air deposits and objects.



(1) Shroud

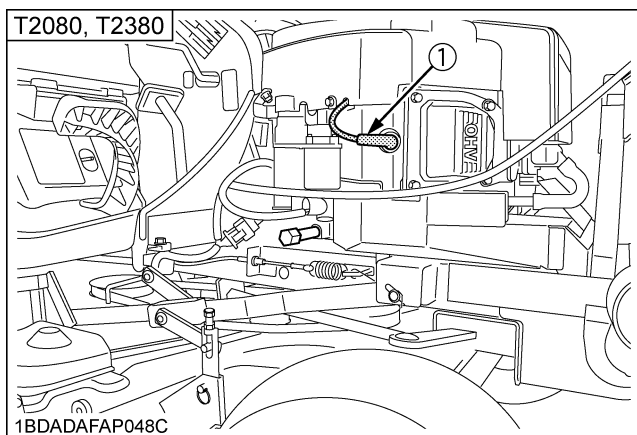
■ Checking Spark Plug

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

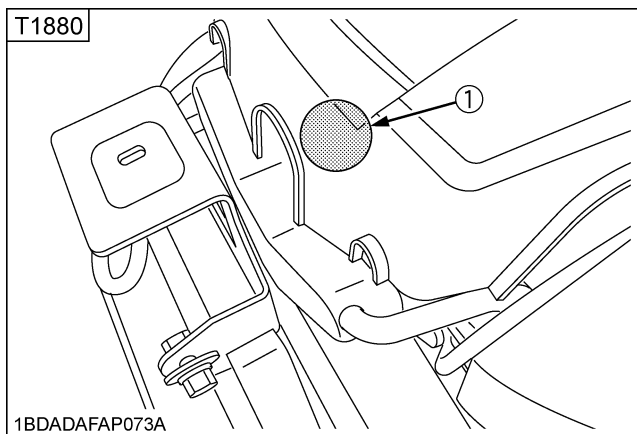
1. Lift hood.
2. Remove the spark plug wire from spark plug.
3. Use a spark plug wrench to remove plug.

NOTE :

- This engine is equipped with resistor-type spark plug.
4. Inspect spark plug for cracked porcelain, pitted electrodes, or other wear and damage. Replace spark plug if necessary.



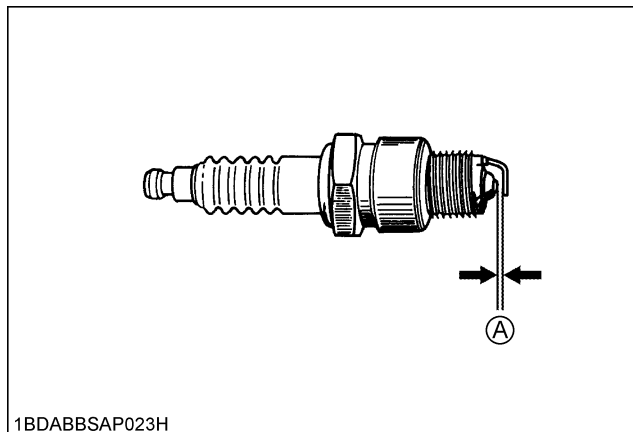
(1) Spark plug (both sides)



(1) Spark plug

5. Check spark plug gap with gap gauge.

Recommended spark plug	CHAMPION RC12YC
------------------------	-----------------



(A) 0.76 mm (0.03 in.)

■ Checking Fuel Lines



WARNING

To avoid serious injury:

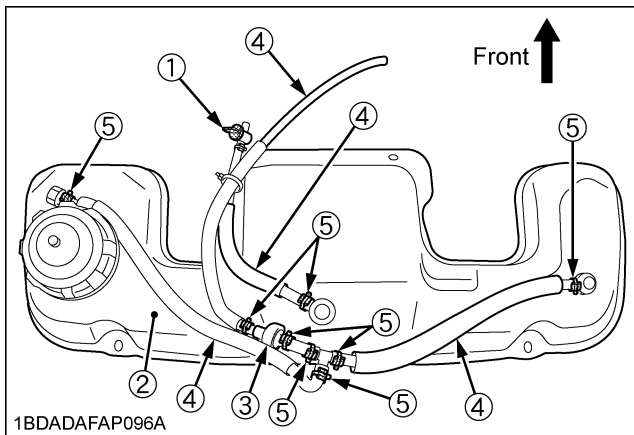
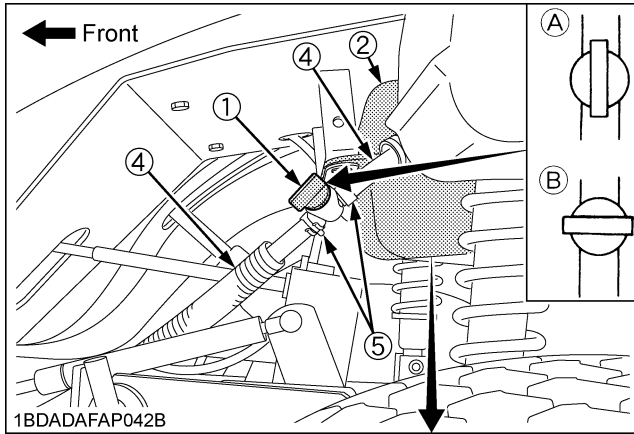
- Be sure to stop the engine and remove the key when attempting to make the following checks and changes.
- Never fail to check the fuel lines periodically. The fuel lines are subject to wear and aging. Fuel may leak out onto the running engine, causing a fire.

The fuel line connections should be checked **every 100 hours of operation**, whichever occurs first.

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

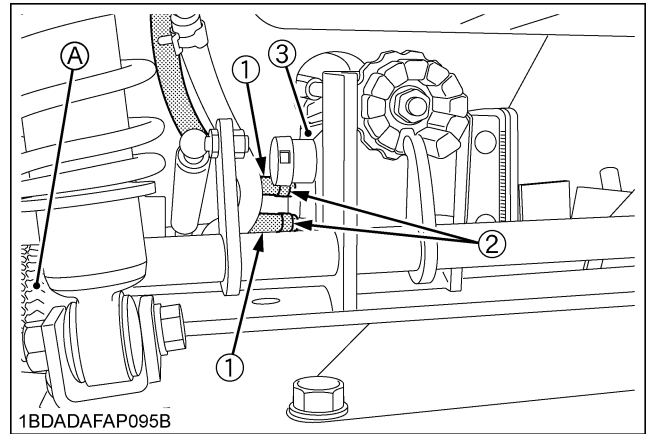
IMPORTANT :

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



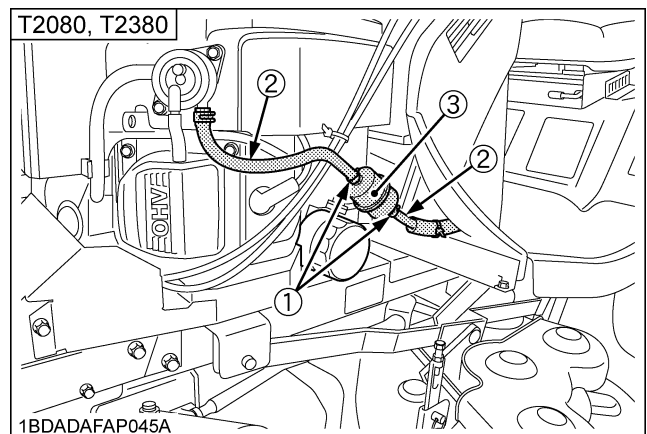
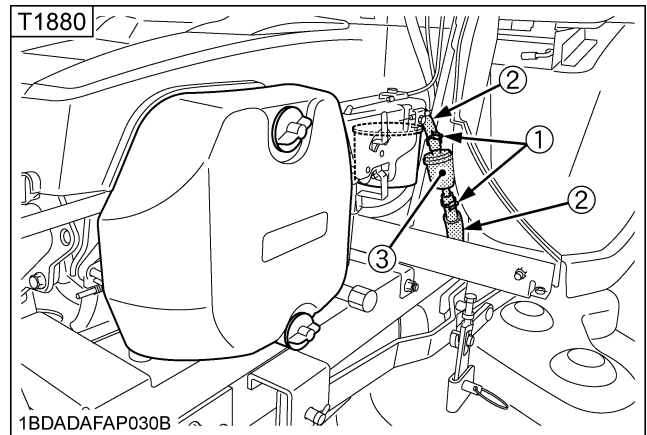
- (1) Fuel valve
(2) Fuel tank
(3) 2 way valve
(4) Fuel line
(5) Pipe clamps

- (A) "OPEN"
(B) "CLOSE"



- (1) Fuel line
(2) Pipe clamps
(3) Carbon canister

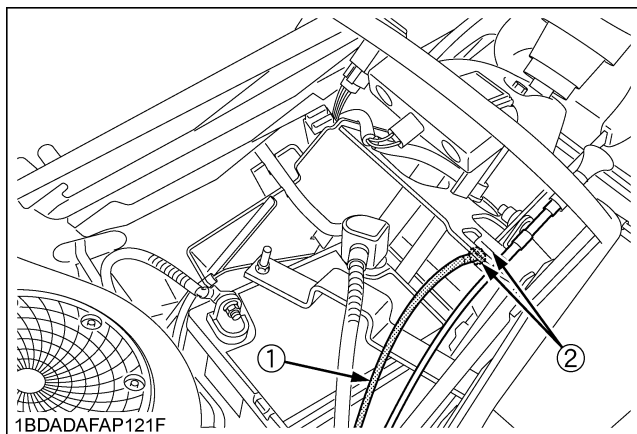
- (A) Left rear tire



- (1) Pipe clamps
(2) Fuel line
(3) Fuel filter

■ Checking Cables

If the throttle lever fails to accelerate the engine speed, look for loose nuts. If they are loose, tighten them.



- (1) Throttle cable
(2) Lock nuts

■ Checking Battery Condition



DANGER

To avoid the possibility of battery explosion:
For the refillable type battery, follow the instructions below.

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



DANGER

To avoid serious injury or death:

- When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.



WARNING

To avoid serious injury:

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

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

IMPORTANT :

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

Battery Type	Volts (V)	Capacity 20 HR (Ah)	Cold Cranking Amps	Normal Charging Rate (A)
10U1L	12	25	300	6 to 10

(For non-accessible maintenance-free type batteries.)

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

Battery voltage	Reference state of charge
12.6	100%(Full charge)
12.4	75%
12.2	50%
12.0	25%
11.8	0%

◆ Battery Charging



DANGER

To avoid serious injury or death:

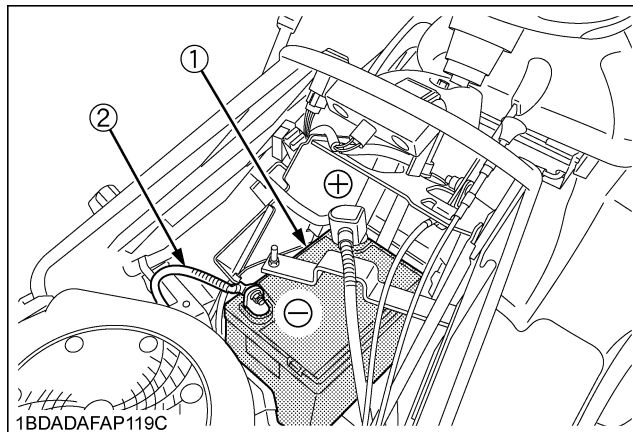
- When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.



WARNING

To avoid serious injury:

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



(1) Battery

(2) Ground cable

(+): Positive terminal

(-): Negative terminal

1. To slow charge the battery, connect the battery positive terminal to the charger positive terminal and the negative to the negative, then charge for at least 1 hour at 6 to 10 amperes.
2. 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 do this will shorten the battery's service life.
3. When the specific gravity of electrolyte is between 1.27 and 1.29 the charging is completed.

◆ Battery for storage

1. When storing the machine for a long period, remove the battery from machine, adjust the electrolyte to the proper level and store in a dry place out of direct sunlight.
2. The battery self-discharges while it is stored. Recharge it once every 3 months in hot seasons and once every 6 months in cold seasons.

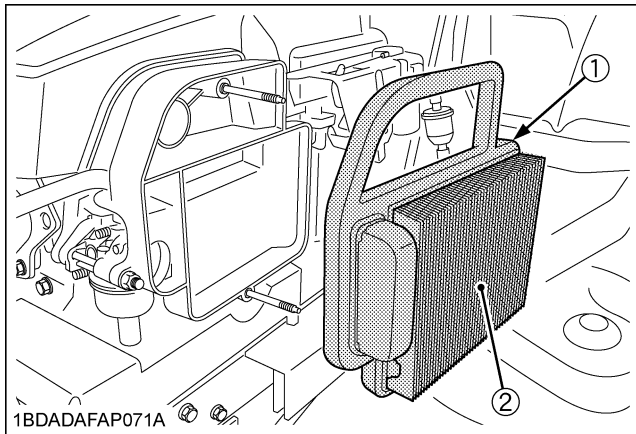
■ Replacing Air Cleaner Paper Element

[T1880]

Every 100 hours of operation or annually replace the paper element if equipped with a precleaner. Check **every 25 hours of operation or annually** if not equipped with a precleaner.

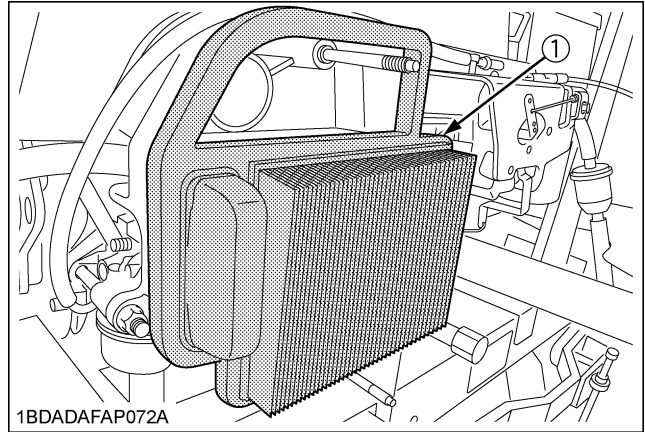
(More often under extremely dusty or dirty conditions.)

1. Loosen the air cleaner cover knobs and remove the air cleaner cover.
2. Remove the air cleaner cover and the precleaner, service as required.
3. Remove the air cleaner element with the integral rubber seal.



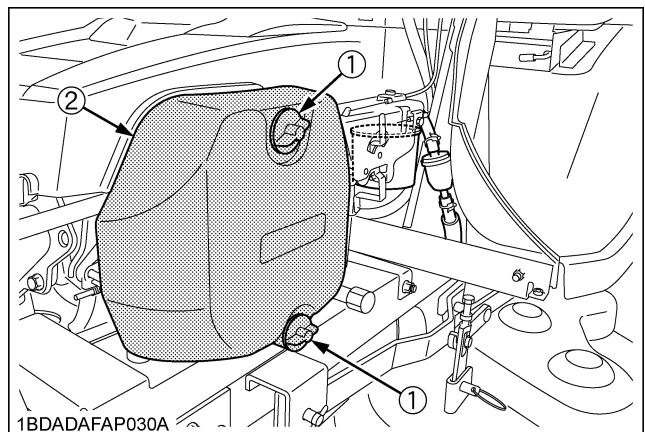
(1) Air cleaner element with rubber seal
(2) Paper element

4. Gently tap the pleated side of the paper element to dislodge dirt. **Do not** wash the paper element or use pressurized air, as this will damage the element. Replace a dirty, bent, or damaged element with a genuine element. Handle new elements carefully; do not use if the rubber seal is damaged.
5. Clean all air cleaner components of any accumulated dirt or foreign material. Prevent any dirt from entering the throat of carburetor.
6. Install the air cleaner element with the pleated side "out" and seat the rubber seal onto the edges of the air cleaner base.



(1) Air cleaner element with rubber seal

7. Reinstall the precleaner, into the upper section of the air cleaner cover. Make sure the hole in precleaner is aligned with the upper mounting knob.
8. Reinstall the air cleaner cover and secure with the 2 knobs.

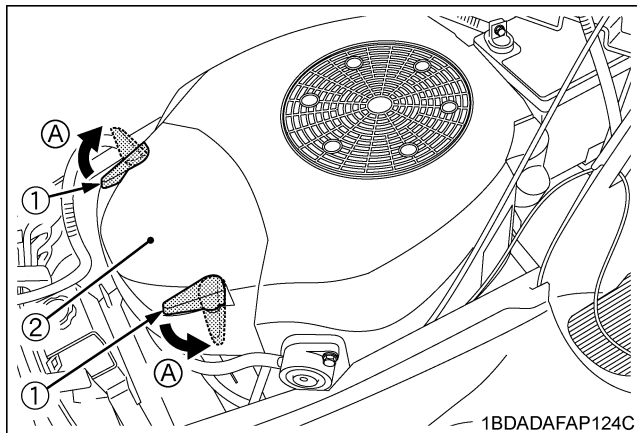


(1) Air cleaner cover knob
(2) Air cleaner cover

[T2080, T2380]

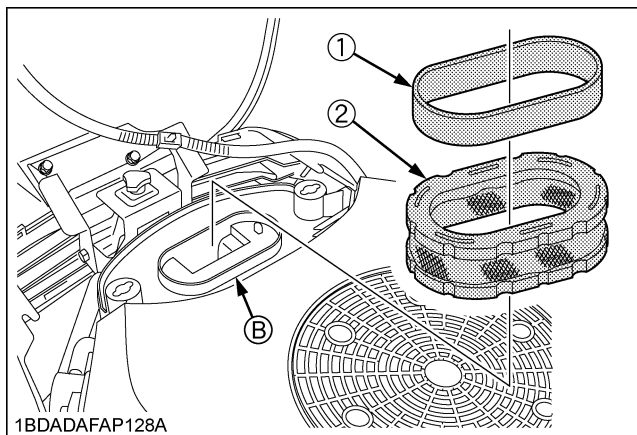
Every 100 hours of operation or annually replace the paper element if equipped with a precleaner. Check **every 50 hours of operation** if not equipped with a precleaner. (More often under extremely dusty or dirty conditions.)

1. Rotate air cleaner cover levers outward to unlock cover, remove air cleaner cover.



- (1) Air cleaner cover lever (A) "ROTATE"
(2) Air cleaner cover

2. Remove air cleaner element as an assembly for servicing, remove precleaner from the air cleaner element. Service the precleaner as described in "Cleaning Air Cleaner" in "EVERY 25 HOURS".



- (1) Precleaner (B) Base
(2) Air cleaner element

3. Gently tap the paper element to dislodge dirt. **Do not wash the paper element or use pressurized air**, as this will damage the element. Replace a dirty, bent, or damaged element with a genuine part. Handle the new element carefully; do not use if the sealing surfaces are bent or damaged.
4. Clean the air cleaner base as required and check condition.
5. Reinstall the precleaner over the paper air cleaner element and install the assembly on the base.

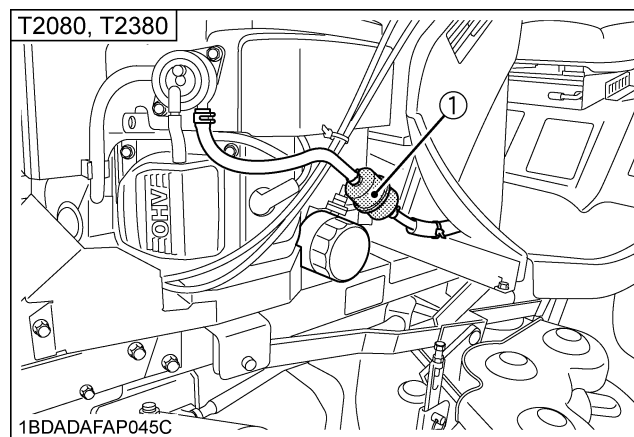
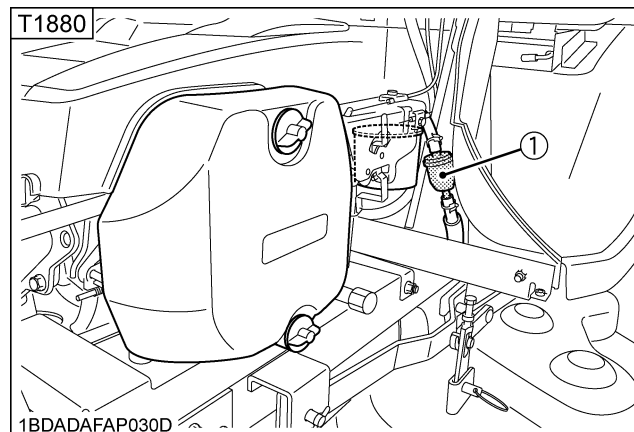
6. Position air cleaner cover with levers outward over air cleaner, and turn levers inward to lock.

NOTE :

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

■ Replacing Fuel Filter

This should be done by your local KUBOTA Dealer.



- (1) Fuel filter

■ Engine Oil Filter Cartridge Change



WARNING

To avoid serious injury:

- Engine oil is a toxic substance. Dispose of used oil properly. Contact your local authorities for approved disposal methods or possible recycling.
- Be sure to stop the engine and remove the key before changing the oil and the oil filter cartridge.
- Allow engine to cool down sufficiently; oil can be hot and may cause burns.

The oil filter cartridge must be changed **every 100 service hours** or **annually**.

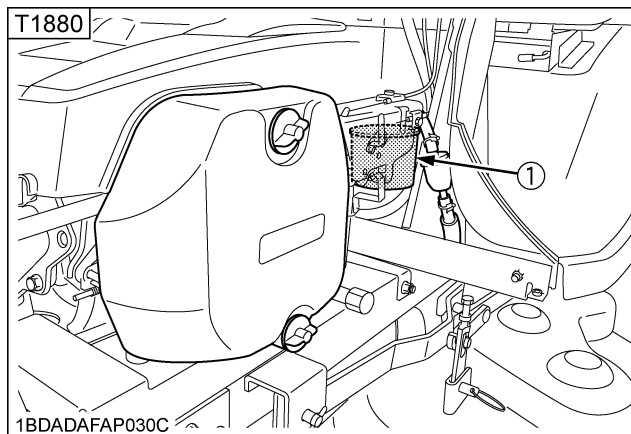
Always use a genuine oil filter.

[T1880]

1. To keep dirt, grass clippings, etc., out of the engine, clean the area around the oil fill cap/dipstick before removing it.
2. Remove the oil drain plug and oil fill cap/dipstick. Be sure to allow ample time for complete drainage.
3. Remove the old filter and wipe off the mounting pad.
4. Reinstall the drain plug. Make sure it is tightened to **14 N-m (125 in. lb.)** torque.
5. Place the new replacement filter in a shallow pan with the open end up. Pour new oil of the proper type, in through the threaded center hole. Stop pouring when the oil reaches the bottom of the threads. Allow a minute or 2 for the oil to be absorbed by the filter material.
6. Apply a thin film of clean oil to the rubber gasket on the new filter.
7. Install the replacement oil filter to the mounting pad. Turn the oil filter clockwise until the rubber gasket contacts the pad, then tighten the filter an additional **2/3 to 1 turn**.
8. Fill the crankcase, with new oil of the proper type, to the "F" mark on the dipstick. Refer to "LUBRICANTS AND FUEL" in "MAINTENANCE" section. Always check the level with the dipstick before adding more oil.
9. Reinstall the oil fill cap/dipstick and push firmly into place.
10. Test run the engine to check for leaks. Stop the engine, allow a minute for the oil to drain down, and recheck the level on the dipstick. Add more oil, as necessary, so the oil level is up to but not over the "F" mark on the dipstick.

NOTE :

- To prevent extensive engine wear or damage, always maintain the proper oil level in the crankcase. Never operate the engine with the oil level below the "L" mark or over the "F" mark on the dipstick.



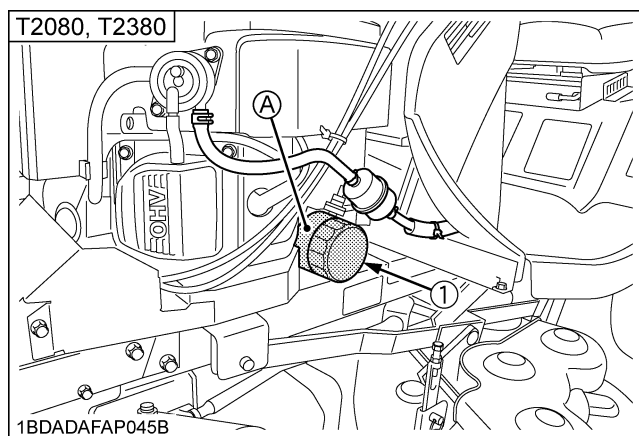
(1) Engine oil filter cartridge

[T2080, T2380]

1. The drain plug is located on the starter side of the oil pan. Clean the area around the oil drain plug and the oil fill cap/dipstick.
2. Remove the drain plug and the oil fill cap/dipstick.
3. Allow the oil to drain and then reinstall the drain plug. Tighten **13.6 N-m (10 ft. lb.)**.
4. Remove the old filter and wipe off the filter adapter with a clean cloth.
5. Place a new replacement filter in a shallow pan with the open end up. Pour new oil, of the proper type, in through the threaded center hole. Stop pouring when the oil reaches the bottom of the threads. Allow a minute or 2 for the oil to be absorbed by the filter material.
6. Apply a thin film of clean oil to the rubber gasket on the new oil filter.
7. Install the new oil filter to the filter adapter. Hand tighten the filter clockwise until the rubber gasket contacts the adapter, then tighten the filter an additional **3/4-1 turn**.
8. Fill the engine with the proper oil to the "FULL" or "F" mark on the dipstick. Always check the oil level with the dipstick before adding more oil.
9. Reinstall the oil fill cap/dipstick and tighten securely.
10. Start the engine and check for oil leaks. Recheck oil level before placing the engine into service. Stop the engine, correct any leaks, and allow a minute for the oil to drain down, then recheck the level on the dipstick.

NOTE :

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



(1) Engine oil filter cartridge (A) "MOUNTING SURFACE"

EVERY 200 HOURS**■Cleaning Bendix Starter [T1880]**

Consult your local KUBOTA Dealer for this service.

EVERY 500 HOURS**■Cleaning Solenoid Shift Starter [T2080, T2380]**

Consult your local KUBOTA Dealer for this service.

EVERY 600 HOURS**■Replacing Transaxle Filter****WARNING**

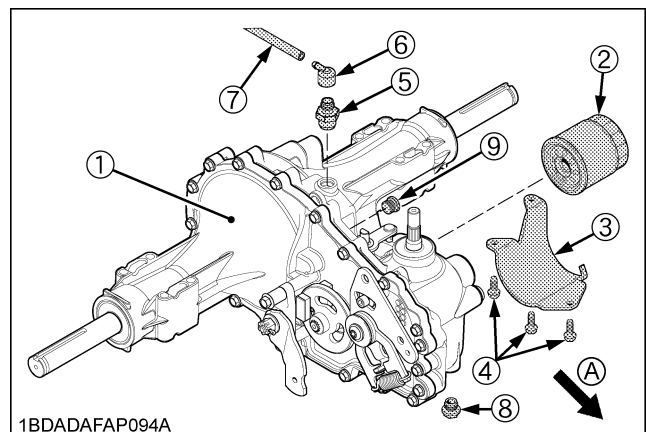
To avoid serious injury:

- Park the machine on a firm and level surface.
- Apply the parking brake.
- Be sure to stop the engine and remove the key before changing or checking the oil.
- Allow transmission case to cool down sufficiently; oil can be hot and may cause burns.

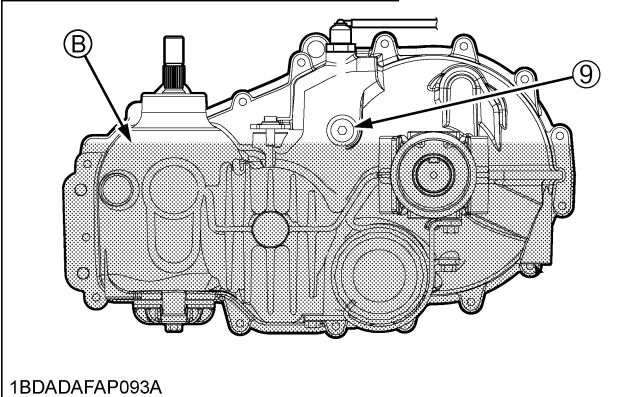
1. Apply the bypass valve.
2. Remove the hex head bolts (4), and filter guard (3). Clean any loose debris from around the perimeter of the oil filter (2).
3. Place an oil drain pan (12" or more diameter and 8 qt. capacity is optimal) beneath the oil filter. Remove the oil filter (2) and discard it.

NOTE :

- Always replace the filter when performing any internal maintenance to the transaxle.
4. Remove the metal oil drain plug (8) from drain port and allow any remaining oil to drain from the transaxle.
 5. After the oil has drained, inspect all parts for excessive wear or damage. Replace if necessary. Then install the metal oil drain plug (8) into transaxle. Torque the plug (8) to 1.70 N-m (1.25 lbf-ft).
 6. Wipe the filter base surface off and apply a film of new oil to the gasket of the new replacement filter (Hydro-Gear part number 52114).
 7. Install the new filter by hand, turn 3/4 to 1 full turn after the filter gasket contacts the filter base surface.



LEFT SIDE VIEW OF TRANSAXLE



- | | |
|----------------------------|-------------------------------|
| (1) Transaxle | (7) Hose |
| (2) Transaxle oil filter | (8) Drain plug |
| (3) Filter guard | (9) Oil level check port plug |
| (4) Hex flange head bolt | (A) FRONT |
| (5) Metal fitting assembly | (B) OIL LEVEL |
| (6) Barbed cap | |
8. Re-install the filter guard (3) with 3 hex head bolts (4). Torque bolts (4) to 7.35 N-m (5.42 lbf-ft) securely.
 9. Remove the oil level check port plug (9) from the transaxle prior to filling with oil. This will allow the transaxle to vent during oil fill.
 10. Remove the hose (7), the barbed cap (6) and the metal fitting assembly (5).
 11. Fill with 20W50 motor oil until oil just appears at the bottom of the oil level check port. Install the oil level check port plug (9) into transaxle. Torque the plug (9) to 20.34 N-m (15.0 lbf-ft).
 12. Install the metal fitting assembly (5) to the transaxle (1) and torque the metal fitting assembly (5) to 20.34 N-m (15.0 lbf-ft). Then install the barbed cap (6) and the hose (7).
 13. Proceed to the purge procedure.

■ Changing Transaxle Fluid

(See "Replacing Transaxle Filter" in "EVERY 600 HOURS" in "PERIODIC SERVICE" section.)

EVERY 2 YEARS

■ Replacing Fuel Lines

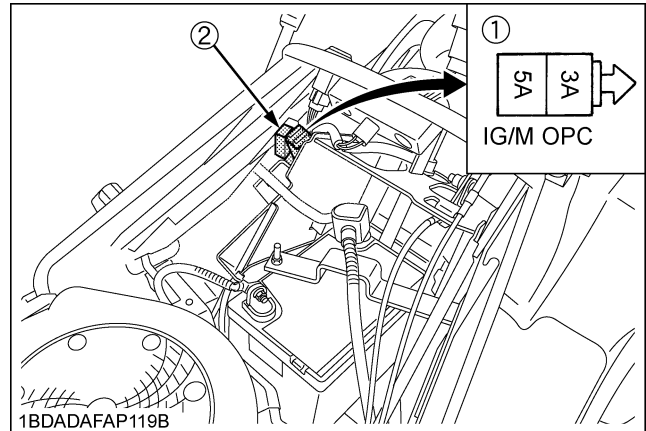
This should be done by your local KUBOTA Dealer.

SERVICE AS REQUIRED

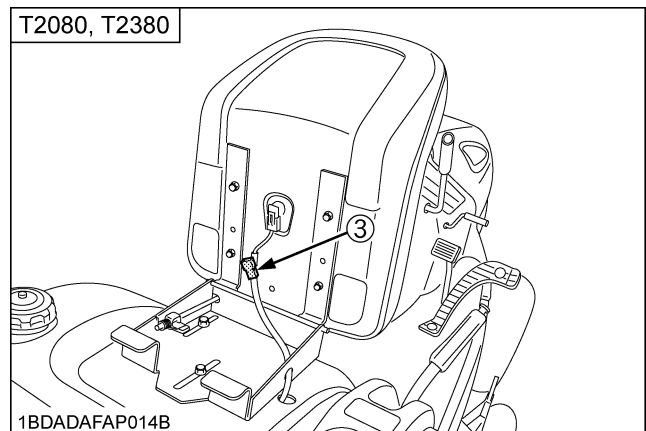
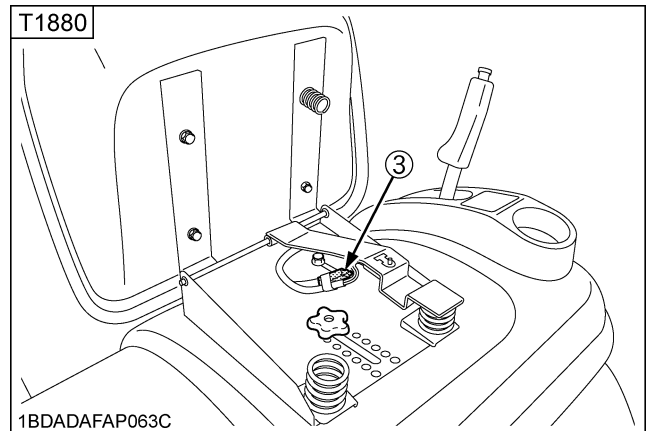
■ Replacing Fuses

Replacement of the fuse

1. Open hood.
2. Remove the blown fuse.
3. Place a new 3A or 5A fuse in position.



- (1) Fuse location
- (2) Slow blow fuse



- (3) Fuse location

IMPORTANT :

- If the new fuse happens to blow out within a short time, contact your dealer for inspection and repair. Never "jump" the fuse with wire or foil, etc.

◆ **Protected circuit**

	FUSE NO. (ID LABEL)	CAPACITY (A)	Protected circuit
(1)	IG/M	5	Main fuse
	OPC	3	Engine running circuit
(2)	Slow blow fuse	20	Check circuit against wrong battery connection
(3)	-	3	KRA system

■ Replacing bulbs

(A) Replacement of the headlight bulb

1. Open hood.
2. Turn bulb socket to remove socket from headlight housing.
3. Push bulb down and turn 1 quarter turn to remove bulb from the socket.
4. Install new bulb to the socket.
5. Install the socket in housing.
6. Close hood.

Headlight bulb	12.8 Rated Voltage/ 1.04 AMP/15 MSCP
----------------	---

(B) Replacement of the Indicator light bulb

1. Open hood.
2. Turn bad bulb socket to the left. And remove it.
3. Pull bulb from the socket.
4. Push new bulb into the socket.
5. Install the socket.
6. Close hood.

Indicator light bulb	14.0 Rated Voltage/ 0.27 AMP/2 MSCP
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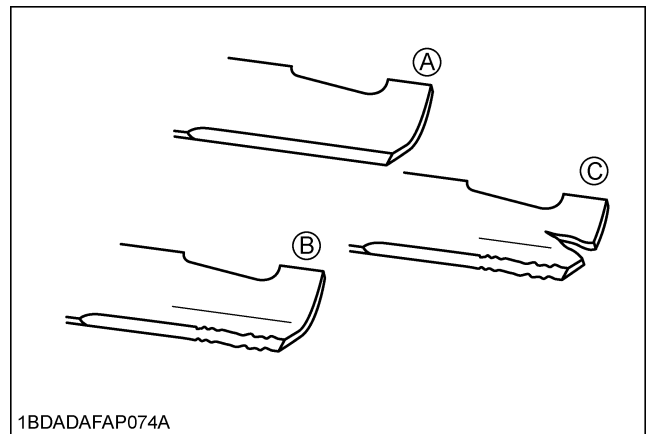
■ Checking and Replacing Blade**WARNING**

To avoid serious injury:

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

◆ **Checking**

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

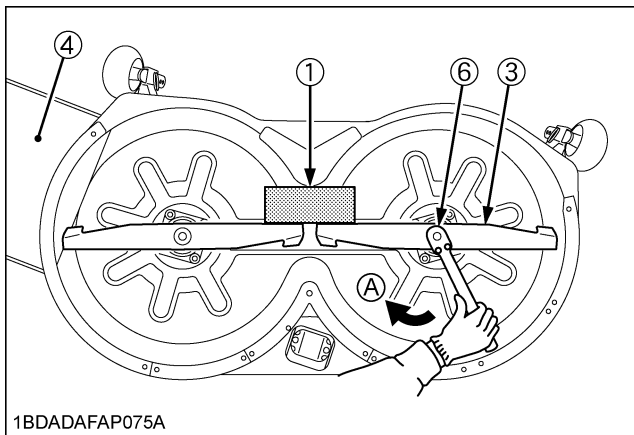
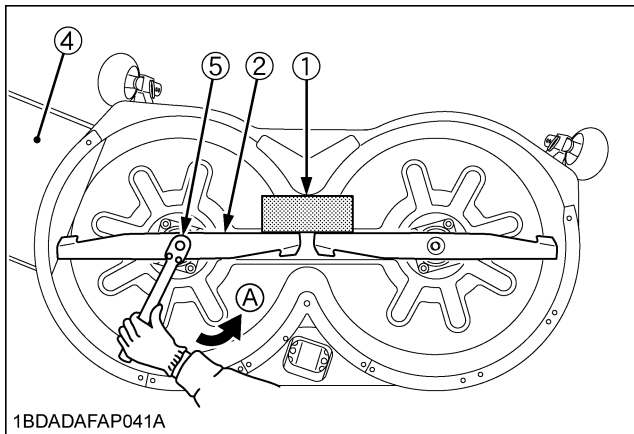


1BDADAFAP074A

- (A) New blade
(B) Worn blade
(C) Cracked blade

◆ **Replacing**

1. Remove the mower deck from the machine and turn it over to expose the blades.
2. Wedge a block of wood between the blade and mower housing as illustrated.
3. The bolt for black blade has right hand threads, turn counterclockwise to loosen. The bolt for red blade has left hand threads, turn clockwise to loosen.



- (1) Block
 (2) Blade (Black)
 (3) Blade (Red)
 (4) Discharge deflector
 (5) Bolt (Right hand thread)
 (6) Bolt (Left hand thread)
- (A) "LOOSEN"

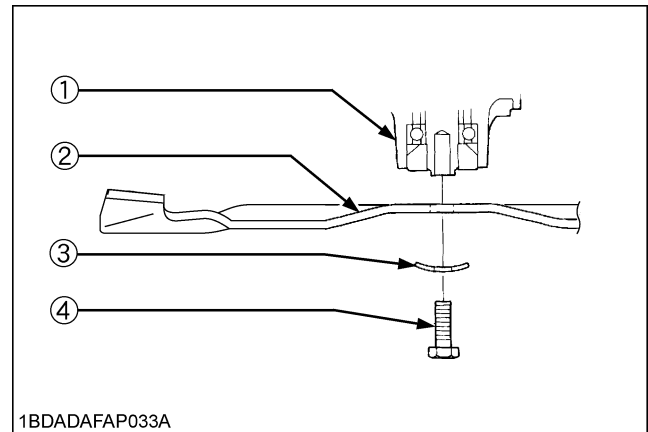
NOTE :

- Use the proper size box or socket wrench to tighten or loosen the blade mounting bolt.
 - Black blade to be assembled at discharge deflector (Black color) side.
 Red blade to be assembled at mower deck wall (Red color) side.
- To sharpen the blades yourself, clamp the blade securely in a vise.
 Use a large mill file and file along the original bevel until sharp.
 - To check the blade for balance, place a small rod through the center hole. If the blade is not balanced, file the heavy side of the blade until balance is achieved.
 - To attach blades, be sure to install the cup washer between the blade and bolt head.

NOTE :

- Make sure that the cup washer is not flattened out or worn; this may cause blade to slip excessively.
 Replace the cup washer if either is damaged.

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



- (1) Spindle holder
 (2) Blade
 (3) Cup washer
 (4) Bolt

IMPORTANT :

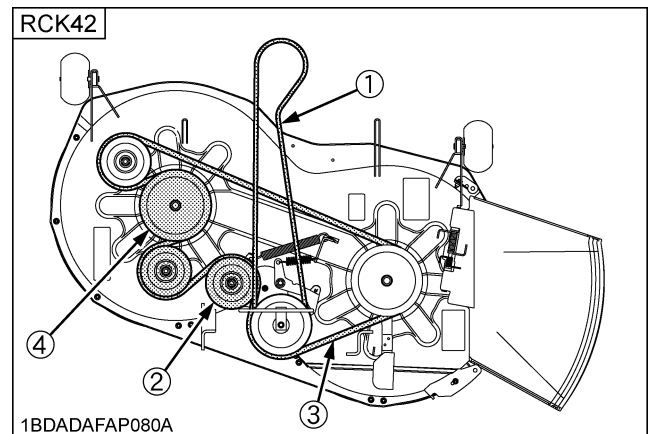
- Tighten the bolt of the all blades from 103 to 118 N-m of torque. (76 to 87 lbf-ft of torque.)

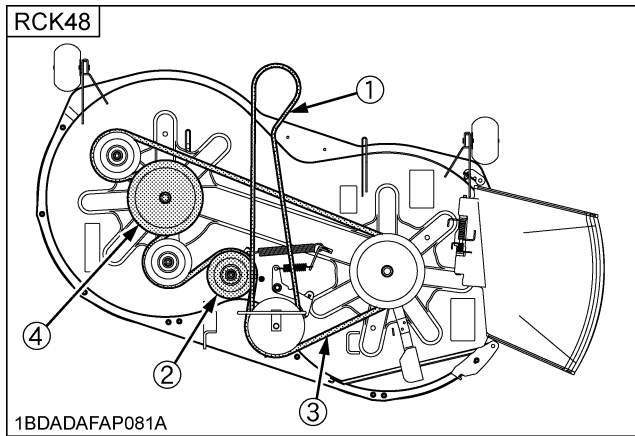
◆ Mower belt replacement

- Remove the mower from the machine.
- Remove the left and right hand shield from the mower deck.
- Clean around the pulleys to remove the belt from the pulley. Slip the belt over the top of the left side pulley.
- To install a new belt, reverse the above procedure.

NOTE :

- Tighten cover bolts securely.





- (1) *PTO belt*
- (2) *Tension pulley*
- (3) *Belt*
- (4) *Left side pulley*

GENERAL TORQUE SPECIFICATION

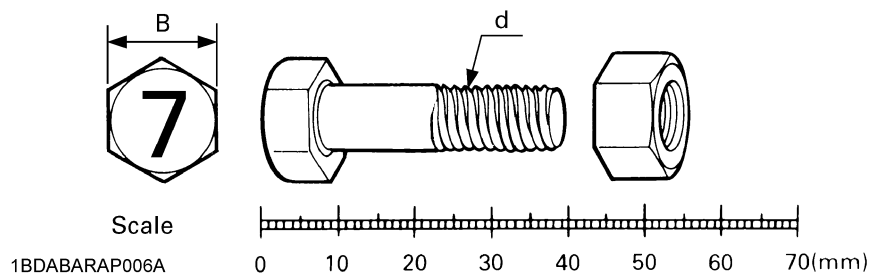
American standard cap screws with UNC or UNF threads			Metric cap screws		
SAE grade No.	GR.5 	GR.8 	Property class	Class 8.8 	Class 10.9 
1/4	(lbf-ft) 8 - 9.6 (N-m) 10.7 - 12.9 (kgf-m) 1.11 - 1.33	12 - 14.4 16.1 - 19.3 1.66 - 1.99	M6	(lbf-ft) 7.2 - 8.3 (N-m) 9.81 - 11.3 (kgf-m) 1.0 - 1.15	
5/16	(lbf-ft) 17 - 20.5 (N-m) 23.1 - 27.8 (kgf-m) 2.35 - 2.84	24 - 29 32.5 - 39.3 3.31 - 4.01	M8	(lbf-ft) 17.4 - 20.2 (N-m) 23.6 - 27.4 (kgf-m) 2.4 - 2.8	21.7 - 25.3 29.4 - 34.3 3.0 - 3.5
3/8	(lbf-ft) 35 - 42 (N-m) 47.5 - 57.0 (kgf-m) 4.84 - 5.82	45 - 54 61.0 - 73.2 6.22 - 7.47	M10	(lbf-ft) 35.5 - 41.2 (N-m) 48.1 - 55.8 (kgf-m) 4.9 - 5.7	44.9 - 52.1 60.8 - 70.5 6.2 - 7.2
1/2	(lbf-ft) 80 - 96 (N-m) 108.5 - 130.2 (kgf-m) 11.07 - 13.29	110 - 132 149.2 - 179.0 15.22 - 18.27	M12	(lbf-ft) 57.2 - 66.5 (N-m) 77.5 - 90.1 (kgf-m) 7.9 - 9.2	76.0 - 86.8 103 - 117 10.5 - 12.0
9/16	(lbf-ft) 110 - 132 (N-m) 149.2 - 179.0 (kgf-m) 15.22 - 18.27	160 - 192 217.0 - 260.4 22.14 - 26.57	M14	(lbf-ft) 91.2 - 108 (N-m) 124 - 147 (kgf-m) 12.6 - 15.0	123 - 144 167 - 196 17.0 - 20.0
5/8	(lbf-ft) 150 - 180 (N-m) 203.4 - 244.1 (kgf-m) 20.75 - 24.91	220 - 264 298.3 - 358.0 30.44 - 36.53	M16	(lbf-ft) 145 - 166 (N-m) 196 - 225 (kgf-m) 20.0 - 23.0	192 - 224 260 - 303 26.5 - 31.0

TIGHTENING TORQUE CHART

Thread size d (mm)	Hexa-Bolt Head size B (mm)	No mark			7T		
		lbf-ft	N-m	kgf-m	lbf-ft	N-m	kgf-m
M8	12 or 13	13.0 - 15.2 (14.1 ± 1.1)	17.8 - 20.6 (19.2 ± 1.4)	1.9 - 2.1 (2.0 ± 0.1)	17.5 - 20.3 (18.9 ± 1.4)	23.5 - 27.5 (25.5 ± 2.0)	2.4 - 2.8 (2.6 ± 0.2)
M10	14 or 17	28.9 - 33.3 (31.1 ± 2.2)	39.3 - 45.1 (42.2 ± 2.9)	4.0 - 4.6 (4.3 ± 0.3)	35.4 - 41.2 (38.3 ± 2.9)	48.1 - 55.9 (52.0 ± 3.9)	4.9 - 5.7 (5.3 ± 0.4)
M12	17 or 19	46.3 - 53.5 (49.9 ± 3.6)	62.8 - 72.6 (67.7 ± 4.9)	6.4 - 7.4 (6.9 ± 0.5)	57.1 - 66.5 (61.8 ± 4.7)	77.6 - 90.2 (83.9 ± 6.3)	8.0 - 9.2 (8.6 ± 0.6)
M14	19 or 22	79.6 - 92.6 (86.1 ± 6.5)	107.9 - 125.5 (116.7 ± 8.8)	11.0 - 12.8 (11.9 ± 0.9)	91.1 - 108.5 (99.8 ± 8.7)	123.6 - 147.0 (135.3 ± 11.7)	12.6 - 15.0 (13.8 ± 1.2)

NOTE :

- Figure "7" on the top of the bolt indicates that the bolt is of special material.
- Before tightening, check the figure on the top of bolt.



STORAGE



WARNING

To avoid serious injury:

- To reduce fire hazards, allow the engine and exhaust system to cool before storing the machine in an enclosed space or near combustible materials.
- To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.
- Do not clean the machine with engine running.
- To avoid fire hazards, Do not leave grass and leaves in the mower and the grass catcher.
- When storing, remove the key from the key switch to avoid operation by unauthorized persons.

When the machine will not be operated for over 2 months, clean the machine and perform the following operations before storage.

1. Repair parts as necessary.
2. Check bolts and nuts and tighten as necessary.
3. Apply grease or engine oil to parts most likely to rust.
4. Inflate the tires to a little above the standard pressure levels. (Approximately 110%)
5. Lower the mower to the ground.
6. Remove the battery from the machine, recharge it, adjust the electrolyte to the proper level, and store in a cool dry place.

The battery discharges over time even while in storage. Recharge it once a month in hot seasons and once every 2 months in cold seasons.

7. Drain fuel tank, fuel lines, and carburetor, or use a fuel stabilizer, to prevent deterioration of the gasoline. If you choose to use a fuel stabilizer, follow the manufacturers recommendations, and add the correct amount for the capacity of the fuel system. Fill the fuel tank with clean, fresh gasoline. Run the engine for 2 to 3 minutes to get stabilized fuel into the carburetor.
8. Store the machine where it is dry and sheltered from rain. Cover the machine with a vinyl tarp.
9. Moisture content in most grasses can damage the mower and grass catcher if these components are not properly cleaned after use.

Make sure the mower and the grass catcher are clean and completely empty before storage.

REMOVING THE MOWER FROM STORAGE

1. Check the tire inflation pressure and adjust as required.
2. Install the battery. Before installing the battery, be sure it is fully charged.
3. Do daily checking. (See "DAILY CHECK" in "PERIODIC SERVICE" section.)
4. Check all fluid levels. (engine oil, hydrostatic oil)
5. Start the engine. Shut the engine off and walk around the machine and make a visual inspection looking for evidence of oil or other fluids.
6. Run engine a couple of minutes before you put engine under load.
7. With the engine fully warmed up, release the parking brake and test the brakes for proper adjustment as you move forward. Adjust the brakes as necessary.

TROUBLESHOOTING

ENGINE TROUBLESHOOTING

If the engine is not performing correctly, refer to the table below for the cause and its corrective measure.

If	Check
Engine is difficult to start.	● Fuel tank or fuel filter is clogged by dirt.
	● Spark plug malfunction.
	● Dirt or water in the fuel system.
	● In winter, oil viscosity increases, and engine cranks slow.
	● Battery is discharged.
Insufficient engine power.	● Air cleaner element is clogged. ● Insufficient fuel flow or quality.
Engine stops suddenly.	● Insufficient fuel.
Exhaust fumes are colored.	● Fuel quality is poor.
Black smoke is emitted from the muffler during operation; power output is lowered.	● Air cleaner element is clogged.
	● Choke not fully opened.
Bluish white smoke is emitted from the muffler during operation.	● Too much engine oil.
Engine will not idle.	● Spark plug not gapped correctly.
	● Faulty spark plug.
Engine loses power or overheats.	● Engine overheating.
	● Dirty air cleaner.
	● Dirt or water in fuel lines, filter, etc.
	● Out of fuel.
	● Engine cooling air intake screen or air cleaner element plugged.
Engine knocks.	● Stale or low octane fuel.

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

BATTERY TROUBLESHOOTING

If	Check
Starter does not function.	● Battery discharged.
	● Poor terminal connection.
	● Battery life expired.
When viewed from top, the top of plates looks whitish.	● Electrolyte level is low.
	● Battery was used too much without recharging.
Recharging is impossible.	● Battery life expired.
Terminals are severely corroded and heat up.	● Poor terminal connection or stained terminal.

If	Check
Battery electrolyte level drops rapidly.	● There is a crack or pin holes in the electrolytic cells.
	● Charging system trouble.

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

MACHINE TROUBLESHOOTING

If	Check
Machine operation is not smooth.	● Hydrostatic transmission oil is low.
Machine does not move while engine is running.	● Parking brake is on. ● Transmission oil is insufficient. ● HST belt slipping or broken.
Machine moves when speed control pedal is not depressed. (Engine is operated.)	● Hydrostatic neutral system is not correctly adjusted.

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

MOWER TROUBLESHOOTING

If	Check
Discharge chute plugged.	● Grass too wet. ● Grass too long. ● Cutting too low. ● Engine rpm too low. ● Ground speed too fast.
Streaking of uncut grass.	● Ground speed too fast. ● Engine rpm too low. ● Grass too long. ● Blades dull or damaged. ● Debris in mower deck.
Uneven cut.	● Mower deck not level. ● Ground speed too fast. ● Blades dull. ● Blades worn. ● Tire inflation. ● Mower rollers not adjusted correctly.
Blades scalping grass.	● Cutting height too low. ● Blades speed too fast. ● Ridges in terrain. ● Rough or uneven terrain. ● Bent blade(s). ● Low tire inflation. ● Anti-scalp rollers not adjusted correctly.
Belt slipping.	● Belt tension incorrect. ● Mower deck plugged. ● Debris in pulleys. ● Worn belt.

If	Check
Excessive vibration.	● Debris on mower deck or in pulleys. ● Damaged drive belt or PTO belt twisted. ● Damaged pulleys. ● Pulleys out of alignment. ● Blades out of balance.
Mower loads down machine.	● Engine rpm too low. ● Ground speed too fast. ● Debris wrapped around mower spindles.
Grass tips are jagged and turn grayish brown.	● Blades dull. ● Blades worn. ● Mower deck is not level.

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

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