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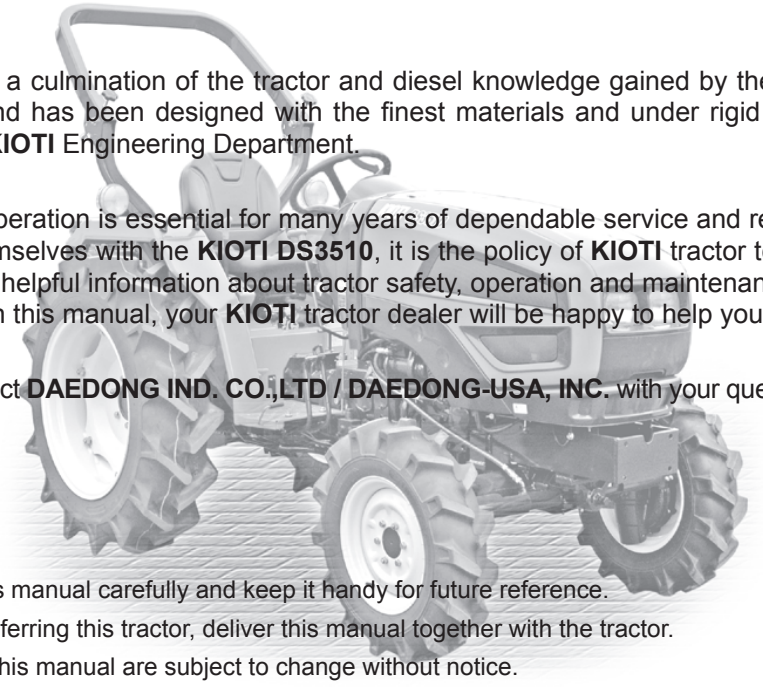
FORWARD

Congratulations, and welcome to the fabulous world of **DS3510** ownership, where serious work is made fun again!

This versatile tractor is a culmination of the tractor and diesel knowledge gained by the Daedong Industrial Co.,LTD since 1947 and has been designed with the finest materials and under rigid quality control standards set forth by the **KIOTI** Engineering Department.

Knowledge of tractor operation is essential for many years of dependable service and reliability. To help new owner's familiarize themselves with the **KIOTI DS3510**, it is the policy of **KIOTI** tractor to provide an owner's manual which includes helpful information about tractor safety, operation and maintenance. If the information you seek is not found in this manual, your **KIOTI** tractor dealer will be happy to help you.

Please feel free to contact **DAEDONG IND. CO.,LTD / DAEDONG-USA, INC.** with your questions or concerns.



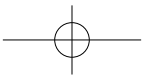
< NOTE >

- Make sure to read this manual carefully and keep it handy for future reference.
- When leasing or transferring this tractor, deliver this manual together with the tractor.
- The specifications in this manual are subject to change without notice.

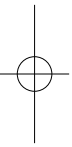
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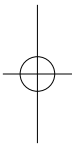
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SAFETY AND VEHICLE DAMAGE WARNING

This manual includes information titled as **WARNING, CAUTION, IMPORTANT** and **NOTE**. These titles indicate the following:

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

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UNIVERSAL SYMBOLS

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

- Fuel-Level
- Engine Coolant-Temperature
- Parking Brake
- Battery Charging Condition
- Engine Oil-Pressure
- Turn Signal
- Power Take ”OFF” Clutch Control ”ON” Position
- Power Take ”OFF” Clutch Control ”OFF” Position
- Differential Lock
- Position Control-Lowered Position
- Hazard Warning Lights
- Headlight-Low Beam
- Headlight-High Beam
- Four-Wheel Drive-”ON”
- Fast
- Slow
- Creep
- High Range
- Middle Range
- Low Range
- Coolant
- Preheat
- QT lamp
- **H** H: High speed travel light
- **M** M: Middle speed travel light
- **L** L: Low speed travel light
- **N** Neutral Position
- Single brake light

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SAFETY PRECAUTIONS

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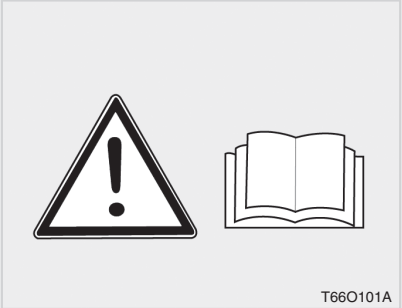
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PRECAUTIONS BEFORE OPERATION
GENERAL PRECAUTIONS

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, use these safety precautions, and pay attention to the job at hand. If you can prevent an accident, your time will have been well spent.

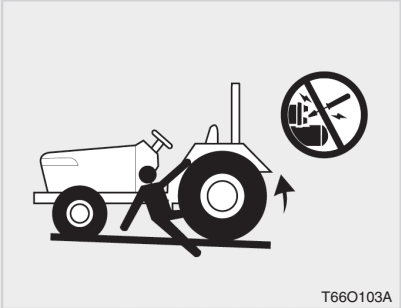

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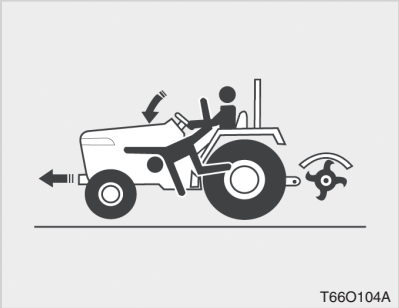

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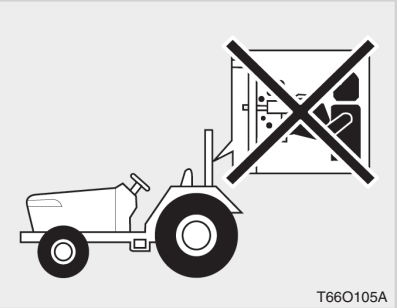
1. It is recommended that you read and understand this entire manual before operation of your new tractor. Failure to do so could result in accidents or injury.
2. Only persons who are properly trained should be allowed to operate the tractor.
3. Read and follow all warning labels and decals affixed to the tractor.
4. Replace any missing or damaged decals as soon as it is practical. A list of decals is shown on page 1-17~19.
5. Keep safety decals clean of dirt and debris.
6. Watch where you are going at all times so that you are able to avoid obstacles that can cause injury or damage to your tractor.
7. When starting the tractor make sure your path is clear of people to avoid accidents caused by sudden movements.
8. Before making reverse movements with your tractor, you should always check to see that the path is clear.

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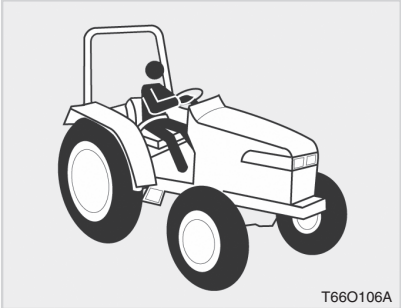

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9. Never operate this tractor or any other agricultural equipment while under the influence of alcohol, drugs or while fatigued.
10. While working in cooperation with other tractors always communicate your intentions.
11. Do not start your tractor by shorting across the starter.
12. Never start the engine while standing on the ground.
13. Only the operator should ride on the tractor unless a passenger seat is installed. Keep bystanders away from the tractor while in operation.
14. When getting ”ON” and “OFF” the tractor, hand holds and step plates should always be used. This will help to prevent accidental slips, trips and falls.
15. Be sure to scrape “OFF” mud or soil from your shoes before mounting the tractor.
16. All persons using the tractor should have knowledge of its proper operation and should read this manual carefully.
17. Never get “OFF” the tractor without setting the parking brake, lowering the implement to the ground and shutting of the tractor.
18. No alterations should be made to your **KIOTI** tractor.

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19. Before starting your tractor you should depress the clutch and make sure that all shift levers are in the neutral position and parking brake is applied.

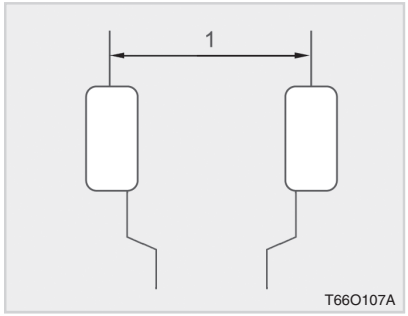
20. for your safety roll-over protective structures (**ROPS)** with a seat belt is recommended for all applications.

NOTE

- Always use seat belt when the tractor is equipped with a **ROPS** and **CAB**. Never use the seat belt when tractor is not equipped with a **ROPS**.

A **ROPS** and **CAB** should never be modified by welding, grinding or cutting, as this can weaken the **ROPS** structure. If any components of the **ROPS** unit is damaged, it must be replaced.

If the **ROPS** unit is removed or loosened for any reason, the parts should be fitted back to their original positions and all bolts should be properly torqued.



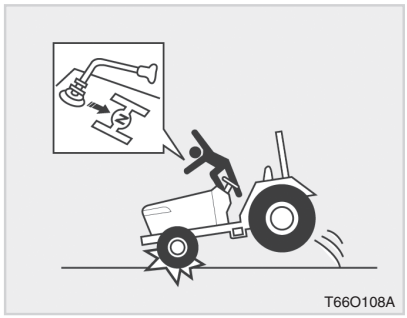
(1) Tread

21. Extra caution should be taken when driving tractors with narrow tread widths. For added stability you should adjust your rear wheel tread width, see page 4-26.

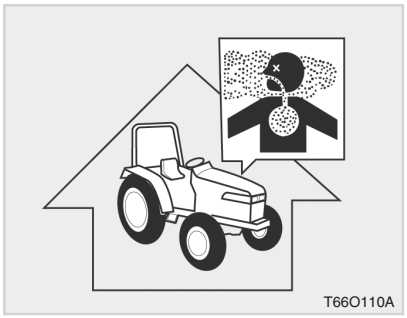
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PRECAUTIONS DURING OPERATION
WHEN STARTING THE ENGINE


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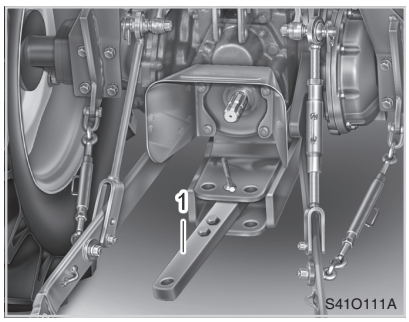
1. Avoid accidental contact with gear shift levers while the engine is running. Unexpected tractor movements can result in bodily injury.

2. Do not park your tractor on a steep incline, and remember to shut “OFF” the engine and P.T.O before dismounting the tractor.

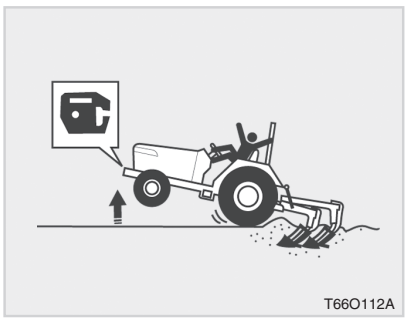
3. Do not operate your tractor in an enclosed building without the proper ventilation. Containing carbon monoxide can cause serious injury or death.

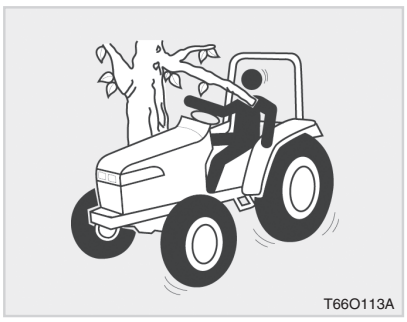
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(1) Draw Bar



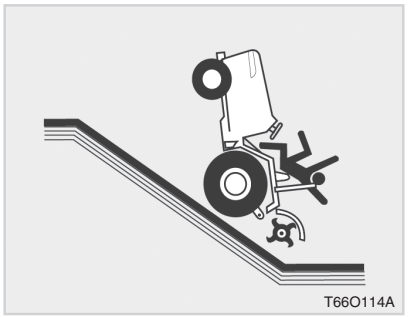


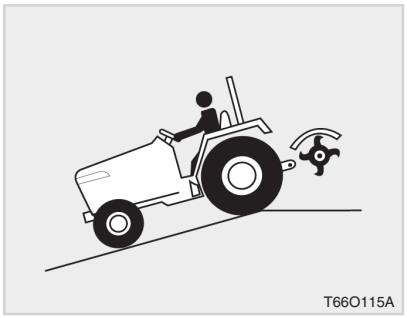
4. Make sure that all pressure lines are tight before starting the tractor.
5. Pull only from the draw-bar. Never hitch anything to the axle housing or any other point except the draw-bar. Pulling from any other location only increase the risk of serious personal injury or death.
6. If the front of the tractor tends to rise up when heavy implements are attached to the three point hitch, weights should be installed on the tractor. Do not operate the tractor with a light front end.
7. Always use the proper ballast weight on your tractor when using rear implements.
8. Watch front and rear to avoid obstacles at row ends, near trees and around other obstructions.

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9. Do not leave attachments or implements in the raised position when the vehicle is stopped or unattended.
10. When using implements or attachments with your tractor you should first read their respective owner's manual. You should always keep their safe operation procedures in mind.
11. You should be familiar with your equipment and its limitations.
12. If abused or used incorrectly your tractor can become dangerous to you and bystanders. Overloading your tractor or using unsafe equipment can also be dangerous and should be avoided. Refer to the "Specifications of Implement Limitation", which outlines the maximum load for safe tractor operation.


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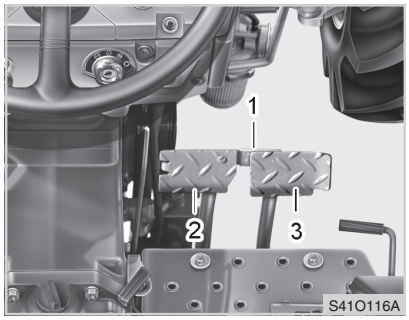

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13. Driving forward out of a ditch or steep inclines can cause the tractor to tip over backwards. To avoid this you should back out of these positions. Four wheel drive tractors can give you a false sense of security in the tractors ability to maneuver out of these positions, so extra caution should be taken.
14. Never try to get “ON” or “OFF” a moving tractor.
15. When working in groups, always let the others know what you are going to do before you do it.
16. Never "freewheel". Disengaging the clutch or shifting into neutral while descending a slope as this could lead to a loss of control.
17. Do not operate near ditches, holes, embankments, or other terrain features which may collapse under the tractor's weight. The risk of tractor upset is even higher when the ground is loose or wet.

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WHEN DRIVING THE TRACTOR

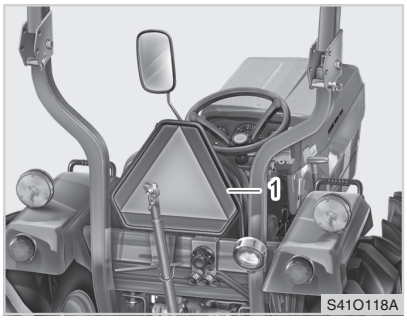


(1) Brake Pedal Lock (2) Brake Pedal (L)
(3) Brake Pedal (R)

1. Lock the brake pedals together when traveling at road speeds. Brake both wheels simultaneously when making an emergency stop. Uneven braking at road speeds could cause the tractor to tip over.



2. Always slow the tractor before turning. Turning at high speed may tip the tractor over 3 or cause a loss of control.



(1) SMV Emblem

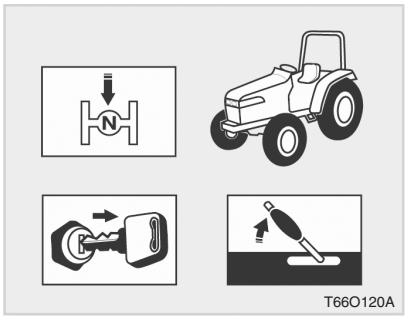
3. Make sure that the Slow Moving Vehicle (SMV) sign is clean and visible. Use hazard lights as required.

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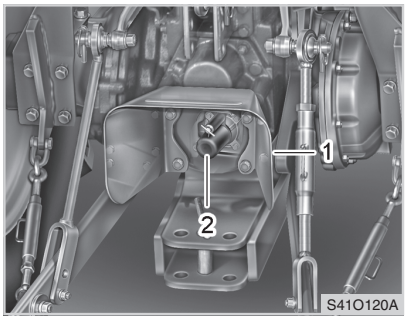
4. Observe all local traffic and safety regulations.
5. Turn the headlights on. Dim them when meeting another vehicle.
6. Drive at speeds that allow you to maintain control at all times.
7. Do not apply the differential lock while traveling at road speeds. As the tractor may run out of control.
8. Avoid sudden movements of the steering wheel as this can cause a loss of control of the tractor. This risk is especially great when traveling at road speeds.
9. Do not operate an implement while the tractor is on the road. Lock the three point hitch in the raised position.
10. When towing other equipment, use a safety chain and place an SMV emblem on it as well.

WHEN PARKING THE TRACTOR



1. Disengage the P.T.O, lower all implements, place all control levers in the neutral position, set the parking brake, stop the engine and remove the key.

WHEN OPERATING THE P.T.O



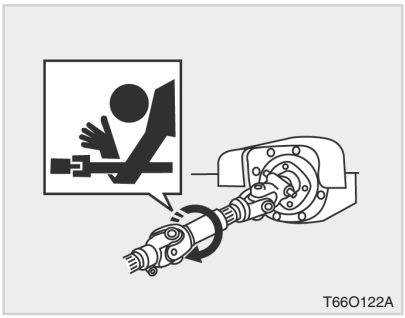
(1) P.T.O Shaft Cover
(2) P.T.O Shaft Cap

1. Make sure the tractor is completely stopped, gears are in neutral and all moving components have completely stopped before connecting, disconnecting, adjusting, cleaning or servicing any P.T.O driven equipment.
2. Keep the P.T.O shaft cover in place at all times. Replace the P.T.O shaft cap when the shaft is not in use.

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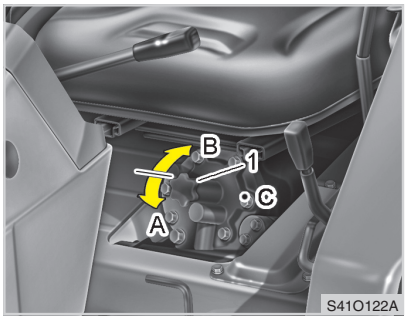
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3. Before installing or using P.T.O driven equipment, read the manufacturer's manual and review the safety labels attached to the equipment.



4. When operating stationary P.T.O driven equipment, always apply the tractor parking brake and place chocks behind and in front of the rear wheels. Stay clear of all rotating parts.
5. Do not attach a P.T.O driven implement if the implements safety shields are damaged or not in place. Rotating shafts are an entanglement hazard.

WHEN USING THE 3-POINT HITCH



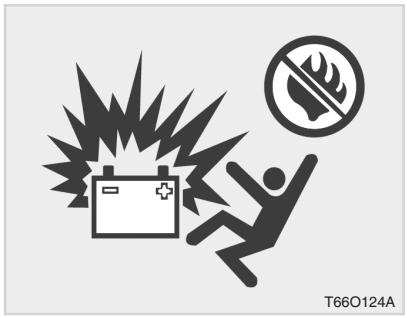
(1) 3-point hitch lowering speed knob
(A) "FAST" (B) "SLOW"
(C) "LOCK"

1. Use the 3-point hitch only with equipment designed for 3-point hitch usage.
2. When using a 3-point hitch mounted implement, be sure to install the proper counterbalance weight on the front of the tractor.
3. When transporting on the road, set the implement lowering control in the "LOCK" position to hold the implement in the raised position.

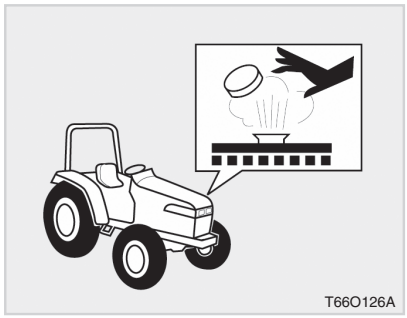
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SAFETY PRECAUTIONS WHILE SERVICING


T66O124A


T66O125A

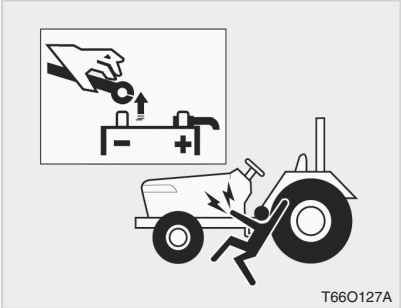

T66O126A

In order to service your tractor you must park it on a flat level surface, set the parking brake, place the gear shift lever in neutral and stop the engine.

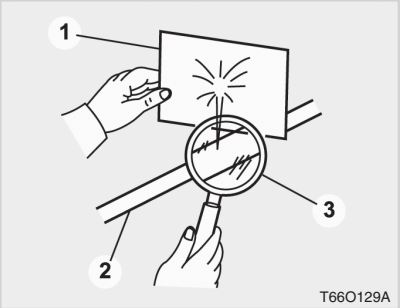
1. Do not smoke while working around the battery or when refueling your tractor. Keep all sparks and flames away from the battery and fuel tank. The battery presents an explosive hazard because emits dangerous gases especially when recharging.
2. Allow the tractor time to cool off before servicing any part that may have become hot while the tractor was running.
3. You must always stop the engine before refueling the tractor. Avoid overfilling the tractor or spilling the fuel.
4. Before jump starting a dead battery, read and follow all of the instructions.
5. It is recommended to keep a first aid kit and fire extinguisher handy at all times.
6. Do not remove the radiator cap while the coolant is hot. When cool, slowly rotate the cap to the first stop and allow sufficient time for excess pressure to escape. After all the pressure is released remove the cap completely. If your tractor is equipped with a coolant recovery tank, add coolant there rather than to the radiator.

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(1) Cardboard *(2) Hydraulic Line*
(3) Magnifying Glass

7. When working with your tractors electrical components you must first disconnect the battery cables.
8. To ensure that there are no accidents from sparks you must first disconnect the negative battery cable.
9. Tire mounting should be done by qualified professionals, with the proper equipment.
10. Maintaining correct tire pressure is important for the life of your tires.

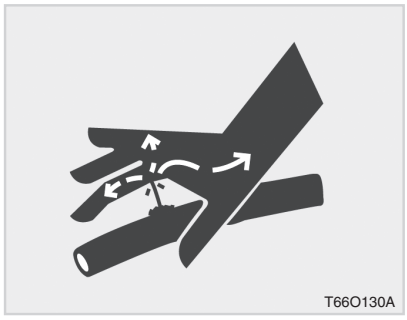
    Do not inflate the tires above the recommended pressure specified in the owner's manual.
11. Securely support the tractor when changing wheels or the wheel tread width.
12. Make sure that wheel bolts have been tightened to the specified torque.
13. Escaping hydraulic fluid under pressure has sufficient force to penetrate skin, causing serious personal injury. Be sure to release all residual pressure. Before disconnecting hydraulic lines.

    Before adding pressure to the hydraulic system, make sure that all connections are tight and that all line, pipes and hoses are free of damage.

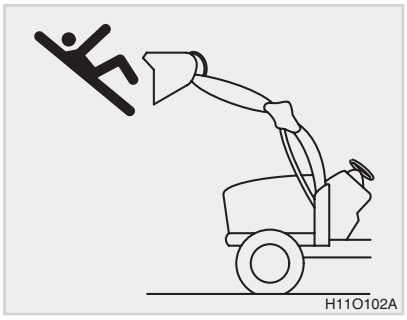
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SAFETY PRECAUTIONS WHEN USING THE LOADER


T66O130A


T66O131A


H11O102A

14. Fluid escaping from pinholes may not visible. Do not use hands to search for suspected leaks;

    Use a piece of cardboard or wood, instead. Use of safety goggles or other eye protection is also highly recommended. If injured by escaping fluid, see a medical doctor at once. This fluid can produce gangrene and/or severe allergic reaction.

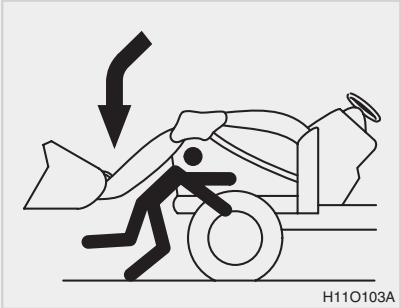
15. Keep environmental pollution in mind. When replacing coolant or oil, dispose of it in the correct manner.

    Be sure to observe all relevant regulations when you dispose of the engine oil, transmission oil, fuel, coolant, filters and battery.

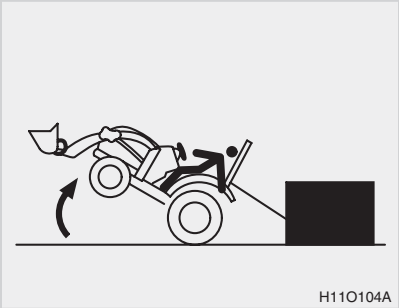
Never let anyone get in the loader and use the loader as a workbench. Otherwise, it may lead to a fatal injury or even death.

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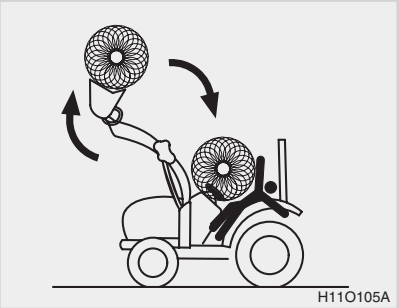


Never stand under the lifted loader or get close to it. Also, lower the loader arm onto the ground before leaving the tractor. Otherwise, it may lead to a fatal injury or even death.



The loader can be turned over if a draw-bar is improperly loaded.

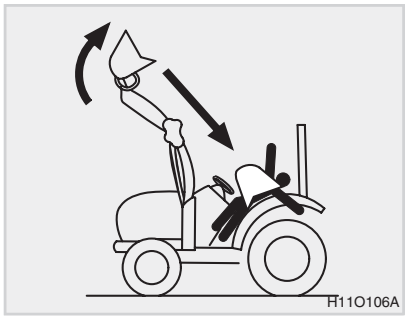
Make sure to use a draw-bar proper for the 3-point hitch lower link. Otherwise, it may lead to an injury or even death.



Never carry a big object with the loader unless a proper implement is attached. Keep a carried object low while driving. Otherwise, it may lead to an injury or even death.

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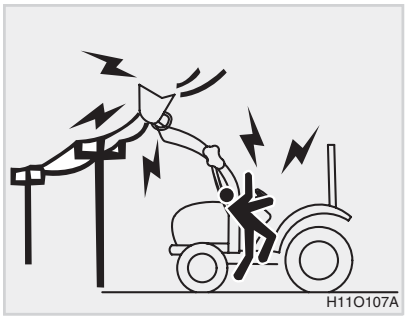

H11O106A

When attaching or detaching the loader, fix all parts which are connected to the bucket and boom. The bucket or boom can be accidentally dropped down, leading to an injury or even death.


C56O185A

IMPORTANT

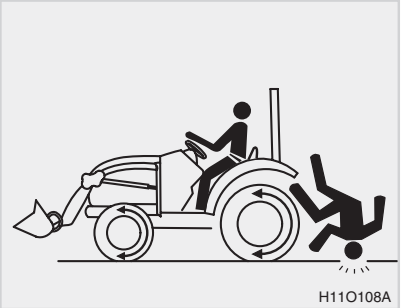
- **ROPS (Roll Over Protective Structure), sun canopy or cabin are not a FOPS (Falling Object Protective Structure).**
  It never can protect the riders against falling objects.
  Avoid driving the vehicle into a dangerous area such as falling rocks zone.


H11O107A

Do not allow loader arms or attachment to contact electrical power lines. Electrocution will cause serious injury or death.

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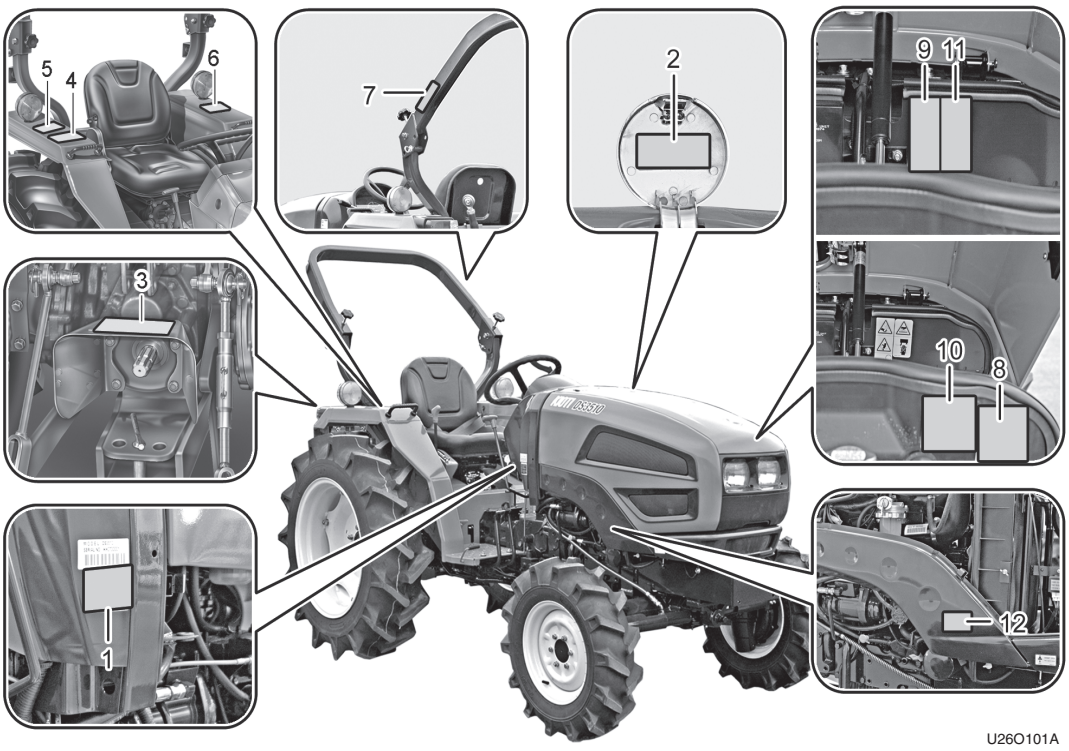


Never allow bystanders to be near equipment while in operation. Do not allow anyone to ride on the tractor while in operation.

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SAFETY DECAL MAINTENANCE
DECAL MOUNTING LOCATION



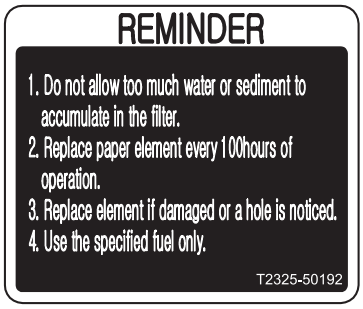
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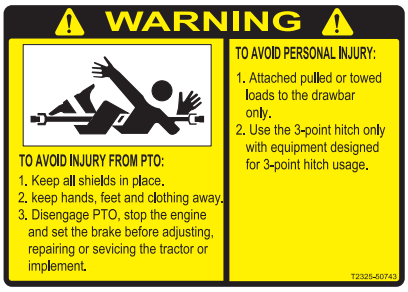
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DECALS

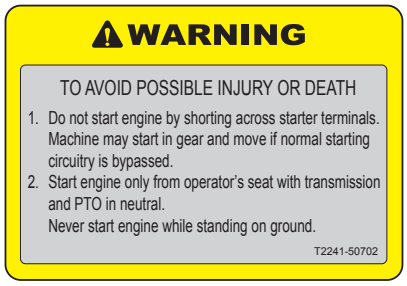
(1) Part No. : T2325-50192



(3) Part No. : T2325-50743



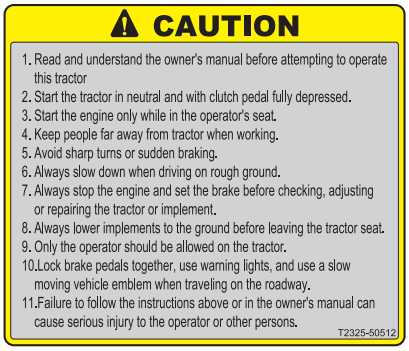
(5) Part No. : T2241-50702



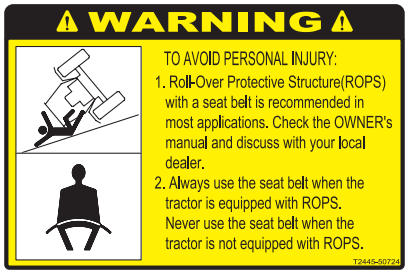
(2) Part No. : T2615-54112



(4) Part No. : T2325-50512



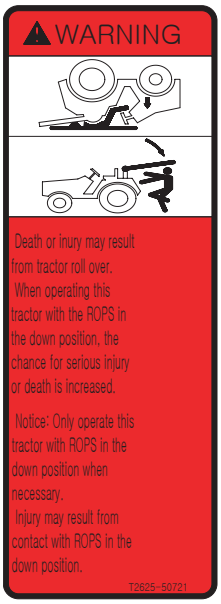
(6) Part No. : T2445-50724



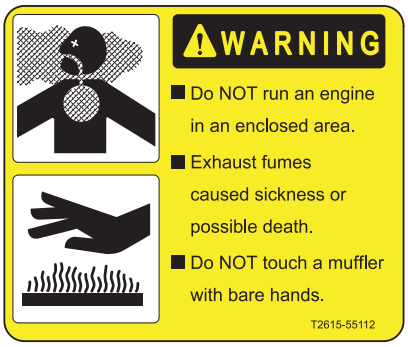
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(7) Part No. : T2625-50721



(8) Part No. : T2615-55112



(9) Part No. : T4625-52351



(10) Part No. : T2615-53561



(11) Part No. : T4625-52361



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(12) Part No. : 94612-94591



CAUTIONS FOR DECAL MAINTENANCE

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

⚠ CAUTION

- **Keep the decals clean and intact. If any decal is dirty, wash it with soap and dry with a soft cloth.**
- **Never use a solvent, such a thinner or acetone, since it can ruin the decals.**
- **Do not spray high-pressure water directly onto the decal. The decal may fall "OFF" the tractor.**

IMPORTANT

- **If a decal is damaged or lost, contact your local KIOTI dealer immediately to install a new decal.**
- **Make sure to attach the decal to the correct position cleanly without bubbles after cleaning its mounting surface.**
- **If a decal is attached to a component to be replaced, replace the decal as well.**

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PRECAUTIONS BEFORE OPERATION

2

2

VEHICLE IDENTIFICATION NUMBER..... 2-2

PRODUCTION NUMBER.....2-2
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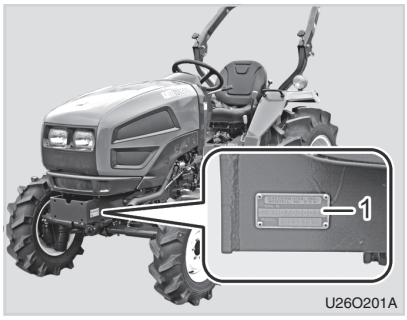
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VEHICLE IDENTIFICATION NUMBER

PRODUCTION NUMBER

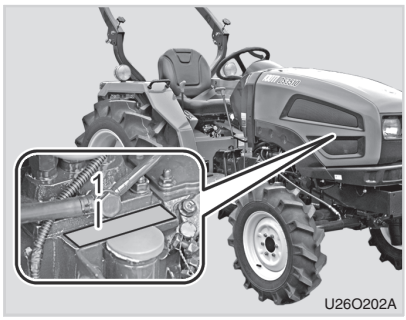


(1) Tractor Serial Number Plate

This number is stamped on the plate attached to the front axle frame on the left side of the tractor.

This number is also printed on the bar code label which is located on the dash board cover on your right hand side.

ENGINE NUMBER

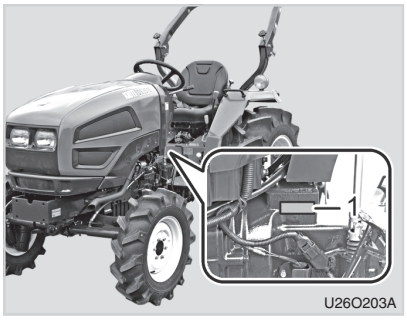


(1) Engine Identification Plate

Engine identification plate is installed on the cylinder head cover. This number indicates the engine type, displacement, injection timing, and date of manufacture.

The engine serial number is engraved on the cylinder block surface which is machined for the injection pump installation.

TRANSMISSION NUMBER



(1) Transmission Serial Number

The transmission number is stamped to the left upper part of the clutch housing.

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Your dealership is interested in your new tractor and has the desire to help you get the most benefit from it. After reading this manual thoroughly, you will find that you can do some of the regular maintenance yourself.

However, when in need of parts, warranty or major service, be sure to see your **KIOTI** dealer. For service, contact the **KIOTI** dealership from which you purchased your tractor or your local authorized **KIOTI** dealer.

When in need of parts, be prepared to give your dealer both the tractor and engine serial numbers.

Before using non **KIOTI** approved implements, contact your nearest dealer, regarding safety application of the implement.

(FOR YOUR RECORDS)

- **Identification No.**
- **Engine Serial No.**
- **Transmission Serial No.**
- **Date of Purchase**

To be filled in by purchaser

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ESSENTIAL REPLACEMENT PARTS

OILS AND FLUIDS



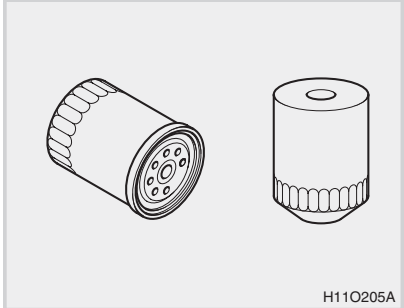
ITEM	SPECIFICATION	CAPA [U.S.gal.(L)]
Engine oil	SAE 15W40	1.5 (5.8)
Transmission fluid	DAEDONG UTF55 Exxonmobil Mobilfluid 424 BP: Tractran UTH Exxonmobil Hydraulic 560 Shell: Donax TD	6.87 (26)
Grease	SAE multi purpose type grease	A little
Antfreeeze	Fresh clean water with ethylene glycol (50:50)	2.06 (7.8)

Various oils and fluids are used in this tractor for operation, lubrication, cooling, and anti-corrosion of various parts.

If oil or fluid is insufficient, contaminated or degraded, it can cause poor performance, incorrect operation, and seized part of the tractor, leading to malfunction.

Regularly add or change the fluid specified on the right to keep the tractor in perfect condition.

FILTERS



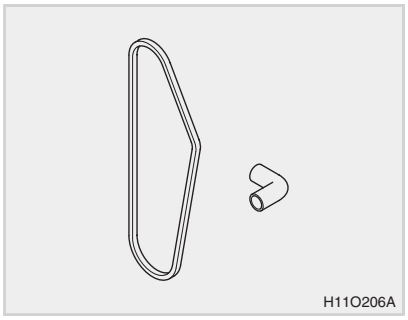
Filters for the engine, transmission, air cleaner, and A/C are consumable that purify oil and air. Make sure to replace the these items when changing oil.

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PART NO	DESCRIPTION	QTY
E6201-32443	Engine Oil Filter	1
T2185-38031	Hydraulic Filter	1
84612-4316-0	Fuel Filter Element	1
E7230-11081	Air Cleaner filter	1

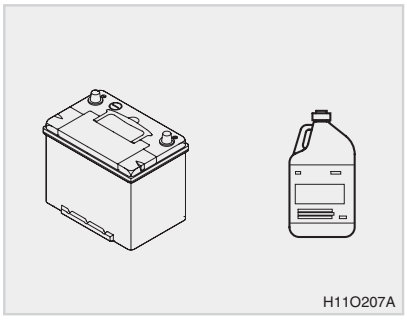
BELTS AND HOSES



Belts, hoses and boots, which are made of rubber, get weakened and cracked as they age. If these parts are kept left in this state, they can became broken, leading to a serious problem in the tractor. Therefore, regularly replace the items indicated on the right to prevent an accident.

PART NO	DESCRIPTION	QTY
E5640-72351	Fan Belt	1

OTHER COMPONENTS



The battery is a very important consumable component that supplies power to the alternator when the engine is started.

Therefore, make sure to check its discharging condition daily, including its life span and electrolyte condition.

PART NO	DESCRIPTION	QTY
C7910-42204	Battery	1

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MEMO

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SPECIFICATIONS

3

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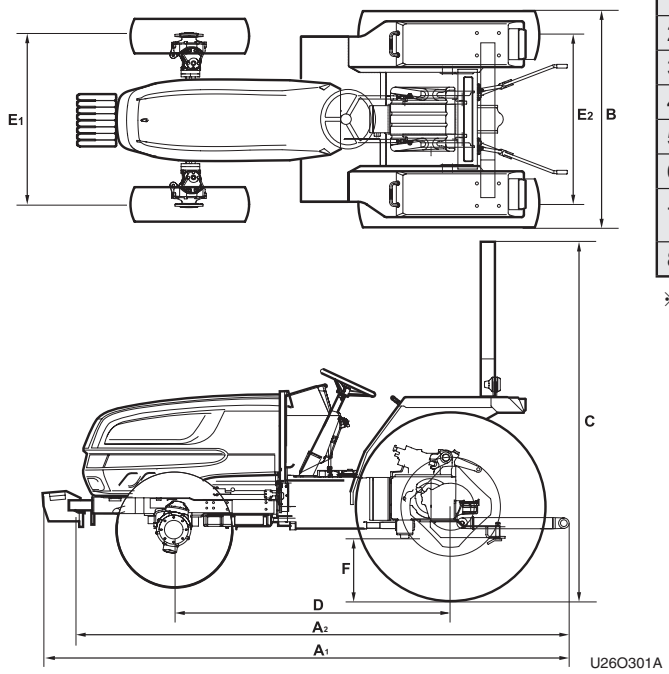
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GENERAL SPECIFICATIONS
EXTERNAL DIMENSIONS

in. (mm)



U26O301A

ITEM	DS3510	REMARKS
1. Overall length (A1)	119.2 (3,029)	
2. Overall length (A2)	112.9 (2,868)	
3. Overall width (B)	51.7 (1,314)	
4. Overall height (C)	88.6 (2,250)	
5. Wheel base (D)	64.6 (1,640)	
6. Tread (E1)	44.8 (1,139)	
7. Tread (E2)	36.8~49.8 (934~1,266)	
8. Ground clearance (F)	10.8 (275)	

※ A1: Overall length including weight and 3 point
A2: Overall length excluding weight and 3 point
E1: Front wheel tread E2: Rear wheel tread

※These dimensions are measured with the standard tires installed to the **ROPS** model tractor.

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GENERAL SPECIFICATIONS

ITEM			DS3510	REMARKS
Engine	Model		3A165LWD	
	Number of cylinders		3	
	Total displacement	cc (cu)	100.5 (1,647)	
	Bore and stroke	in. (mm)	3.4 x 3.6 (87 x 92.4)	
	Engine gross power	HP (kw)	34 (25.4)	
	P.T.O Power	HP (kw)	27.6 (20.6)	
	Rated revolution	rpm	2,600	
Capacities	Fuel tank	U.S.gal. (L)	7.9 (30)	
	Transmission oil	U.S.gal. (L)	6.87 (26.0)	
	Front axle oil	U.S.gal. (L)	1.19 (4.5)	
Drive train	Clutch		Dual clutch	
	Transmission	Shuttle	Constant mesh	
		Main	Synchronized mesh, 4	
		Range	Constant mesh, 2	
		Speed	8 x 8	
	Ground speed (Tire for agricultural)	Forward mile/h (Km/h)	0.81~11.66 (1.30~18.80)	
		Reverse mile/h (Km/h)	0.74~10.64 (1.19~17.14)	
	Brake	Traveling	Wet disc type	
		Parking	Connected with the traveling brake	
	Differential lock		Standard for rear axle	

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ITEM				DS3510	REMARKS
Tires	Agricultural		Front	7-14 / 6PR	
			Rear	11.2~2.4 / 6PR	
Hydraulic system	Pump capacity		gpm (L/min)	Main pump: 7.88 (29.9) Power steering pump: 4.26 (16.2)	
	Steering			Hydrostatic power steering	
	Hydraulic lift control			Position control	
	3-point hitch			Category I	
	Max. lifting capacity		lbs. (kg)	2,238 (1,015)	
	Exterior hydraulic valve (★)			1 EA	※ Australia only
PT.O	Rear	Type		Live	
		P.T.O shaft		1-3/8″ 6 spline	
		Speed (PTO rpm @ engine rpm)	1st	540 @ 2,600	
			2nd	1,000 @ 2,600	
Min. turning radius (With one rear wheel braked)			in. (mm)	918 (2,800)	
Weight (With CABIN)			lbs. (kg)	-	
Weight (ROPS)			lbs. (kg)	2,703 (1,226)	
Max. Trailer loading weight			lbs. (kg)	1,792 (812)	

※ The specifications are subject to change without notice.
※ (★) Mark means the specifications are subject to change according to the applicable country.

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TRAVELING SPEED

M/h (Km/h)

OPERATING THE LEVER		FORWARD	REVERSE
RANGE	MAIN	DS3510	DS3510
Low	1	0.81 (1.30)	0.74 (1.19)
	2	1.17 (1.89)	1.05 (1.69)
	3	1.66 (2.68)	1.35 (2.17)
	4	2.69 (4.32)	1.83 (2.95)
High	1	3.93 (6.34)	5.31 (8.54)
	2	5.46 (8.79)	7.41 (11.93)
	3	7.76 (12.49)	9.53 (15.33)
	4	11.66 (18.80)	10.64 (17.14)

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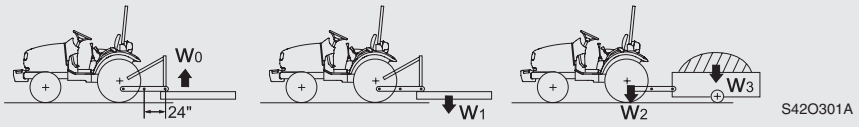
IMPLEMENT LIMITATIONS
STANDARD SIZE BY IMPLEMENT

This **KIOTI** tractor has been thoroughly tested for proper performance with implements sold or approved by **KIOTI**. Use with implements which are not sold or approved by **KIOTI** and which exceed the maximum specifications listed below, or which are otherwise unfit for use with this **KIOTI** tractor may result in malfunctions or failures to the tractor, damage to other property and injury to the operator or others. [Any malfunctions or failures to the tractor resulting from use with improper implements are not covered by the warranty.]

Item / Model	Tread (max. width)		Lifting Capacity max. loading weight W0 (24 in. aft of hitch)
	Front	Rear	
DS3510	35.8 in. (910 mm)	37 in. (940 mm)	1,109 lbs. (530 kg)

Item / Model	Actual figures		Trailer loading weight W_3 Max. capacity
	Implement weight W_1 and / or size	Max. Drawbar Load W_2	
DS3510	As in the following list (shown on the next page)	551 lbs. (250 kg)	1,792 lbs. (812 kg)

Lifting Capacity max. loading weight ..... The max. allowable load which can be put on the 24 in. aft of hitch : W_0
Implement weight ..... The implement's weight which can be put on the lower link : W_1
Max. draw-bar load ..... W_2
Trailer loading weight ..... The max. loading weight for trailer (without trailer's weight) : W_3



NOTE : Implement size may vary depending on soil operating conditions.

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GENERAL SPECIFICATIONS

(in. (mm)

IMPLEMENT	REMARKS	DS3510	REMARKS
Loader	Max. Bucket width	60 (1,524)	Operating capacity 660 lbs (300 kg) and below
Backhoe with sub frame	Max. Digging depth	89.7 (2,280) and below	Do not use 3 point hitch backhoe
Mid Mower	Max. Cutting width	60 (1,524) and below	
Tiller	Max. Cutting width	47 (1,193.8) and below	
Box Blade	Max. Cutting width	48 (1,219.2) and below	
Rear Blade	Max. Cutting width	60 (1,524) and below	
Rotary Cutter	Max. Cutting width	52 (1,320.8), 60 (1,524)	
Belt Guard	Max. Cutting width	52 (1,320.8), 60 (1,524)	
Chain Guard	Max. Cutting width	52 (1,320.8), 60 (1,524)	
Bale Transport	Max. Width	48 (1,219.2) and below	
Core Aerator	Max. Width	48 (219.2), 60 (1,524)	

NOTE : This is a sample of attachments commonly used. Before purchasing or using any attachment on a **KIOTI** product, please review the specifications to determine if it is a compatible product. Damages or failures due to improper use of compatibility issue will not be covered by warranty. If you have questions concerning product compatibility or warranty, please consult with your local **KIOTI** Dealer.

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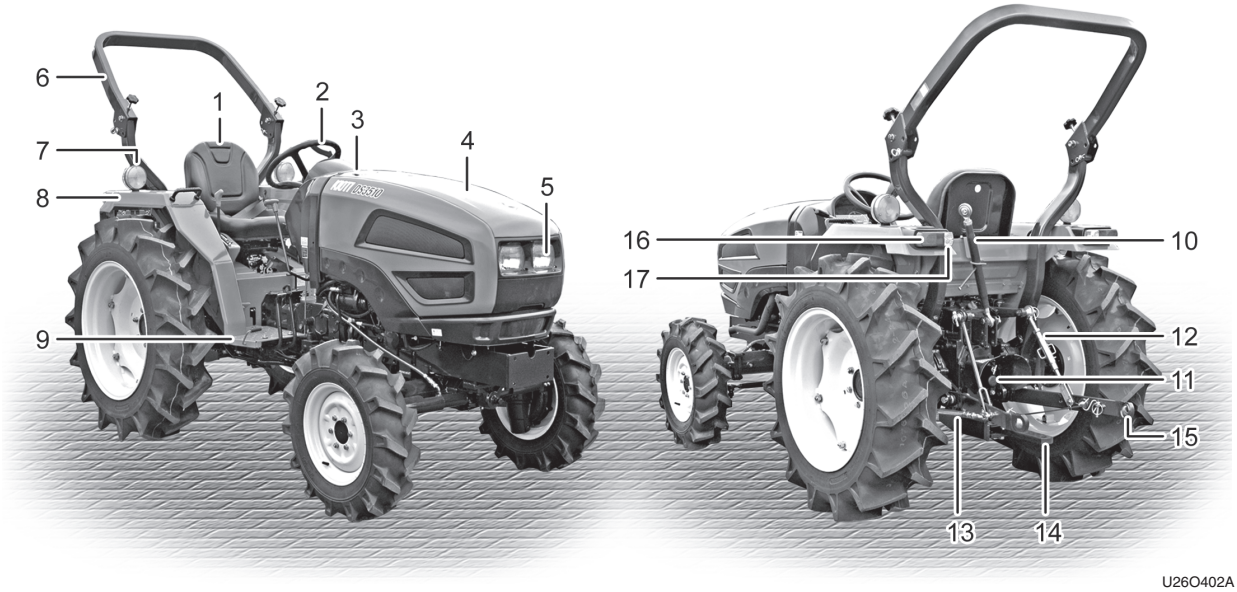
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EXTERIOR VIEW



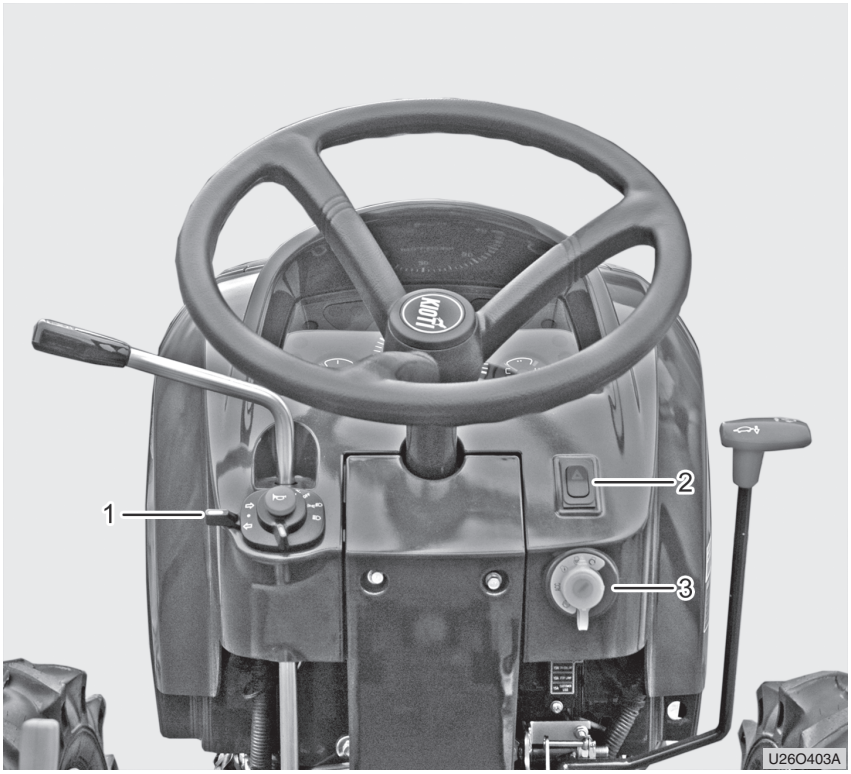
U26O402A

(1) Seat
(2) Steering wheel
(3) Fuel access cover
(4) Bonnet
(5) Head lamp
(6) ROPS
(7) Turn signal lamp
(8) Fender
(9) Footstep
(10) Top link
(11) P.T.O Shaft
(12) Crank lifting rod
(13) Check link
(14) Swing Draw Bar
(15) Lower link
(16) Brake Lamp
(17) Tail Lamp

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SWITCH
MOUNTING LOCATION

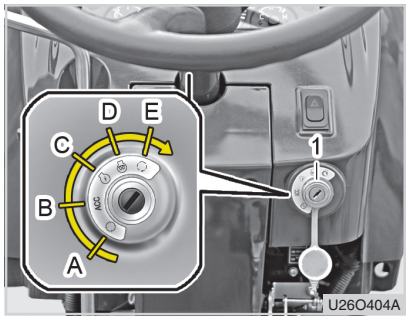


(1) Combination Switch
(2) Hazard Lamp Switch
(3) Key Switch

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KEY SWITCH



(1) Key switch
(A) "Start"
(B) "Heat"
(C) "ON"
(D) "ACC"
(E) "OFF"

• **(A)**

When the key switch is in position "A", the engine and all electrical devices in the vehicle stop.

• ACC **(B)**

When the key switch is turned to the position "B", only electrical devices, such as the brake light.

• **(C)**

The position "C" indicates the "ON" position. As soon as the key switch is turned to this position, the oil pressure warning lamp and battery charge warning lamp comes on (These become "OFF" after the engine is started). The preheat operation is automatically started. The automatic preheat operation is indicated by the glow plug indicator. Make sure to preheat the engine until the glow plug indicator goes "OFF" (approx. 8 seconds) in cold weather.

• **(D)**

The position "D" indicates the "manual preheat" position, which is not used in normal conditions. This position is a self-return type, so the key should be held there while using. This position can be used in very cold weather to preheat the engine manually in order to start the engine. Using this position for more than 30 seconds consecutively can reduce the preheat system's life.

• **(E)**

The position "E" indicates the "Start". In order to start the engine, depress the clutch pedal. As soon as the engine is started, release the key and the key switch is returned to the position "C".

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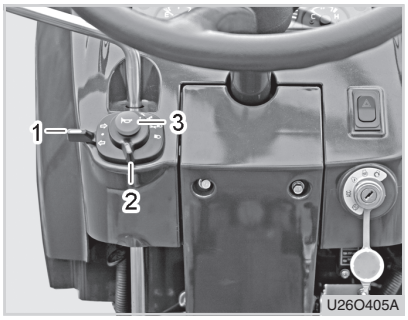
⚠ CAUTION

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

NOTE

- The ignition key is not directional and can be inserted in any direction. Also, be careful not to leave the tractor unattended while key is in ignition.
- The horn, turn signal lamp, and hazard lamp can be operated without the key inserted.

COMBINATION SWITCH

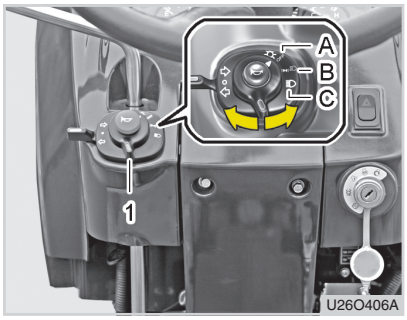


(1) Turn Signal Light Switch
(2) Head Light Switch
(3) Horn Switch

The combination switch consists of the head light, turn signal light, and horn switches. Its function by its position is as follows:

OFF: Head light and tail light “OFF”
: Low beam and tail light "ON"
: High beam "ON"
: Turn signal light and tail light "ON"

HEAD LIGHT SWITCH



(1) Head Light Switch
(A) “OFF” *(B) Low Beam "ON"*
(C) High Beam "ON"

The head light switch can be operated only while the key switch is turned to the “ON” position. Turning the head light switch clockwise one click will illuminate the low beam head lights while turning it one more click will illuminate the high beam head lights.

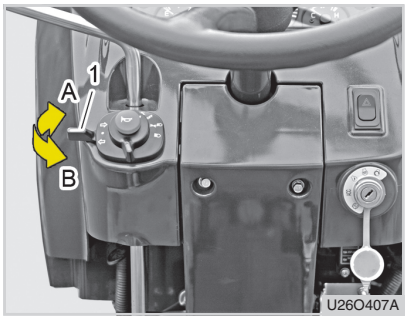
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⚠ WARNING

- ***Driving with high beam head light disturbs the approaching vehicle's visibility for safe driving. Use the high beam head lights only if necessary.***

TURN SIGNAL LIGHT SWITCH



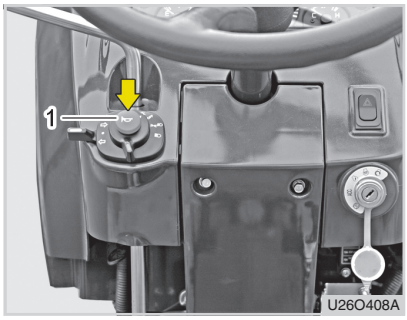
(1) Turn Signal Light Switch
(A) Right Turn (B) Left Turn

The turn signal lights are used when turning the vehicle left or right. Pulling the lever up blinks the right turn signal light while pushing the lever down blinks the left turn signal light.

NOTE

- The turn signal light lever is not the self-return type. Therefore, make sure to return the lever manually after turning the vehicle.
- The turn signal lamps can be operated without the key inserted.

HORN SWITCH



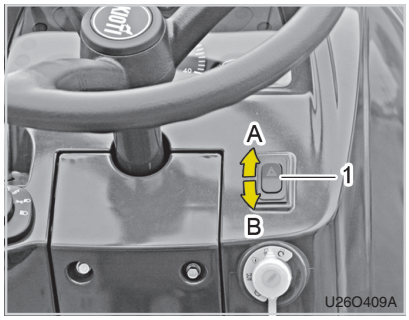
(1) Horn Switch

The horn switch can be operated without the key inserted. Pressing this switch sounds the horn.

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HAZARD LAMP SWITCH



(1) Hazard Lamp Switch
(A) "ON" *(B) "OFF"*

This switch can be used to warn other vehicles when malfunction occurs in the tractor while driving on a public road. Pressing this switch up blinks the hazard lamp and returning it turns "OFF" the lamp. The turn signal lights cannot be operated while this switch is pressed up to operate the hazard lamps.

⚠ CAUTION

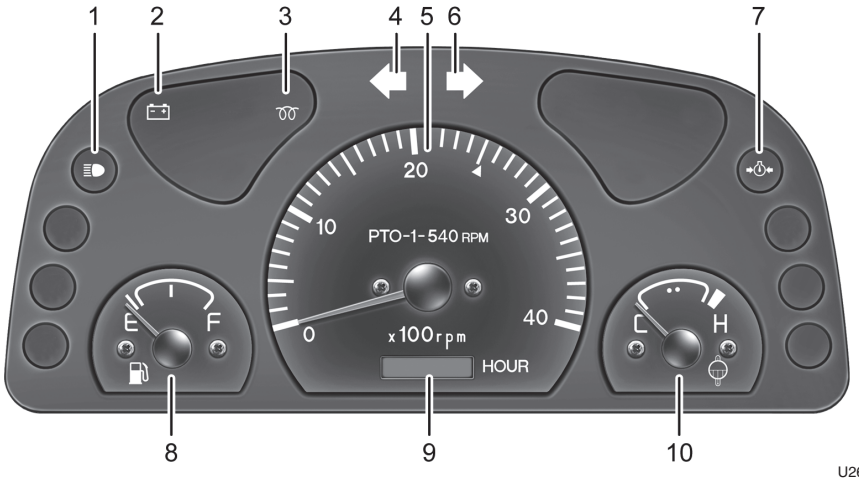
- **If the hazard lamps are turned on for an extended period of time while the engine is stopped, the battery can be discharged. Therefore, use them only in emergency.**
- **The hazard lamp can be operated without the key inserted.**

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INSTRUMENT PANEL
VIEW

Symbols on the instrument panel come on when the key switch is turned to the “ON” position.



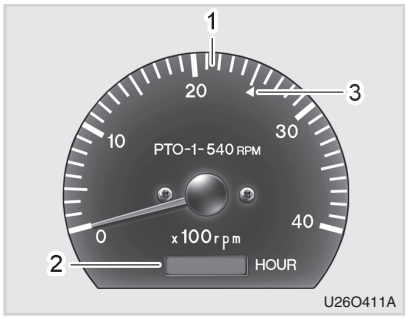
U26O410A

(1) High Beam Indicator
(2) Parking Brake Indicator
(3) Glow Plug Indicator
(4) Turn Signal Light (LH)
(5) Tachometer
(6) Turn Signal Light (RH)
(7) Engine Oil Pressure Warning Lamp
(8) Fuel Gauge
(9) Hour Meter
(10) Coolant Temperature Gauge

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TACHOMETER / HOURMETER INDICATOR



(1) Tachometer (2) Hourmeter Indicator
(3) Rated Engine Speed

The tachometer indicates the engine rpm.

The mark "▲"(3) indicates approx. engine rated speed. You can have the 540 PTO rpm while the engine speed is around this indicator.

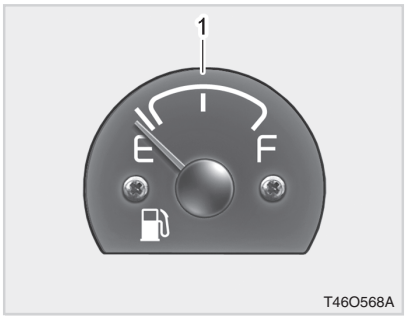
For speedy and effective work, adjust the work load so that the engine rpm is close to this mark "▲".

The hour meter indicates the total run hours of the tractor in 6 digits.

The last digit represents 1 hour.

The hourmeter does not operate if the engine is stopped even if the key switch is in the "ON" position.

FUEL GAUGE



(1) Fuel Gauge
"E" : Empty "F" : Full

This gauge indicates the remaining fuel level after the key switch is turned to the "ON" position.

F : Fuel is fully filled.

E : Replenish the fuel tank.

If driving is continued with the needle below the position "E", air may enter the fuel supply system. In this case, "bleed" the system. (For detailed instructions, refer to "Bleeding fuel system" in the chapter "Maintenance".)

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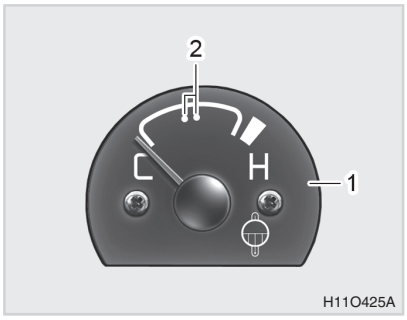
ENGINE COOLANT TEMPERATURE GAUGE

⚠ WARNING

- ***There is no warning lamp for running out of fuel. Therefore replenish the fuel immediately when the needle approachs to "E" position.***

NOTE

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



(1) Coolant Temperature Gauge
(2) Normal Driving Range
"C" : Cold "H" : Hot

This gauge indicates the coolant temperature after the key switch is turned to the "ON" position.

· C : Coolant is cold.

· H : Coolant is hot.

The range marked in "2" in the figure indicates the normal engine temperature (normal driving range).

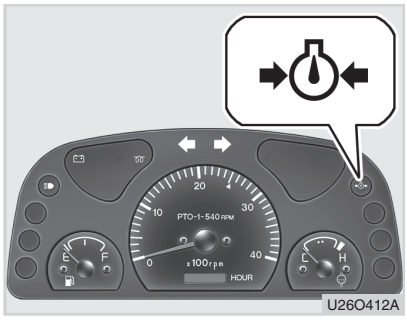
⚠ CAUTION

- **Make sure to control the work load so that the needle is not in the red zone.**
- **If the needle stays in the red zone, do not stop the engine immediately. Instead, reduce the work load to cool down the engine before stopping the engine.**
- **Make sure to keep the front grill clean so that air is sucked through it freely for efficint cooling.**

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ENGINE OIL PRESSURE WARNING LAMP



⚠ CAUTION

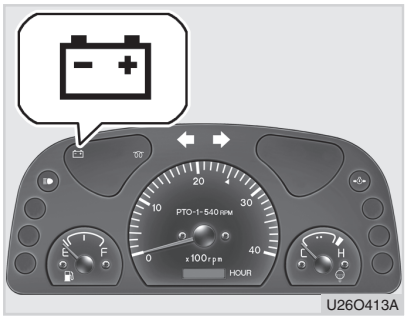
- **If the oil level is below the specified range, the engine can sieze.**
- **The engine can be severely damaged if driving or operating the tractor with the engine oil warning lamp “ON”.**

This lamp comes on when the engine oil pressure or oil level is low.

This lamp is turned on when the starting switch is turned on before starting the engine but turned “OFF” after starting the engine. If this lamp comes on while driving, stop the engine immediately and check the engine oil level.

If this lamp comes on even with the specified engine oil level, have the tractor checked by your local **KIOTI** dealer or workshop immediately.

BATTERY CHARGING LAMP



This lamp is turned on when the starting switch is turned on before starting the engine but turned “OFF” after starting the engine.

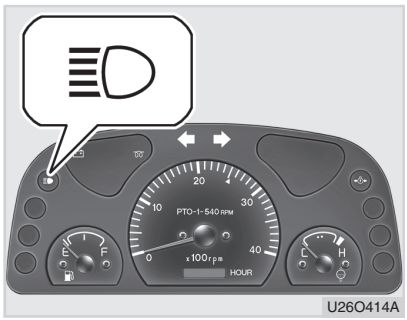
⚠ CAUTION

- **If this warning lamp comes on while driving, the charging system, such as the alternator, is malfunctioning. Therefore, turn “OFF” all electrical devices and have the tractor checked by your local KIOTI Dealer or workshop as soon as possible.**

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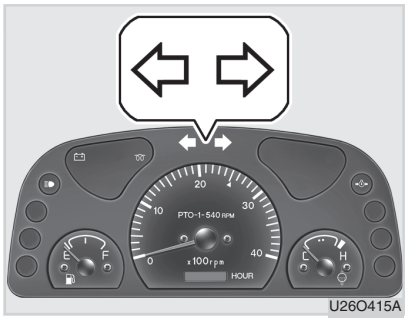
HEAD LIGHT HIGH BEAM LAMP



This lamp comes on in blue when the high beam head light is switched on.

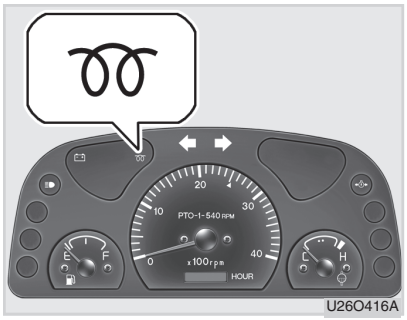
Driving with high beam head light disturbs an approaching vehicle's visibility. For safe driving, use the high beam head light only if necessary.

TURN SIGNAL LAMP



Operating the turn signal lamp switch up and down turns on the corresponding lamp in green.

GLOW PLUG INDICATOR

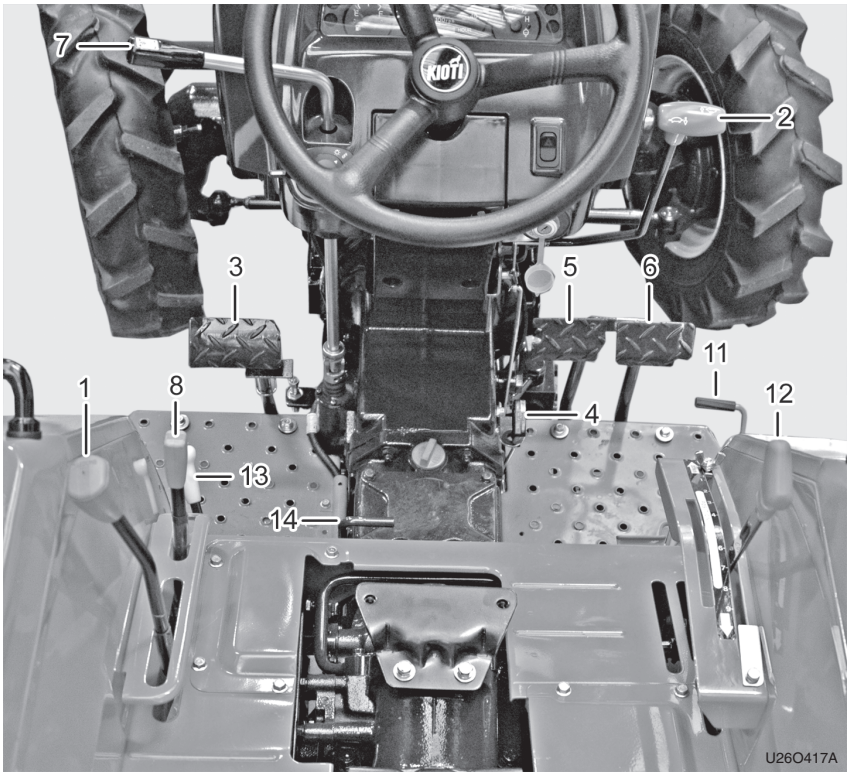


This indicates the operating condition of the preheat system. In case the auto pre-heating kit is installed, this indicator comes on 8 seconds when the key switch is turned to the "ON" position. In case of basic model, this indicator comes on when the key is held in "PRE-HEAT" position by operator.

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OPERATING THE CONTROLS

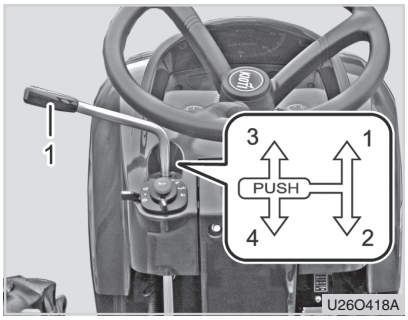


(1) Shuttle Shift Lever
(2) Hand Throttle Lever
(3) Clutch Pedal
(4) Parking Brake Lock Lever
(5) Brake Pedal (L)
(6) Brake Pedal (R)
(7) Main Gear Shift Lever
(8) Range Gear Shift Lever
(9) 3-Point Hitch Lowering Speed Knob
(10) Differential Lock Pedal
(11) Foot Throttle
(12) Lift Position Control Lever
(13) PTO Shift Lever
(14) Front Wheel Drive Lever

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MAIN SHIFT LEVER

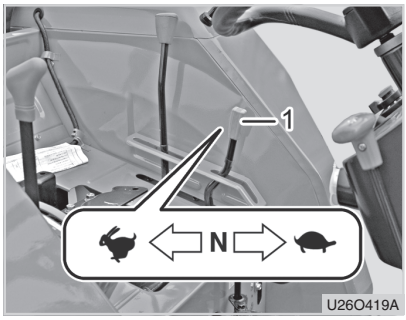


(1) Main Shift Lever

Four speeds can be selected by moving this main shift lever in “H” shaped path. You can shift into this lever from the 1st to 4th gears even when the tractor body is moving by disengaging the clutch during driving as these gears are constanted.

In total, 8 forward driving speeds and 8 reverse driving speeds are provided by combination of the main shift lever (4 speeds), range shift lever (2 speeds), shuttle shift lever.

RANGE GEAR SHIFT LEVER



(1) Range Gear Shift Lever
( ) High Speed *( ) Low Speed*

High and low speeds can be selected by the range shift lever. Make sure to shift the range shift lever after the tractor is completely stopped by depressing the clutch pedal.

If the lever is not moved freely or makes abnormal noise, put the lever into the neutral position, engage and disengage the clutch, and then try to shift the lever.

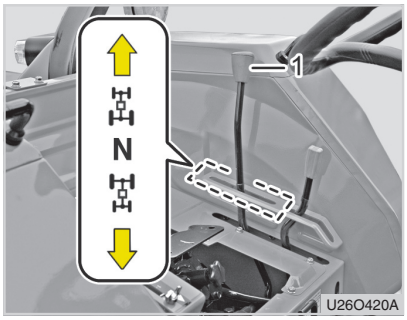
⚠ CAUTION

- **Make sure to shift the range gear shift lever with the clutch pedal depressed and the tractor stationary.**
- **Never put the range shift lever into the high speed position during driving backward as it is dangerous to drive at a high speed.**
- **The tractor is not braked by depressing the brake pedal without depressing the clutch pedal at a low speed as rotational force of the axle has a major effect at a low speed. Therefore, disengage the clutch before depressing the brake pedal to stop the tractor.**

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SHUTTLE SHIFT LEVER



(1) Shuttle Shift Lever
(F) Forward *(R) Reverse*
(N) Neutral

This lever is to select the forward and reverse driving direction. As it is a synchromesh transmission, shift the lever with the clutch disengaged completely.

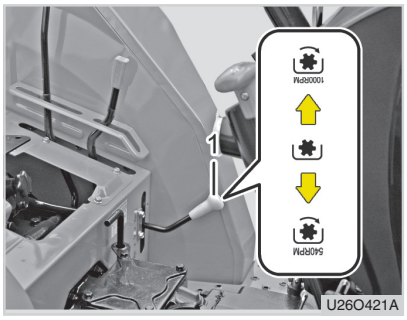
Shifting this lever frequently can deteriorate the trans-mission's life and durability.

Put this lever into the neutral position when the tractor is not driven.

⚠ CAUTION

- **Reduce the speed before moving this lever since it is very dangerous to switch the driving direction at a high speed.**

P.T.O SHIFT LEVER



(1) P.T.O Shift Lever

This lever is to shift the P.T.O speed into 2 speeds.

(rpm)

Model \ Shift	1st	2nd
DS3510	540	1,000

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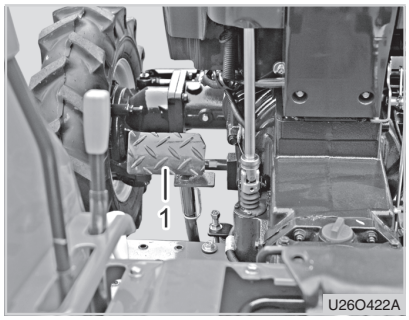
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CLUTCH PEDAL

⚠ CAUTION

To avoid personal injury:

- **When disassembling, assembling or cleaning the P.T.O system, make sure that to stop all rotating parts and the engine before disengaging the P.T.O.**



(1) Clutch Pedal

Make sure to depress the clutch pedal to its end. To start “OFF” smoothly, put the main and range shift levers into the proper positions and release the clutch pedal slowly.

⊕ IMPORTANT

- **Never put your foot onto the clutch pedal during driving. The clutch disc can be worn pre-maturely.**

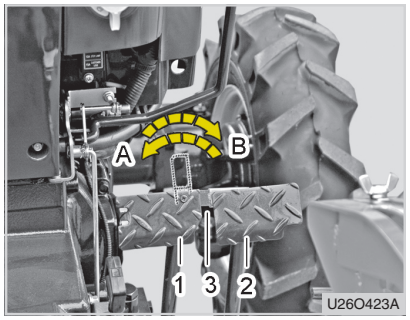
⊕ IMPORTANT

- **Be sure to depress the clutch pedal fully when shifting. Otherwise, the shift gear can be broken.**

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BRAKE PEDAL



(1) Brake Pedal (L) *(2) Brake Pedal (R)*
(3) Pedal Interlock
(A) Unlock *(B) Lock*

1. Make sure to link the left and right brake pedals as shown in the figure while driving on a road. The tractor can roll over if depressing only one brake pedal at a high speed.
2. When turning sharply on a field, disengage the left and right brake pedals to use one brake pedal. Unlock the brake lock, and then turn the steering wheel while depressing the brake pedal on the turning side.
3. Depressing only one brake pedal is not very effective while the 4WD is activated. (However it is effective in 2WD)

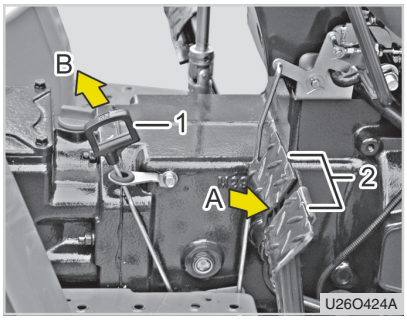
⚠ WARNING

- ***Make sure to interlock the brake pedals as an accident, such as rollover or impact, can occur during driving, and entering/exiting field.***

⚠ CAUTION

- **Be sure to disengage the clutch before depressing the brake pedal to stop the tractor.**

PARKING BRAKE LEVER



(A) Press Down *(B) Pull Up*

To stop the tractor, depress the brake pedal and pull the lever up to apply the parking brake.

The parking bake is automatically released by depressing and then releasing the brake pedal.

⚠ CAUTION

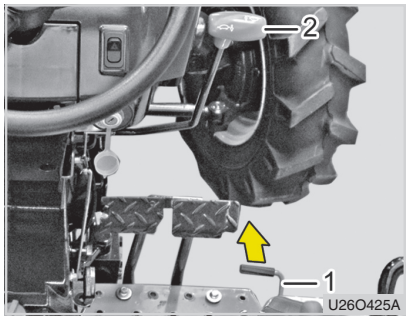
- **If the vehicle is driven with the parking brake partially or completely engaged, it may cause early wear of the brake disc.**

4

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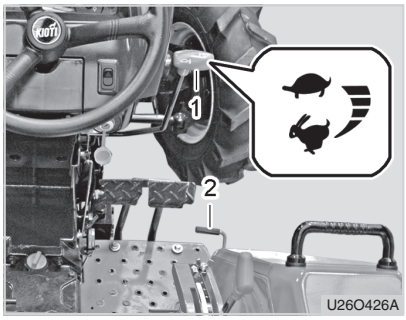
FOOT THROTTLE



(1) Foot Throttle *(2) Hand Throttle Lever*

The foot throttle is mainly used during driving on a road while the hand throttle lever is mainly used while working in the field.

HAND THROTTLE LEVER



(1) Hand Throttle Lever *(2) Accelerator Pedal*
Decrease *Increase*

The hand throttle lever is to control the engine rpm. The engine accelerates to its full speed by pulling the hand throttle lever (position) completely out while pushing the lever (position) decelerates the engine.

The hand throttle lever is mainly used while working in the field.

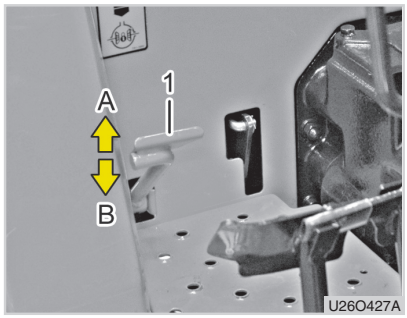
⚠ CAUTION

- **Using the accelerator lever during driving can lead to an accident as it becomes hard to decelerate the tractor rapidly.**

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DIFFERENTIAL LOCK PEDAL



(1) Lock Pedal
(A) Release to "Disengage"
(B) Depress to "Engage"

The differential lock is to secure the differential system and keep the wheel rotation on both sides the same in order to enhance the traction of the rear axle.

Depressing the pedal engages the differential lock while releasing the pedal disengages the differential lock.

Use this system under the following conditions:

1. When any wheel slips and the tractor does not move in the field.
2. When it is hard to escape a paddy field.

⚠ CAUTION

- **The differential lock should be engaged only while the driving clutch is engaged. If the differential lock pedal does not move when depressing it, try to depress it again after releasing it.**
- **When engaging the differential lock, reduce the engine speed. After engaging it, accelerate the tractor.**
- **Make sure to set the steering wheel in the straight ahead position while the differential lock is in use. Otherwise, the differential system can be damaged.**

SEAT ADJUSTMENT

SEAT SLIDING



(1) Seat Adjustment Lever

To adjust the seat position, pull the lever (1) to left under the front of the seat, slide the seat to the desired position, and then release the lever.

Make sure that the seat is firmly fixed by moving it gently after adjustment.

⚠ CAUTION

- **Do not put a hand between the seat and the slides when adjusting the seat position. You can get injured unexpectedly.**

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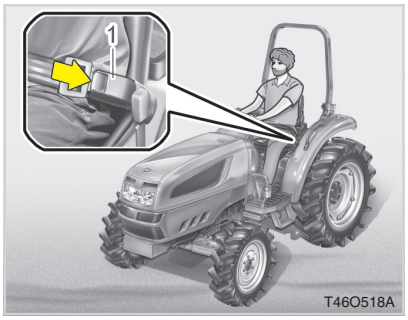
SEAT BACK ADJUSTMENT



(1) Seat Back Adjustment Lever

To change the seat-back angle, raise the lever (1) on the left of the seat. Then, adjust the seat-back angle with the lever pulled. Release the lever after adjustment. Make sure that the lever is returned and the seat is firmly fixed after adjustment.

SEAT BELT



(1) Seat Belt

The seat belt is self-retracting type. Make sure to fasten the seat belt before driving.

⚠ WARNING

- ***Always fasten the seat belt when the tractor has ROPS properly. Otherwise, never wear the seat belt.***
- ***Make sure that the seat belt is not twisted. It cannot work properly, leading to a dangerous situation.***

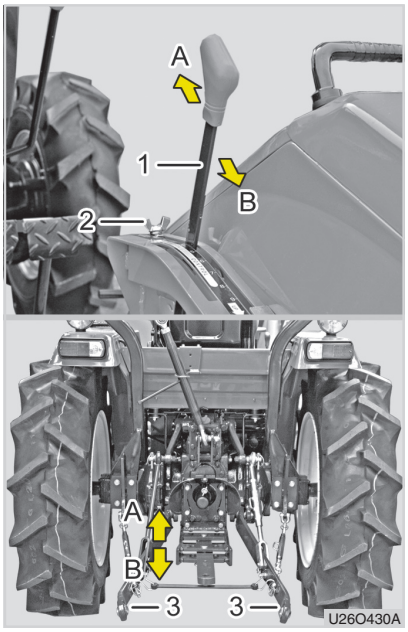
⚠ WARNING

- ***Be extra careful not to let any part of your body under the tractor or an implement when lowering an implement.***

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POSITION CONTROL LEVER



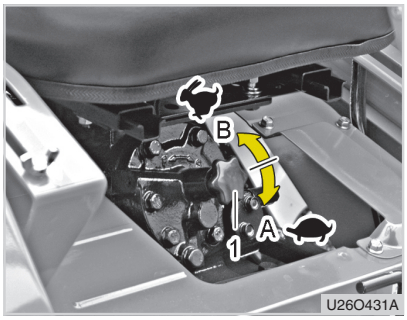
(1) Position Control Lever *(2) Lock Bolt*
(3) Lower Link
(A) Lowering *(B) Lifting*

The position control lever is used to keep the plowing depth constant during work.

The implement attached to the lifting arm can be lowered by pushing the lever while the implement is raised by pulling the lever.

In order to limit the lowering height of implements, use the lock bolt (2) to limit the operating range of the lever.

LIFTING ARM (LOWER LINK) SPEED CONTROL KNOB



(1) Lowering Speed Control Knob
(A) Low Speed *(B) High Speed*

Turning the lever counterclockwise increases the lowering speed while turning it clockwise decreases the lowering speed. Also, turning it clockwise to its end can fix the implement to a certain position.

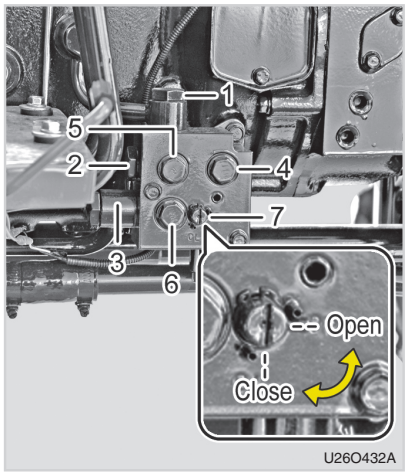
NOTE

- This lever does not control the lifting speed of the lifting arm.

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POWER TAKE-OFF (HYDRAULIC BLOCK TYPE)



(1) To the Tank *(2) Relief Valve*
(3) To The Hydraulic Cylinder
(4) OUT PORT (To The Exterior Implement)
(5) IN PORT ("T" PORT Of The Exterior Implement)
(6) R PORT (Carry-Over Port Of The Exterior Implement)
(7) Adjusting Screw

The block type power take-off is useful when attaching a hydraulic operating equipment, such as the front-end loader and front blade.

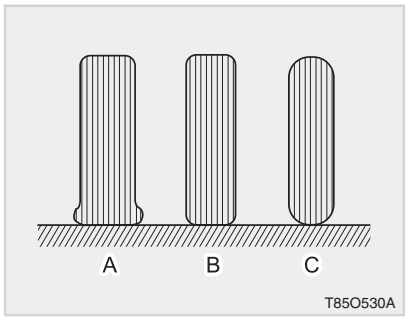
IMPORTANT

- **When no implement is used, turn the direction valve counterclockwise completely. Otherwise, the relief valve is operable.**

WHEN ATTACHING AN IMPLEMENT

1. Unscrew the plug.
2. Fit the hose (PT3/8") to the inlet and outlet of the hydraulic block.
3. Turn the adjusting screw clockwise completely to attach an implement.

TIRES, WHEELS AND BALLAST



(A) Insufficient *(B) Standard*
(C) Excessive

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

WARNING

- ***Do not use tires larger or smaller than specified.***
- ***Do not disassemble or assemble the tire. If it is necessary to disassemble/assemble the tire, let a qualified service person perform the work.***

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⚠ WARNING

- ***The tire rims can fall out of the tires. Therefore, stay out of their way when checking or inflating tires.***

INFLATION PRESSURE

Always maintain the proper tire inflation pressure. Make sure the tire pressure does not exceed the pressure recommended in the manual.

		DS3510	
		Tire sizes	**Inflation pressure**
Rear	AG	11.2-24,6PR	179 kPa (1.8 kgf/cm^2, 26psi)
	Turf	41X14.0-20,4PR	172 kPa (1.8 kgf/cm^2, 25 psi)
	Industrial	15-19.5,6PR	248 kPa (2.5 kgf/cm^2, 36psi)
Front	AG	7-14,4PR	196 kPa (2.0 kgf/cm^2, 28psi)
	Turf	27X8.50-15,4PR	207 kPa (2.1 kgf/cm^2, 30 psi)
	Industrial	25X8.50-14,6PR	345 kPa (3.5 kgf/cm^2, 50psi)

** IND : for Industrial.*

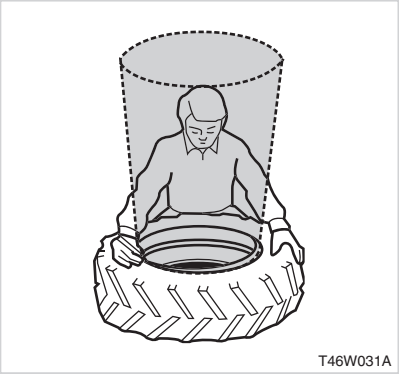
NOTE

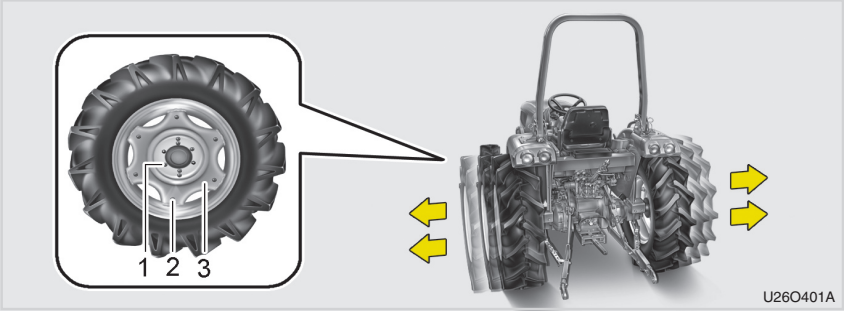
- Keep the front tire pressure to maximum if maximum load is applied to the loader or front weight.
- If tires with a different size from the ones already in use are installed, contact the **KIOTI** dealer for the front/rear wheel speed ratio. Improper front/rear wheel speed ratio can result in excessive wear of the tires.

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TREAD





(1) Bolt *(2) Rim Bolt* *(3) Disc*

⚠ WARNING

- ***Do not weld or apply heat to the tire rim or disc. The tire can explode due to the rapidly increased pressure in the tire.***
- ***Check tires for inflation pressure, damage, deformation, and extended wear on lug and damage of rim and disc. Also check if wheel bolts, rim bolts, and nuts are loose.***

When working on a field where crops are linearly aligned, the tread should be adjusted so that the tires do not cross over the crops.

It is also necessary to widen wheel tread to decrease danger when working on slopes or hills, or when doing trailer work, etc.

⚠ WARNING

Never operate tractor with a loose rim, wheel, or axle.

- ***Always tighten nuts or bolts to the specified torque.***
- ***Make sure to frequently check that all these parts are firmly tightened.***

Make sure to perform inspection daily.

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STANDARD TREAD DIMENSION (REAR WHEEL)

in. (mm)

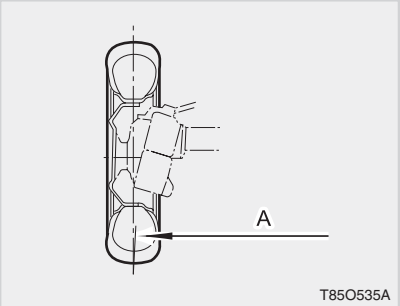
Model	AG					Turf	Industrial
	A	A	A	A	A	A	A
DS3510	40.2 (1,020)	41.7 (1,060)	44.7 (1,134)	45.3 (1,150)	49.9 (1,268)	45.1 (1,145)	46.0 (1,168)

Model	Tire size		
	AG	Turf	Industrial
DS3510	11.2-24/6PR	41 x 14.0-20/4PR	15-19.5/6PR

IMPORTANT

- **Always attach tires as shown in the drawings.**
- **If not attached as illustrated, transmission parts may be damaged.**
- **When re-fitting or adjusting a wheel, tighten the bolts to the following torques then recheck after driving the tractor 200 m (218 yards) and thereafter according to service interval.**
- **Torques : 226 N·m (23 kgf·m, 166 lbf·ft)**

FRONT WHEELS (EXAMPLE)



(A) Tread

Front tread can not be adjusted.
If it is necessary to adjust it, contact your local **KIOTI** Dealer.

If it is damaged by unapproved modification, it will not be covered by warranty.

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KIOTI SPECIFICATIONS FOR STANDARD TIRE (FRONT WHEEL)

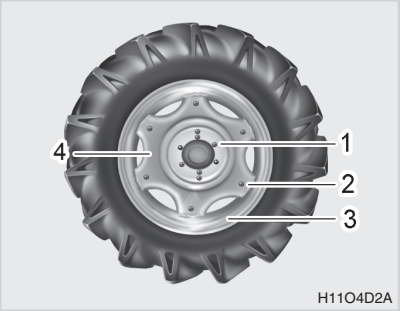
Model	Tire size		
	Farm	Turf	Industrial
DS3510	7-14 / 6PR	27x8.5-15 / 6PR	25-8.5-14 / 4PR

Tightening torque of wheel bolt (nut)	17~19 kgf·m

⚠ WARNING

- ***Use tires approved by KIOTI only.***
- ***Assemble the tire as shown in the figure.***
- ***Contact your local KIOTI Dealer if it is necessary to change the tire specification or installation method.***

REAR WHEELS (EXAMPLE)



(1) Wheel Bolt *(2) Rim Bolt*
(3) Rim *(4) Disc*

The rear axle tread width are adjustable by changing the installation of the tire (together with rim) to the disk, to suit the type or condition of work.

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Model	Tire size		
	Farm	Turf	Industrial
DS3510	11.2-24 / 6PR	41-14-20 / 4PR	15-19.5 / 6PR

Model	Tightening torque	
	Wheel nut	Rim bolt
DS3510	274.6 ~ 318.7 N·m (28 ~ 32.5 kgf·m)	274.6 ~ 333.4 N·m (28 ~ 34.0 kgf·m)

⚠ WARNING

- ***Use tires approved by KIOTI only.***
- ***Assemble the tire as shown in the figure.***
- ***Contact your local KIOTI Dealer if it is necessary to change the tire specification or installation method.***

For agricultural tires, make sure to install them with their arrow marks on their side pointing the front driving direction.

The tire is correctly installed if the mark “V” is shown straight when the tire is in the forward position.

ADDITIONAL WEIGHT

ADDITIONAL FRONT WEIGHT



(1) Additional Front Weight

If the loader is not installed, attach a weight to the front frame of the tractor as a safety measure.

If a heavy implement is installed at the rear or when towing a heavy trailer, the front wheels may be lifted. Add sufficient weight to keep steerability and to prevent rollover.

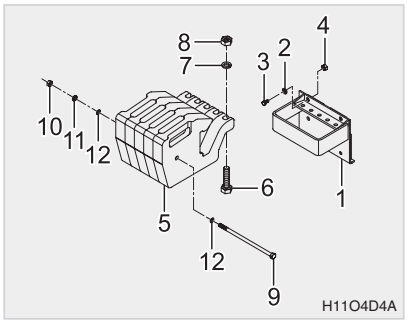
If sufficient weight, such as front loader, is applied to the front wheels, remove the extra front weight.

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If the front tires are heavily loaded, it becomes hard to steer the tractor, the tires can be worn faster and the durability of the front axle can be deteriorated.

COMPONENTS FOR ADDITIONAL FRONT WEIGHT (OPTION)



(1) Front Bracket
(2) Spring Washer
(3) Bolt
(4) Nut
(5) Balance Weight
(6) Bolt
(7) Spring Washer
(8) Nut
(9) Front Weight Bolt
(10) Nut
(11) Spring Washer
(12) Plain Washer

When installing or removing a weight, always check the tire inflation pressure and adjust it as necessary.

The front weights are available at the **KIOTI** Dealer. For required number of weights, consult your local **KIOTI** Dealer.

Model	Max. load
DS3510	149.6 lbs. (17 kg x 5 Pieces)

⚠ CAUTION

- **Additional weight might be needed for transporting heavy implements.**
- **Reduce the speed regardless of additional weight when driving on a bumpy or rough road with the implement lifted. The tractor can roll over.**

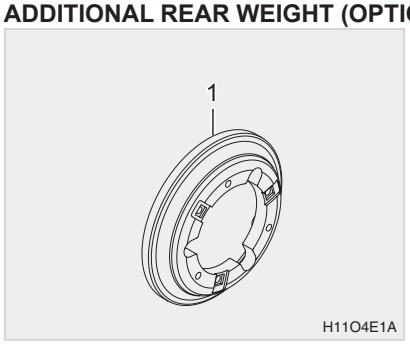
IMPORTANT

- **Attach only required amount of weight.**
- **The life of the axle or wheel can be shortened.**

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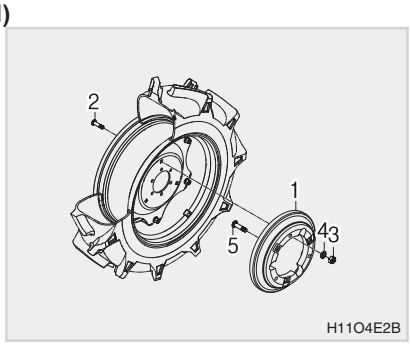
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ADDITIONAL REAR WEIGHT (OPTION)



(1) Rear Weight

The rear weight is used to maximize the traction of the tractor by increasing the grip of the rear wheels when using a heavy trailer or plow.



(1) Rear Weight
(2) Weight Bolt
(3) Nut
(4) Spring Washer
(5) Bolt

For detailed information on installation, contact your local **KIOTI** Dealer.

Max. load	330 lbs. (25 kg X 2 Pieces)

IMPORTANT

- **Attach only required amount of weight.**
- **Unnecessary weight can result in poor braking performance, rapid wear of the brake disc, shortened axle life, and increase in fuel consumption.**

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ADDITIONAL LIQUID TYPE WEIGHT

It is possible to inject water and calcium solution into the tire to use it as a ballast.

NOTE

- The liquid injection should be performed only by a qualified service personnel.
  For detailed information, contact your local **KIOTI** Dealer.

If one liter of water is mixed with 0.4 kg of calcium, this liquid does not freeze down at -49°F (-45℃).

For a tire without a tube, fill it with water and calcium solution at least to the valve stem level (75 %) with the valve stem.

If the tire without a tube is not filled with water and calcium solution sufficiently, a part of the ream is exposed, resulting in corrosion.

For a tire with a tube, fill it up to 90% of its level.

NOTE

- If the liquid ballast is used, inflate the tire 0.14 bar (2 psi) more than the specified pressure. This is to compensate for the ventilation symptom which occurs while the tire is moving.

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OPERATION

5

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PRE-OPERATION CHECK

It is a good practice to know the condition of your tractor before you start it. You should do routine check before each use.

⚠ CAUTION

- **Park the tractor on the level ground, stop the engine, and apply the parking brake before checking or repairing it.**
  Refer to "DAILY CHECKING ITEMS" in the section 7 "MAINTENANCE" for pre-operation check.
- **Be sure to read and understand the information titled as "DANGER", "WARNING", and "CAUTION" thoroughly for the safe operation.**

CHECK ITEMS

- Walk around inspection.
- Engine oil level.
- Transmission oil level.
- Coolant level.
- Clean the front grill and radiator screen.
- Air cleaner element.
- Brake pedal free play.
- All dash gauges and indicators.
- Head lights, tail lights, and working lights.
- Accessible wiring harness for any damage.
- Seat belt and **ROPS** for damage.
- All "DANGER" and "WARNING" decals.
- Fuel level.
- Tire pressure and wheel bolt tightness condition.
- 3-point hitch and securing pins.

For detailed information, refer to "Maintenance schedule chart" in chapter 7.

INITIAL OPERATION

Driving a new tractor at a high speed or under heavy load can affect its durability.

Make sure to run the tractor at the proper work load and speed for the initial operation of 10 to 20 hours.

TIPS FOR BREAKING-IN

1. Start the engine and idle the engine at a low speed for 3 to 4 minutes in advance.
2. Increase the idling time in cold weather.
3. Do not drive the tractor at the maximum speed on a road.
4. Never apply excessive load during work.
5. Idle the engine at a low speed for 2 to 3 minutes before stopping it.

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OPERATING THE ENGINE
STARTING THE ENGINE

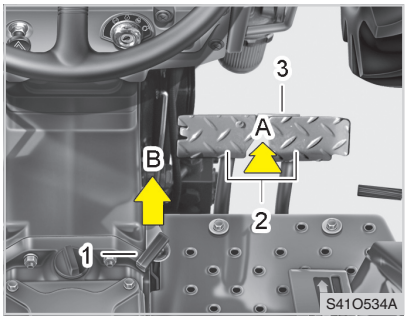
⚠ WARNING

To avoid accidents:

- ***Be sure to read and understand the warning and caution decals on the tractor thoroughly.***
- ***Run the engine only in a well-ventilated area, or you can be suffocated by exhaust gas.***
- ***Never start the engine unless you are on the driver's seat.***
- ***The tractor can abruptly start "OFF", resulting in an injury or accident.***

IMPORTANT

- **Using an starting fluid so the engine will start more easily can damage the engine. And it will not be covered by warranty.**
- **Never try to start the engine for over 10 seconds consecutively to protect the start motor and battery from damage.**



(1) Parking Brake Lever *(2) Brake Pedal*
(3) Interlock the Brake Pedals
(A) "DEPRESS" *(B) "PULL"*

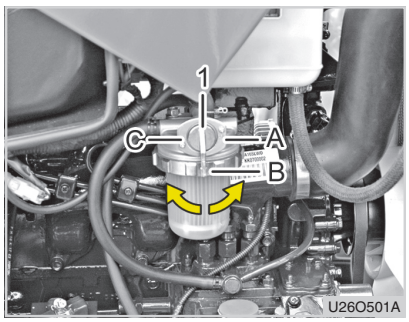
1. Make sure there is no obstructions around the tractor.
2. Make sure the parking brake is set
   (1) To set the parking brake;
      1) Interlock the brake pedals
      2) Depress the brake pedals
      3) Latch the brake pedals with the parking brake lever.
      (Check that the parking brake lamp on the gauge board illuminates.)
   (2) To release the parking brake press the brake pedals again.

IMPORTANT

- **Make sure that the brake pedals are fully depressed before pulling the parking brake lever up.**

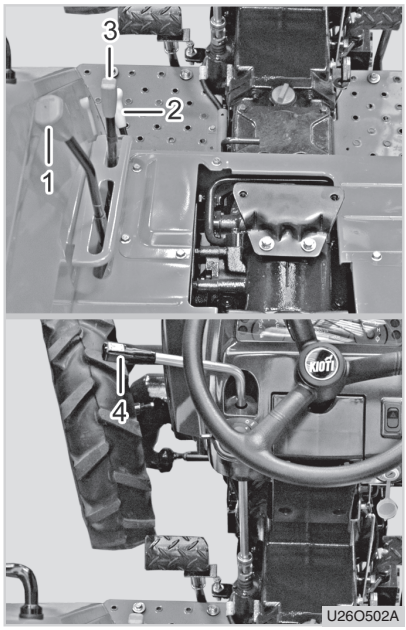
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(1) Fuel Cock
(A) Close *(B) Open*
(C) Air Bleeding

3. Make sure the fuel cock is in the open position.

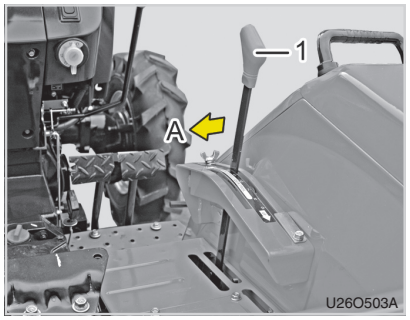


(1) Forward/Reverse Lever
(2) P.T.O Shift Lever
(3) Range Gear Shift Lever (Hi-Lo)
(4) Main Shift Lever

4. Set the PTO shift lever in the neutral position.
5. Set the main, range and shuttle shift levers in the neutral position.

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(1) Position Control Lever
(A) "DOWN"

6. Lower the attachment by pushing the position control lever toward.

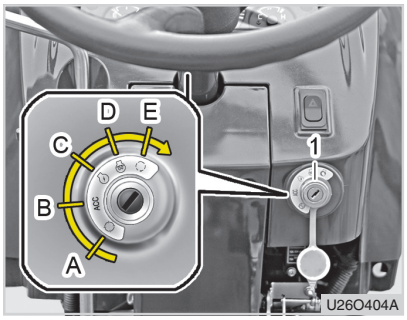
IMPORTANT

- **Make sure that no one is around the implement or behind the tractor.**



(1) Hand Throttle Lever
"Increase" *"Decrease"*

7. Set the hand throttle lever into the neutral position.
8. Depress the clutch pedal.



(1) Key switch *(A) Start*
(B) Heat *(C) "ON"*
(D) "ACC" *(E) "OFF"*

9. Insert the key into the key switch and turn it "ON". Maintain it until the preheat lamp is turned "OFF". (approx. 8 sec)

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OPERATING PRINCIPLE OF PRE-HEAT SYSTEM

The glow plug lamp comes on for 8 seconds and then goes “OFF” when the key switch is turned to the “ON” position.

The engine should be started within 5 seconds after the glow plug lamp goes “OFF”. After the engine is started, post-heat is performed for 15 seconds with the key switch in the “ON” position.

The preheat/after-heat function and glow plug lamp do not operate when the coolant temperature is 30℃(86˚F) or higher. In this case, the engine can be started without the preheat operation.

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

⚠ WARNING

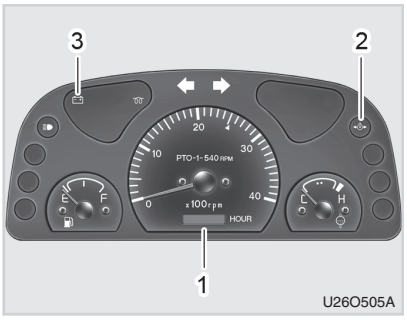
- ***Never engine the starter for 10 consecutive seconds as it consumes a lot of power. If the engine cannot be started within 10 seconds, wait for 30 seconds and try again.***
- ***Never try to crank while the engine is running.***

10. When the engine is started, release the key. Then, the key is automatically turned back to the “ON” position.

⚠ WARNING

- ***Do not turn the key switch to the “Start” position while the engine is running.***

11. Warm up the engine for 3 to 4 minutes. (10 minutes in winter)



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

12. Check to see that all the warning lamps on the instrument cluster turn “OFF”.

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

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CHECK LAMPS

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

⚠ WARNING

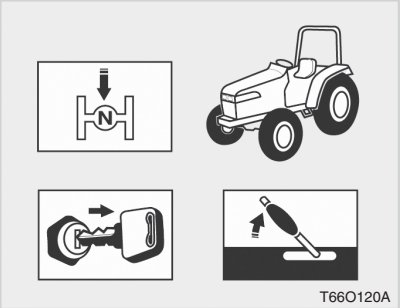
- ***The engine can be severely damaged if it is run with the oil pressure warning lamp ON.***

2. If the charge warning lamp (3) does not go “OFF” in 4 to 5 seconds after the engine is properly started, it means that the battery is not being charged. Have the charging system, such as the battery and alternator, serviced.
3. Refer to “Instrument panel” in chapter 4 for detailed information about other indicators and lamps.

⚠ WARNING

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

STOPPING THE ENGINE



1. Make sure to reduce the engine rpm before stopping the engine.
2. Depress the clutch pedal and put all shift levers in the neutral position.
3. Run the engine at the idle speed for approx. 2 to 3 minutes, and then turn the key switch to the “OFF” position to stop the engine.

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⚠ WARNING

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

IMPORTANT

- **Turn "OFF" all the electrical devices and remove the ignition key before leaving the tractor.**
- **The horn, turn signal lamp and hazard lamp can be operated without the key inserted. However, using these components without the engine started can discharge the battery.**

WARMING UP

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

HOW TO WARM UP ENGINE

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

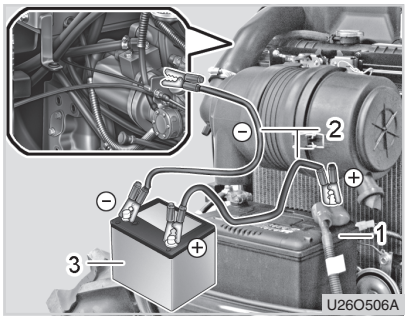
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JUMP STARTING

⚠ WARNING

- ***Warming up the engine excessively increases fuel consumption and affects the durability of the tractor negatively.***
- ***Never warm up the engine and leave the tractor for an extended period of time. It can cause fire and an accident.***



(1) Dead *(2) Jumper Cables*
(3) Helper Battery

If the battery is discharged and the engine cannot be started, it is possible to start the engine by connecting the discharged battery to a battery from another tractor or other extra battery.

1. Check that the voltage of the discharged battery is same as the voltage of the other tractor or vehicle for jump start (specification for this tractor: 12V).
2. Check the length of the jump cable and position another tractor near the tractor with the discharged battery. Then, put all the shift levers in the neutral position, apply the parking brake, and stop the engine.
3. Wear protective glasses and gloves and open the hoods of both tractors. Remove the battery terminal cover as necessary.
4. Connect the alligator clips on both ends of the red positive cable to the positive terminals of both batteries.
5. Connect one clip of the black negative cable to the negative terminal of the normal battery and the other clip to the tractor body with the discharged battery. Make sure to connect the clip to the body part without paint.

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OPERATING THE TRACTOR
DRIVING SAFETY

6. Start the engine of the tractor with the normal battery.
7. Start the engine of the tractor with the discharged battery.
8. Disconnect the black cable from the negative battery terminals of both of the tractors.
9. Disconnect the red cable.
10. Run the engine for at least 30 minutes to charge the discharged battery.
11. If the battery is discharged again, replace it or check the charging system, such as the alternator.



(1) Seat
(2) Seat back Adjustment Lever
(3) Seat Adjustment Lever (Sliding)

1. Adjust the seat and fasten the seat belt.

⚠ WARNING

- ***Check if the seat is securely locked after the seat adjustment.***
- ***Do not adjust the seat while driving. The seat may move suddenly causing the loss of control of the tractor.***



(1) Seat Belt

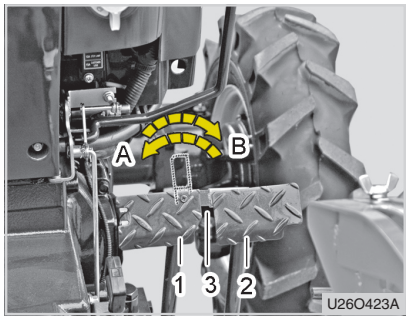
2. Wear the seat belt.

⚠ WARNING

- ***Always wear the seat belt when ROPS is installed.***
- ***If the seat belt is worn across the abdomen or waist, not the hips, an injury can occur in case of an accident or impact.***
- ***Do not wear the seat belt if the ROPS is not installed or folded.***

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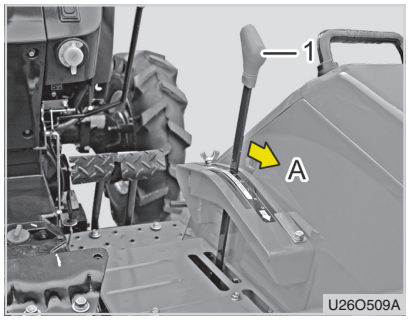


(1) Brake Pedal (L) *(2) Brake Pedal (R)*
(3) Pedal Interlock
(A) Lock *(B) Unlock*

3. Make sure the brake pedal of the left and right side is engaged.

⚠ WARNING

- ***If depressing only one brake pedal at a high speed, the tractor can lose its balance and be "OFF" the track.***



(1) Position Control Lever
(A) Lifting

4. Pull the position control lever backward to raise the attachment.

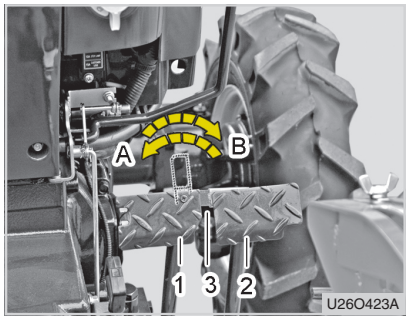


(1) Hand Throttle Lever
"Increase" *"Decrease"*

5. Increase slowly the engine RPM from idle speed to the medium speed.

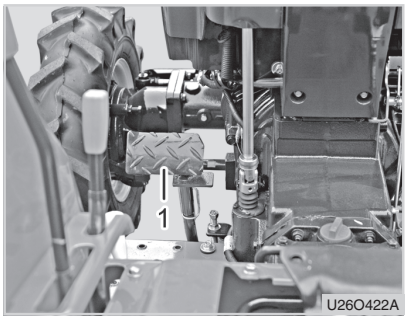
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(1) Brake Pedal (L) *(2) Brake Pedal (R)*
(3) Pedal Interlock
(A) Lock *(B) Unlock*

6. Depress the brake pedal to release the parking brake.



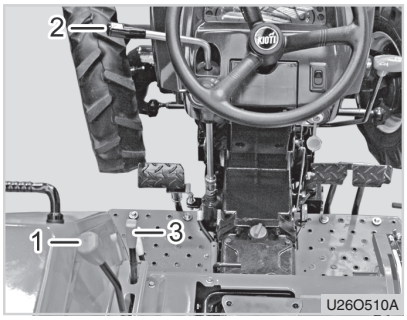
(1) Clutch Pedal

7. Depress the clutch pedal fully.

⚠ CAUTION

To avoid accidents:

- **Do not release the clutch pedal abruptly. The tractor may start "OFF" abruptly, resulting in roll-over.**



(1) Shuttle Lever *(2) Main Shift Lever*
(3) Range Shift Lever

8. Change the main and Hi-Lo shift, and shuttle lever to the position you want.
9. The tractor will start to move as you slowly remove foot pressure from the clutch pedal.

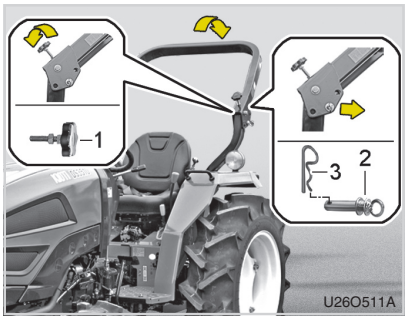
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HOW TO FOLD THE ROPS

⚠ CAUTION

- **Never put a foot on the clutch pedal during driving. The clutch disc can be rapidly worn.**
- **Make sure to operate the clutch fast when disengaging it and slowly when engaging it.**
- **Do not change the tractor speed abruptly for safe driving.**
- **When driving on a slope or loading or unloading the tractor to a transporting vehicle, reduce the speed in advance so that there is no need to shift the gear in the middle of the slope. Also, do not put your hand on the shift lever while driving on a slope. The tractor may roll down the slope due to the disengaged gear which is very dangerous.**



(1) Grip Bolt *(2) Set Pin*
(3) Clip Pin

1. Remove the clip pin and set pin.

⚠ CAUTION

- **You should always stop the engine, remove the key and set the parking brake before raising or folding the ROPS.**
- **Always perform such tasks from a safe and stable position at the rear of the tractor.**

⚠ CAUTION

- **It is very dangerous to drive with the ROPS folded. Fold the ROPS only when there is absolutely no possibility for roll over. If the situation changes, unfold the ROPS immediately.**

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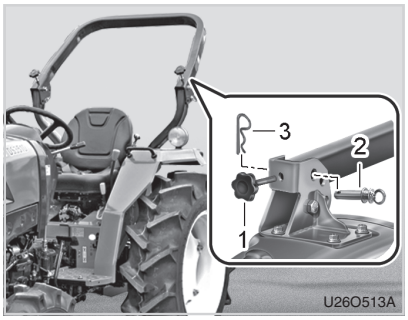
(1) ROPS

2. Loosen the grip bolt and fold the **ROPS**.

⚠ CAUTION

To avoid personal injury:

- **Hold the ROPS tightly with both hands and fold the ROPS slowly and carefully.**



(1) Grip Bolt (2) Set Pin
(3) Clip Pin

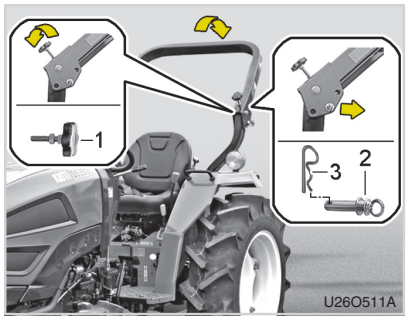
3. Align pin holes, insert set pin, and secure them with the clip pin.

⚠ CAUTION

To avoid accidents:

- **Make sure the pins are properly installed and secured.**

HOW TO RAISE THE ROPS TO UPRIGHT POSITION



(1) Grip Bolt (2) Set Pin
(3) Clip Pin

1. Remove both the grip bolt, clip pin and set pin.
2. Raise **ROPS** to the upright position.
3. Align pin holes, insert set pin and secure them with the clip pin.
4. Fix the **ROPS** with the grip bolt.

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PARKING

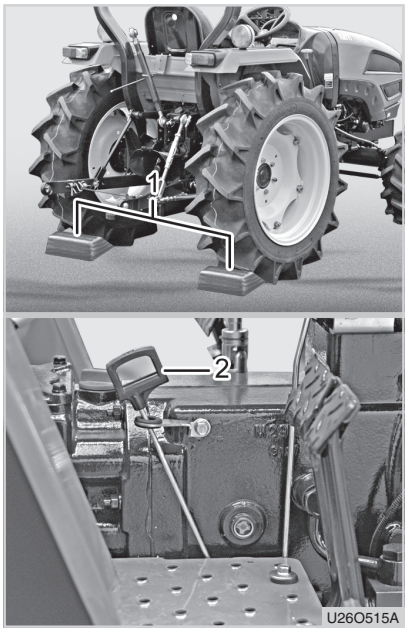
⚠ CAUTION

To avoid accidents:

- **Make sure to set the ROPS upright and fasten the seat belt during work.**
  If it is necessary to work with it folded, do not fasten the seat belt.
  It can be dangerous in case of tractor rollover.

IMPORTANT

- **ROPS (Roll Over Protective Structure), sun canopy or cabin are not a FOPS (Falling Object Protective structure).**
  It does not protect the riders against falling objects.
  Avoid driving the vehicle into a dangerous area such as falling rocks zone.



(1) Chocks *(2) Parking Brake Lever*

1. This tractor is not equipped with a separate parking brake. However uses the brake pedals instead.
2. Make sure to interlock the left and right brake pedals before applying the parking brake.
3. Pull the parking brake lever (2) up with the brake pedals depressed fully to engage the pedals with the latch. If the braking force is insufficient, depress the pedals more firmly.
4. Before leaving the tractor after parking it, make sure to stop the P.T.O, lower the implement onto the ground, and stop the engine.
5. If it is necessary to leave the tractor with the engine running, put all the shift levers in the neutral position and apply the parking brake firmly.
6. When parking the tractor on a slope, stop the engine with the parking brake applied and engage the low speed gear. Also, put the shuttle shift lever into the forward driving position on an uphill and into the reverse driving position on a downhill.

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7. If it is necessary to park the tractor on a slope with the engine running, chock all four wheels (1) and perform Steps 4 and 5 above.
8. In order to release the parking brake, depress the brake pedals firmly again.

⚠ WARNING

- ***If the parking brake is applied without the brake pedals interlocked, the braking force is applied to the wheel on one side only, resulting in poor braking performance and an accident.***
- ***The brake disc can be rapidly worn if you drive with the parking brake applied.***
- ***Never park the tractor on a steep slope in any circumstance. A severe accident can happen.***

⊕ IMPORTANT

- **The tractor may move slowly with the engine running even though the main and shuttle shift levers are in the neutral position. This is normal and is due to the fluid friction in the transmission. This symptom can occur easily when the engine rpm is high, the low speed gear is selected by the range shift lever, and the viscosity of the transmission fluid is high due to low temperature. To prevent this symptom, make sure to apply the parking brake.**
- **Get "OFF" the tractor after checking that the tractor is completely stopped and the parking brake is firmly applied.**
- **Do not park the tractor on tall grass or hay. If grass or hay contacts with the muffler, it can catch fire.**

TURNING

You should turn slowly by lowering the engine RPMs if possible.

⚠ WARNING

To prevent accidents due to loss of steering control:

- ***If you turn at high speed, the tractor can turn over.***
- ***Never use the differential lock system turning at high and low speeds. A serious accident can occur.***

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DRIVING ON SLOPE

1. Please drive according to the conditions of the slope at safe speed so that the engine is not under heavy load if possible.
2. Make sure to shift to the lower gear in order to prevent the engine from stalling on an uphill.
3. On the downhill slope, drive at the low speed.

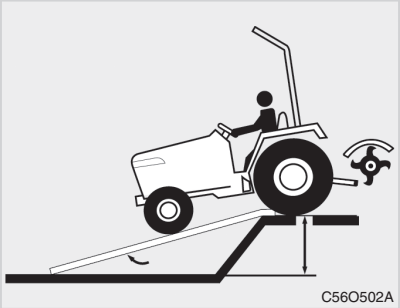
IMPORTANT

- **For heavy load job, such as front end loader operation, use low or medium speed of the range shift lever.**

WARNING

- ***Make sure that the coupling device of brake pedal and differential lock pedal are surely released.***
- ***Do not disengage the clutch or put the shift lever in the neutral position on a slope. Otherwise, the tractor may become inoperable. Before entering a steep slope, move the shift lever down to a proper gear and never try to move the shift lever on a slope. A serious accident can occur.***

PRECAUTIONS WHEN COMING IN AND OUT OF PAVED ROAD

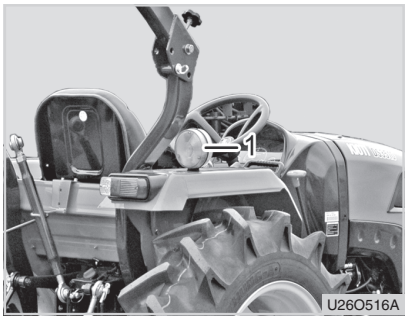


1. Make sure that the left and right pedal are interlocked.
2. Enter and exit the field by driving the tractor at a right angle to the bank.
3. It is recommended to use the 4WD and drive backward when moving onto a bank.

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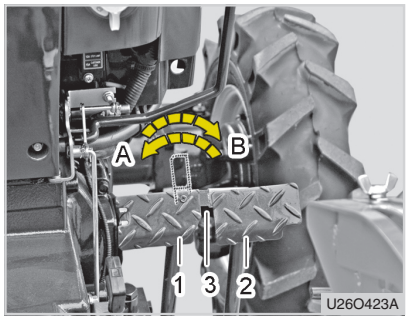
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PRECAUTIONS WHILE DRIVING ON THE ROAD



(1) Direction Indicator

1. When you change the driving direction on the road, let other vehicles know your direction with turn signal lights.
2. Do not use high beam headlights when another vehicle is approaching from the opposite direction so that not to interrupt another driver' s view.
3. Always interlock the left and right brake pedal while driving on the public road.



(1) Brake Pedal (L) *(2) Brake Pedal (R)*
(3) Pedal Interlock
(A) Lock *(B) Unlock*

⚠ WARNING

- ***When you are driving on the road, observe all local traffic and safety regulations. If not, you can have an accident of bodily injury on a person.***
- ***Only the operator should ride on the tractor unless a passenger seat is installed.***

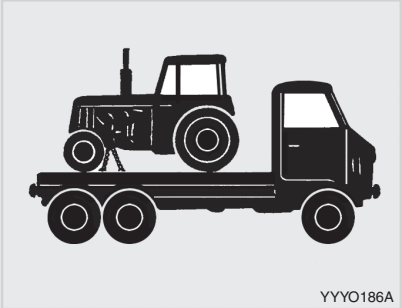
⚠ WARNING

- ***If the tractor is broken down during driving on the road, move it to a safe place to service. If not, it can cause personal injury.***

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LOADING INTO AND UNLOADING OUT OF THE TRUCK

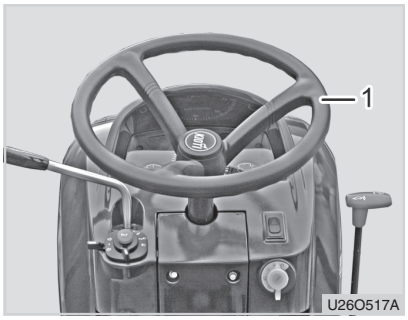


⚠ WARNING

- ***When transporting the tractor with a truck, fix the tractor firmly onto the truck and and be sure to aware the height of loaded tractor to avoid to hit the ceiling of the tunnel or the bottom of the bridge.***
- ***Make sure to follow this instruction as such accidents really happen.***

1. When you load the tractor, do it by driving backward.
2. If the engine stalls out halfway, step on the brake pedal at once, and then take away the pedal slowly to reach the road. After that, start the engine again to go up.

PRECAUTIONS WHEN USING POWER STEERING



(1) Power Steering Handle

1. The power steering function is activated only while the engine is running. However, the steering wheel becomes slightly heavier when the engine is running at a low speed.

   The steering wheel can be operated but becomes very heavy while the engine is stopped.

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2. If you operate the steering wheel, with the tractor halted, using the implement equipped in front of the loader and the like, the steering wheel operation can be getting a little heavy. Operate the steering wheel moving the tractor in this case.
3. When a loader is mounted, adjust the air pressure of the front wheel to its maximum specification and mount weight or implement on the 3 point hitch of the tractor, and remove the front weight to make the front and rear balance more stable for safe working.
4. When turning the steering wheel to one side, the operating sound of the safety valve (relief valve) is heard. Do not operate the tractor keep the valve sound is heard continually (OK for a short period of time). The temperature of the hydraulic fluid may rise, causing malfunction.

NOTE

The power steering system in this tractor is a load reaction, full hydraulic type.

- The full hydraulic system means that power necessary for power steering is transferred by hydraulic fluid only and therefore mechanical devices, such as racks and pinions, are not installed to the tractor. Therefore, the angle of the **KIOTI** emblem on the center of the steering wheel may differ occasionally, which is normal.
- The load reaction type means that the reaction force or impact applied to the front axle is transferred to the steering wheel. Therefore, the steering wheel can be returned to its straightforward position from the turning position.

WARNING

- ***When driving on a road with an implement attached to the rear of the tractor, the contact of the front wheels becomes poor, resulting in poor steerability. In this case, attach a proper front weight and drive at a low speed.***
- ***If a malfunction occurs while driving on a road, stop the tractor in a safe place and service it. If it is not possible to move the tractor, turn on the hazard lights and set a warning triangle behind the tractor. Otherwise, a rear end accident may occur.***
- ***The center of gravity of the tractor is higher compared to other common vehicles, so the possibility of the roll-over accident is very high. Be extra careful when driving on a lateral slope, bumpy road, road with puddles, and narrow road. Make sure to set the ROPS in its original position (straight up position) and fasten the seat belt.***

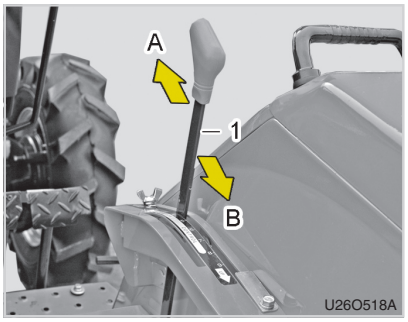
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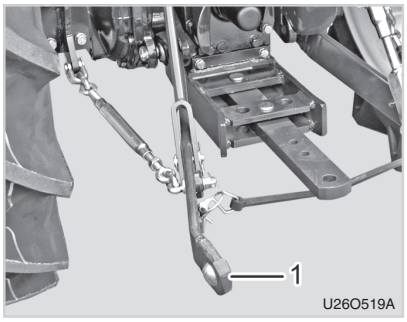
3-POINT HITCH CONTROL SYSTEM

⚠ WARNING

- ***If stopping the engine while driving, the steering performance can become deteriorated due to loss of hydraulic power, resulting in a severe accident. Never stop the engine while driving.***
- ***If stopping the engine while driving, the steering performance can become deteriorated due to loss of hydraulic power, resulting in a severe accident. Never stop the engine while driving.***
- ***Always grip the steering wheel using both hands while driving.***



(1) Position Control Lever
(A) Lowering (B) Lifting



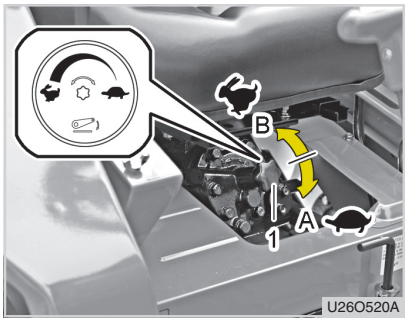
(1) Lower Link

The 3-point hitch can be controlled by the position control lever.

1. The position control lever is used to lift or lower the lifting arm (lower link) of the 3-point hitch.
2. Pushing the lever forward lowers the lower link while pulling the lever backward lifts the lower link.
3. The height of the lower link is precisely controlled proportional to the position of the lever.
4. The lower link is lifted by the hydraulic energy of the tractor while it is lowered by potential energy of its own weight. Therefore, the implement cannot be lowered by the hydraulic pressure.
5. Therefore, the implement attached to the lower link may be lifted by protrusion on the ground when it is lowered to the ground. It is called as "floating."

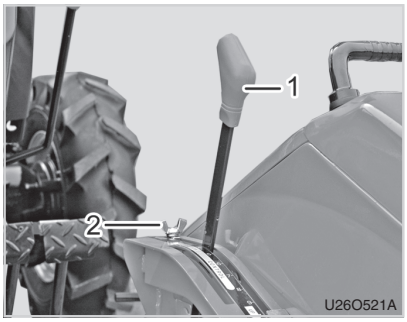
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(1) Lowering Speed Control Lever
(A) High speed (B) Low Speed

6. The lowering speed of the lower link is proportional to the applied weight but can be controlled by adjusting the draining passage of the hydraulic fluid. (See “Lowering speed control valve of lifting arm “lower link” on Page 4-21.)



(1) Position Control Lever (2) Lock Bolt

7. The lower limit of the implement’ s height can be set by limiting the movement of the control lever by the lock bolt.

⚠ WARNING

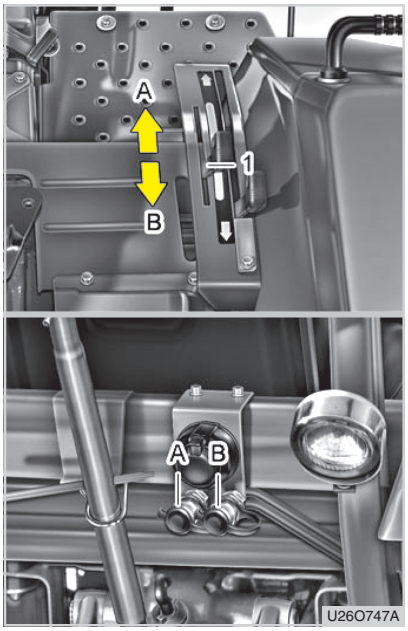
- ***If trying to lift an object with excessive weight by the 3-point hitch while the tractor is not equipped with proper front suit case weights, the front wheels may be lifted instead, leading to roll over. Make sure to follow the specifications for use.***

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EXTERIOR HYDRAULIC CONTROL SYSTEM (IF EQUIPED)

DOUBLE ACTING VALVE LEVER



(1) Double Acting Valve Lever
(A) Port "A" (Single Acting) *(B) Port "B"*

Pressure ⇨ Returning ←

Port		Push		Pull	
Lever 1	A	In	←	Out	⇨
	B	Out	⇨	In	←
Lever 2	C	In	←	Out	⇨
	D	Out	⇨	In	←

	Coupler Size
Port A, B, C, D	½ inch

KIOTI supplies two types of the double acting valves by region: self-return type and detent type.

- For the self-return type double acting lever, it returns to its neutral position to block the hydraulic fluid when it is pushed/pulled and then released. Therefore, this type of double acting valve lever should be pulled or pushed continuously for operation which is suitable for an implement with a short operating time, such as a hydraulic cylinder.
- For the detent type double acting valve lever, it keeps its position after it is pulled or pushed to a certain position. Therefore, it is not necessary to hold the lever to a certain position which is suitable for an implement with a long operating time, such as a hydraulic motor.

5

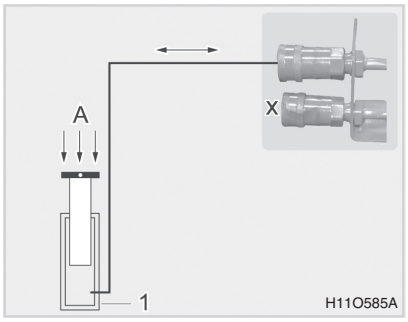
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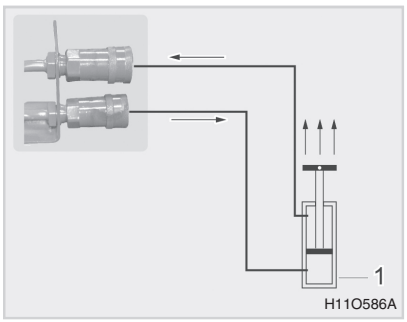
⚠ WARNING

- ***Put the detent valve operating lever into the neutral position when the hydraulic implement is not in use. If the detent valve is kept in the operating position for an extended period of time, the relief valve is kept open and the temperature of the hydraulic fluid rises, leading to damage of various hydraulic parts, such as the oil seals and O-rings.***
- ***When the detent valve is in operation, unnecessary load is applied to the engine. Therefore, the engine power decreases significantly, and noise and vibration increases by the opening of the relief valve.***
- ***It is hard to start the engine while the detent valve is in operation. This is especially true in winter and exhaust gas increases even after the engine is started.***

SINGLE ACTING AND DOUBLE ACTING CYLINDER



(1) Single Acting Cylinder
(A) External Load



(1) Double Acting Cylinder

This tractor is equipped with the remote control valve of the double acting type. However, this valve can also be used in the single acting type hydraulic cylinder.

1. Connect one end of the hydraulic port to the single acting cylinder as shown in the figure. The hydraulic pressure is properly supplied to the cylinder. However, when the hydraulic pressure is released, the cylinder is contracted only if there is outer force, such as potential energy, or weight.
2. To contract the cylinder, operate the lever to the opposite direction of the expansion. Then, the hydraulic fluid is supplied from the hydraulic pump to the hydraulic port which is not connected, and the pressure rises as the port is blocked. However, this pressure is released as the relief valve opens.

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3. When the cylinder is contracted, the hydraulic fluid returned from the cylinder is drained to the transmission through the draining circuit as the operating lever is operated to the opposite direction from the expansion position.

IMPORTANT

- **It is recommended to use the double acting cylinder instead of the single acting cylinder if the implement will be operated frequently and continuously. If using the single acting cylinder too frequently or for an extended period of time, the hydraulic fluid can be overheated, resulting in deterioration of the hydraulic parts and durability of the main relief valve.**

CONNECTING AND DISCONNECTING IMPLEMENT CONNECTION

1. Make sure to stop the engine before connecting it.
2. Move the double acting valve lever forward and backward for 4 to 5 times to release the pressure in the hydraulic line of the tractor. Otherwise, it is hard to connect the couplers, and hydraulic fluid can be sprayed from the line and get in to your eyes while connecting them.
3. Remove any foreign material around the male and female couplers. If foreign material enters the hydraulic components, it can lead to malfunction of the system.
4. Open the dust-proof cover of the female coupler of the tractor and insert the male coupler of the implement. A clicking sound is heard when the couplers are engaged.
5. Pull the hydraulic hose of the implement to check that the couplers are properly connected.
6. Start the engine and check the operating status and leakage.

DISCONNECTION

1. Make sure to stop the engine before disconnecting it.
2. Release any residual pressure in the hydraulic hoses of the implement and tractor by operating the double acting valve lever 4 to 5 times.
3. Remove any foreign material around the couplers.
4. Lower the implement on the ground or remove any external load applied to the implement. Disconnecting hoses while outer load is applied to the implement very difficult and dangerous due to the pressurized fluid in the hose.
5. Remove the male coupler by pushing the female coupler boss backward.
6. Close the dust-proof cover of the female coupler. Wrap the male coupler of the implement with a plastic bag to prevent contamination.

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⚠ WARNING

- ***Never connect or disconnect the implement hydraulic hoses while the pressure in it is not released or the engine is running. It is hard to connect and disconnect the hose and hydraulic fluid can be sprayed from the hose, and get into your eyes or skin.***
- ***Stop the engine and wear protective glasses and gloves before work.***

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3-POINT HITCH IMPLEMENT AND LOADER OPERATION

6

INSTALLATION AND REMOVAL OF 3-POINT HITCH IMPLEMENT (WITH PTO SHAFT) 6-2

OPERATION TIP FOR 3-POINT HITCH ELEMENTS .. 6-4

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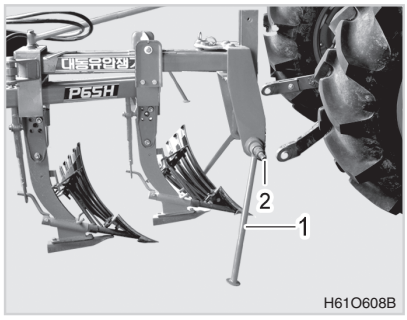
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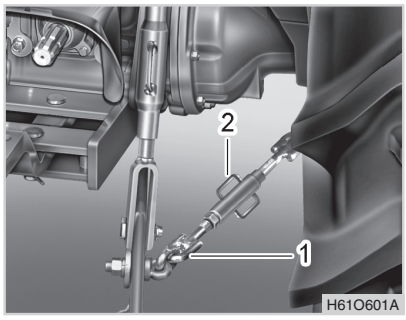
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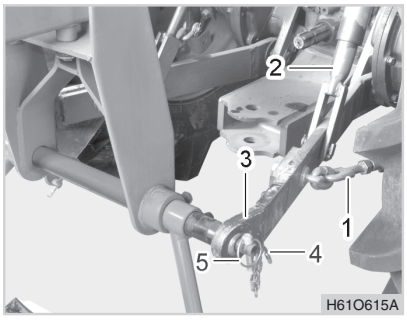
INSTALLATION AND REMOVAL OF 3-POINT HITCH IMPLEMENT (WITH PTO SHAFT)



(1) Implement Support *(2) Implement Pin*



(1) Check Link *(2) Turn Buckle*

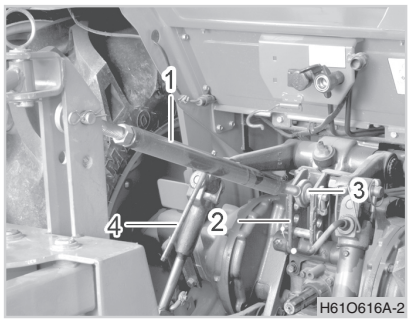


(1) Turn Buckle *(2) Lift Rod (RH)*
(3) Lower Link *(4) Implement Pin*
(5) Lynch Pin

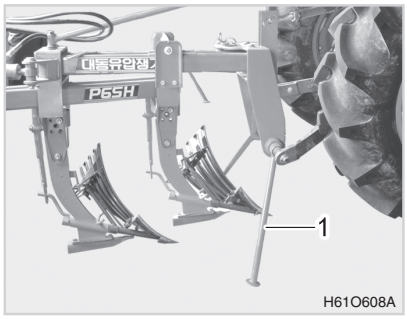
1. Place implement on the level ground.
2. Drive the tractor backward to move as close as possible to an implement (approx. 5 cm). Then, adjust the height of the lower link to be parallel to the pins of the implement.
3. Put all the shift levers in the neutral position.
4. Lengthen the chain by turning the check link turn buckle.
5. First install the left lower link to the implement pin and insert lynch pin into the hole and turn the ring to hold implement pin securely.
6. Install the right lower link to the implement pin and insert lynch pin into the hole and turn the ring to hold implement pin securely .

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(1) Top Link *(2) Top Link Bracket*
(3) Snap Pin *(4) Top Link Handle*



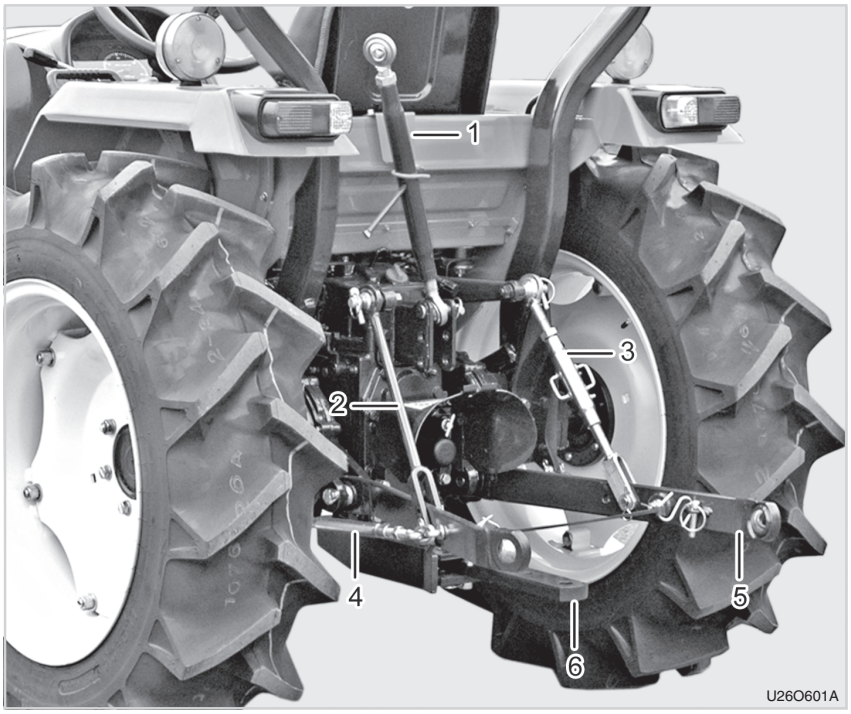
(1) Implement Support

7. Install the top link to the top link hole of the implement. Loosen the lock nuts of top link and turn the top link handle to adjust the length of it as needed. Align the pin holes for top link and top link hole on the implement to insert the set pin. Insert the snap pin into the set pin hole securely to hold the set pin.
8. Raise up the implement by position control of tractor. Remove the implement support as needed. Align the implement by adjusting the length of the check chains on both sides. Tighten the lock nuts on the check chain securely.
9. Adjust the tip angle of implement by adjusting the length of top link. Tighten the top link lock nuts securely.
10. Adjust the balance of implement by adjusting the length of lift rod (RH). Tighten the turn buckle lock nut of lift rod (RH) securely afterward.

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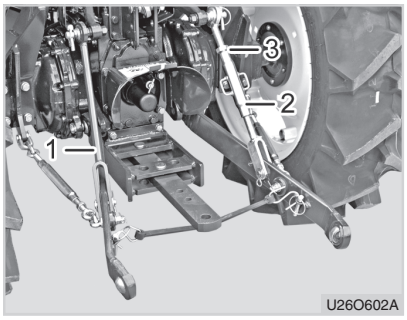
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OPERATION TIP FOR 3-POINT HITCH ELEMENTS



(1) Top Link
(2) Lifting Rod (L)
(3) Lifting Rod (R)
(4) Check Link
(5) Lower Link
(6) Draft Hitch

ADJUSTMENT OF LIFT ROD



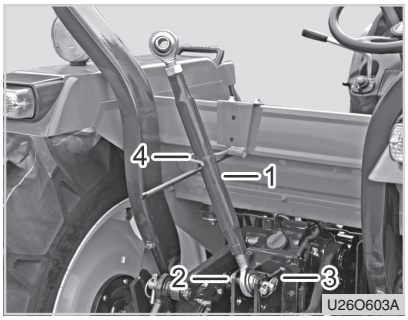
(1) Lift Rod
(2) Lift Rod Handle
(3) Stopper Nut

1. Adjust the implement level balanced by turning the lift rod handle.
2. After adjustment, fix it with the stopper.

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ADJUSTMENT OF TOP LINK



(1) Top Link *(2) Pin*
(3) Retainer Pin *(4) Top Link Hook*

1. Install the top link to the desired position, and install the pin and retainer pin.
2. Fix top link with fixed nut after adjusting top link.

⚠ WARNING

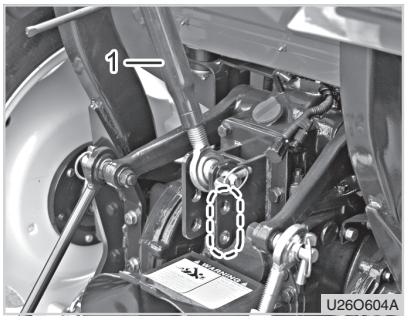
- ***Stop the engine and lower the attachment on the ground prior to disconnecting the lift rod from the lower link. Check that the attachment for proper supporting and there's pressure remained in the hydraulic system to remove the lift rod holding the pin. To eliminate the remained pressure, move the hydraulic adjusting lever back and forth several times.***

NOTE

- When there is no implement attached, fix the lower link to the check link (LH/RH) so that it does not contact with the rear wheel.

  Secure the top link to the hook.

PRECAUTION FOR INSTALLING AND USE OF TOP LINK HOLES



(1) Top Link

1. Adjust an angle of the implements to the desired position by shortening or lengthening the top link.
2. Adjusting a proper length of implements varies as a type of implements used.

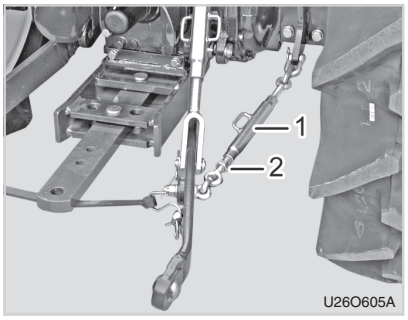
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⚠ CAUTION

- **A plate describing how to attach the implement is placed on the standard implement of our company.**
- **When you are attaching an implement not requiring any traction, mount the assembling spot of the top link into the hole A.**
- **When you are attaching an implement (like plow) requiring some traction, mount the assembling spot of the top link into the hole B, C.**
- **When driving with an implement attached, make sure to install the top link to the hole A or B or put the draft control to the "Deep" position.**

ADJUSTMENT OF STABILIZER



(1) Turn Buckle *(2) Nut*

1. Adjust the check chain to control horizontal sway of the implement. It is also used to set the implement on the back of the tractor in center.
2. To adjust the check chain, pull out the turn buckle and adjust it until the desired transverse moving distance is obtained.

THE IMPLEMENT

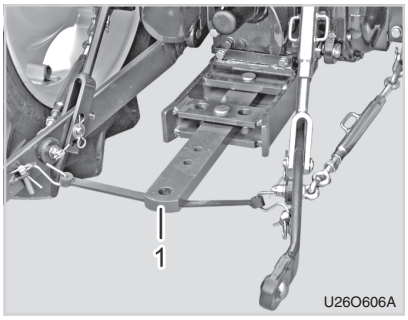
1. Park the tractor with the implement on the level ground and lower the implement all the way down.

   Install the implement support as needed.
2. Disconnect the top link and lower links from the implement by removing the pins.
3. Be sure to insert the set pins, lynch pins and snap pins back to the implement securely to keep those safe.
4. Stop the engine and move the remote hydraulic control lever back and forth to relief the hydraulic pressure in the system before disconnecting hydraulic couplers.
5. Put the top link back to its hook. Hold both lower links together with a rubber band. Otherwise, the lower links can contact with rear tires and cause damage to the lower links and tires while driving.

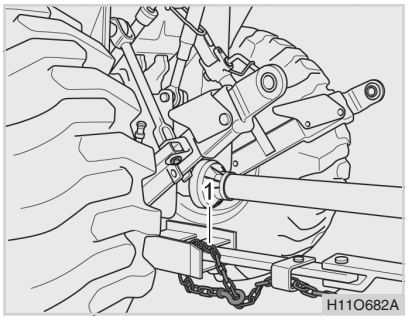
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DRAFT HITCH AND TRAILER



(1) Draw Bar



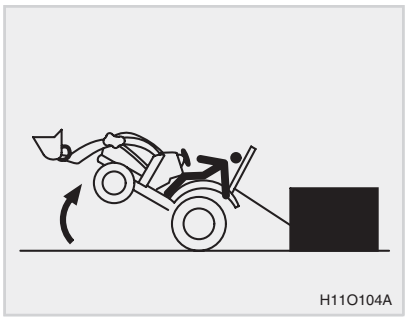
(1) Safety Chain

⚠ WARNING

- ***Never use any other part for pulling except draw bar. Pulling with top link, ROPS and etc. will cause a fatal accident.***
- ***Be sure to install the auxiliary safety chain when installing a trailer.***

The draw bar is used to pull an implement, such as a trailer. This tractor is equipped with a fine draw bar. Make sure to check the max. towing weight of the trailer and max. vertical load that can be applied to the draw bar.

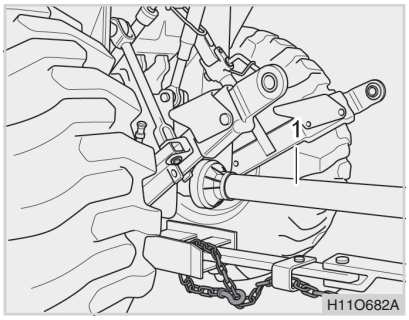
- Max. trailer weight (trailer + loaded weight) = 7,716 lbs. (3,500 kg)
- Vertical load of hitch (draw-bar) = 1,433 lbs. (650 kg)



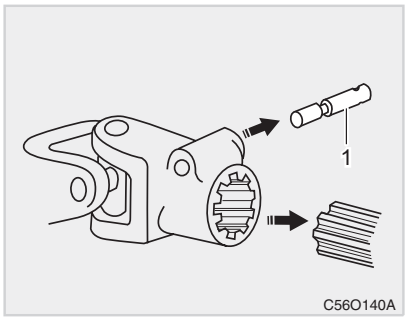
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INSTALLING PTO SHAFT



(1) Universal Joint

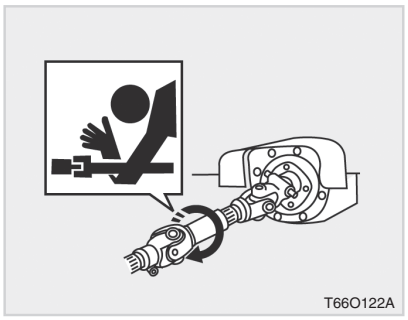


(1) Lock Pin

⚠ WARNING

- ***Make sure that the PTO safety cover is in its position before driving the PTO shaft.***
- ***The PTO shaft and universal joint shaft should not in contact with by any surrounding parts.***
- ***Stay away from the rotating PTO shaft or universal joint shaft. A severe accident could occur.***

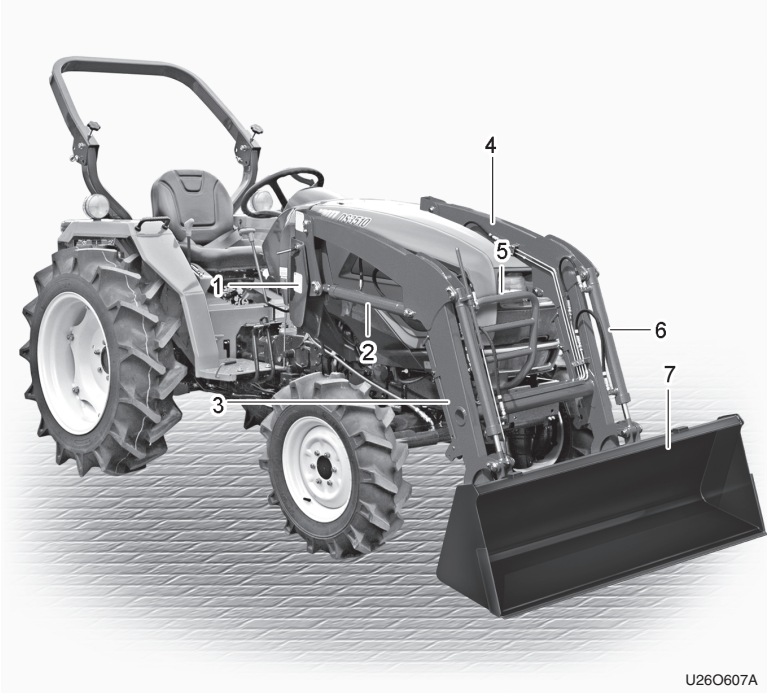
1. Consult your local **KIOTI** Dealer for selection of the universal joint.
2. When selecting a universal joint, make sure that it is not too short to come off of the female and male shafts at the highest position or too long to impact its female and male shafts at the lowest position.
3. Move the joint back and forth to check that its lock pin is properly seated to the groove of the PTO shaft.



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HANDLING LOADER



(1) Loader Mounting Bracket
(2) Balancing Cylinder
(3) Loader Arm
(4) Boom
(5) Grill Guard
(6) Tilt Cylinder
(7) Bucket

For detailed information about installation and use of the front loader, refer to the separate manual of the loader.

IMPORTANT

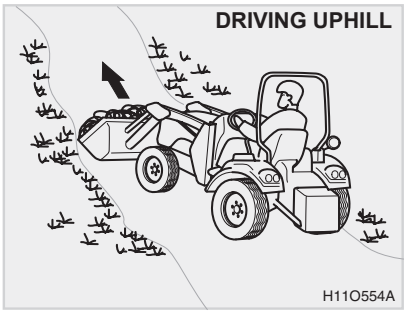
- **Check the transmission fluid level and add fluid as necessary after installing an implement related to the hydraulic fluid, such as a loader or backhoe, and driving the tractor for a test.**

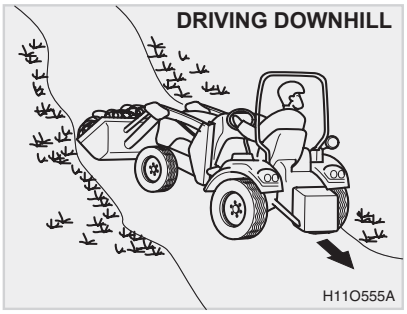
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DRIVING ON SLOPE

WHEN LOADED BUCKET AND REAR BALLAST ARE INSTALLED





When driving on uphill with the loaded bucket and rear ballast installed, keep the higher end of the tractor heavier. In other words, drive forward on uphill and backward on downhill.

⚠ WARNING

To avoid injuries:

- **Keep the loader arm as low as possible when driving on a slope.**

WHEN UNLOADED BUCKET AND REAR BALLAST ARE INSTALLED





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When driving downhill with the empty bucket and rear ballast installed, keep the rear ballast toward the higher level of the ground. In other words, drive backward on uphill and forward on downhill.

Use the 4WD to increase traction when driving on a slope with the loaded bucket and rear ballast installed.

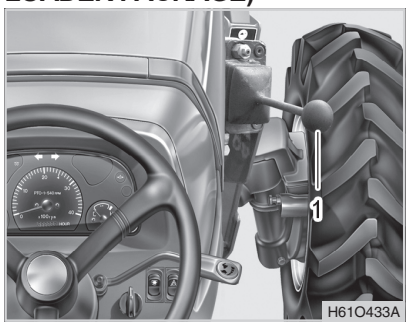
Set the bucket and implement high on rough terrain so that they are not caught by obstacles.

PARKING WITH LOADER INSTALLED

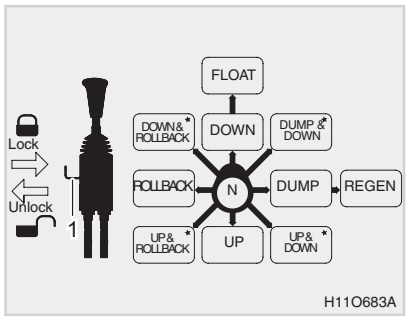
When parking the tractor which is equipped with a loader or backhoe, make sure that the loader or the boom of the backhoe is lowered on the ground.

Otherwise, the tractor can become unstable, leading to an unexpected accident, such as roll over.

JOYSTICK LEVER (COMES WITH LOADER PACKAGE)



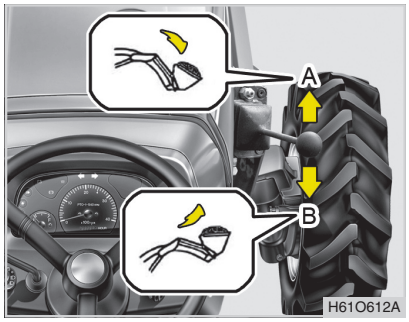
(1) Joystick Lever



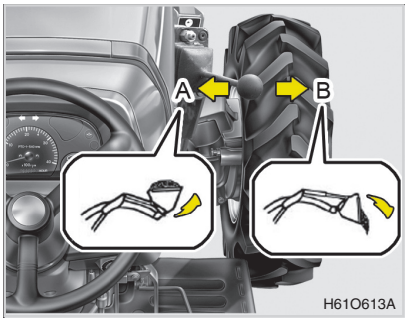
(1) Joystick Lock Lever

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(A) Boom Down (B) Boom Up



(A) Bucket Roll Back (B) Bucket Dump

1. Up and down of boom

   Pulling the joystick lever back (B) lifts the boom of the loader while pushing it forward (A) lowers the boom.

2. Roll back & dump

   "Roll back" means that the bucket scoops up. To operate this function, move the joystick lever to the left(A). "Dump" means that the bucket dumps. To operate this function, move the joystick lever to the right (B).

3. Float

   The floating function is activated when the joystick lever is pushed one position further to forward from the down position. When the lever is in this position, the boom moves up and down freely along the surface of the ground as the hydraulic line is opened from the valve to the boom cylinder. This function is useful when removing soft objects on hard ground (for example, when removing snow or sand on paved road.

⚠ WARNING

- ***If moving the lever to the floating position while the boom is up in the air, the boom can fall freely and lead to the accident.***

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4. Regen.

   The Regen. function is activated when the joystick lever is pushed one position further to the right from the dump position. The Regen means “fast dumping”.

5. Down & roll back

   The boom can be lowered and the bucket can scoop up by operating the joystick lever to the front left position (10 o’clock position). However, the operation time may not be shortened much since the boom is lowered first and then the bucket is rolled back due to unbalanced hydraulic pressure in the hydraulic circuit.

6. Down & Dump

   The boom can be lowered and the bucket can dump by operating the joystick lever to the front right position (2 o’clock position). However, these two operations may not be performed simultaneously due to unbalanced hydraulic pressure in the hydraulic circuit.

7. Up & Roll back

   The boom can be lifted and the bucket can scoop up by operating the joystick lever to the rear left position (7 o’clock position). However, these two operations may not be performed simultaneously due to unbalanced hydraulic pressure in the hydraulic circuit.

8. Up & Dump

   The boom can be lifted and the bucket can dump by operating the joystick lever to the rear right position (5 o’clock position). However, the operation time is may not shortened much since the bucket dumps first and then the boom is lifted due to the unbalanced hydraulic pressure in the hydraulic circuit.

9. Locking / Unlocking Joystick

   Pressing the joystick lock lever in locks the joystick while pulling it outward unlocks the joystick as shown in the figure.

⚠ WARNING

- ***Do not leave the tractor with the boom “OFF” the ground in any circumstances. If it is necessary, lock the joystick.***
- ***When the joystick lever is not in use, lock it since the implement can fall down if the lever is operated accidently.***

IMPORTANT

- **If the boom or bucket is not operating, properly, lower the bucket onto the ground, stop the engine, and reduce all hydraulic pressure. Then, check all the hydraulic connections and connect them again.**
- **Before connecting or disconnecting the hydraulic hose coupling for the loader, lower the boom onto the ground, stop the engine, and move the joystick lever front and back, left and right for several times to remove residual pressure in the hydraulic hose.**

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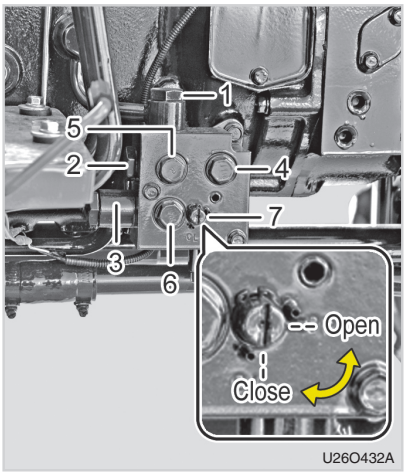
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HYDRAULIC BLOCK

⚠ WARNING

To avoid accidents:

- ***Pressurized diesel fuel or hydraulic fluid may be sprayed on your skin or eyes, leading to a severe injury or even death.***
- ***To check leakage, use a board and wear protective gloves and goggles.***
- ***If your eyes come into contact with the hydraulic fluid, see your doctor immediately.***
- ***Never try to disconnect the tube and quick coupler while the tractor and implement are in operation. Release the pressure by operating the lever after the engine is stopped.***



(1) To the Tank *(2) Relief Valve*
(3) To The Hydraulic Cylinder
(4) OUT PORT (To The Exterior Implement)
(5) IN PORT ("T" PORT Of The Exterior Implement)
(6) R PORT (Carry-Over Port Of The Exterior Implement)
(7) Adjusting Screw

NOTE

- The hoses and couplers for installation are supplied with the loader.
- For detail about implement installation method, refer to KIOTI front loader owner's manual.

⚠ WARNING

- ***Never let anyone get in the loader and use the loader as a workbench. Otherwise, it may lead to injury or even death.***
- ***Do not stand under the lifted loader or get close to it. Also, lower the loader arm onto the ground before leaving the tractor. Otherwise, it may lead to injury or even death.***
- ***Never carry a big object with the loader unless a proper implement is attached. Keep a carried object low during driving. Otherwise, it may lead to injury or even death.***

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MAINTENANCE

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MAINTENANCE

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MAINTENANCE CHECK LIST
DAILY CHECK CHART

SERVICE SCHEDULE		MAINTENANCE CODES
ITEM	SERVICE REQUIRED	
Engine Oil	Check the oil level and add needed. Do not overfill.	E
Hydraulic (Trans / Diff.) Fluid	Check level and add as needed.	D
Engine Air Filter and Air System	Check condition indicator (if equipped). Check for leaks and damaged components. Do not use compressed air to clean elements.	X, T
Engine Cooling System	Clean debris from oil cooler, radiator, screen and grills. Check coolant level cold, add premixed coolant as needed.	F, G, AE
Seat Belt	Check the condition of seat belt and mounting hardware. Repair or replace as needed.	
Tires	Check for wear, damaged tires and ensure for proper sized tires and correct air pressure.	
Parking Brake	Check operation and have dealer adjust if required.	
Clean Pedals	Clean brake pedals, travel control pedal, clutch pedal and footrest area.	H
General Items	Check for loose or broken parts, instrument operation, loose wheel nuts / bolts, oil leaks and damaged or missing signs (decals). Replace floor-mat if damaged or missing.	S, AI, AJ
P.T.O	Inspect the splines. Replaced damaged or missing shields and guards.	
Three-Point Linkage	Check operation and condition of pins, links and bars.	
Loader (If Equipped)	Check mounting hardware for loose or broken parts.	

※ For detailed information about maintenance codes, refer to the corresponding section in each chapter.

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MAINTENANCE SCHEDULE CHART

NO.	ITEM \ MAINTENANCE INTERVAL		RUN HOUR									RUN AGE		REMARKS		MAINTE-NANCE CODES
			10	50	100	200	400	600	800	1500	3000	1YEAR	2YEAR			
1	Engine oil	Change		⊙	○											L
		Check	⊙													E
2	Transmission oil filter	Replace		⊙		○										M
3	HST oil filter	Replace		⊙		○										
4	transmission fluid	Change					○									M
		Check	⊙													D
5	Front axle oil	Change					○									N
6	Front axle pivot	Adjust						○								
7	Engine start system	Check		○												
8	Greasing	Apply			○											P
9	Wheel bolt torque	Check	⊙	○												Q
10	Battery condition	Check			○									* 3		W
11	Air cleaner element	Check	○													T
		Clean		○										* 1	#	T, AF
		Replace			○							○		* 2		
12	Fuel filter element	Replace				○									#	S
13	Fan belt, Air-con belt	Adjust			○									* 3		V, AB
14	Clutch pedal free play	Adjust		⊙	○											O
15	Brake pedal free play	Adjust		⊙	○											R
16	Radiator hose and clamp	Clean	⊙													G
		Check				○										Z
		Replace											○			

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NO.	ITEM / MAINTENANCE INTERVAL		RUN HOUR									RUN AGE		REMARKS		MAINTE-NANCE CODES
			10	50	100	200	400	600	800	1500	3000	1YEAR	2YEAR			
17	Power steering hose and oil line	Check				○										AA
		Replace											○			
18	Fuel line	Check			○										#	U
		Replace											○			
19	Intake air hose	Check	⊙			○										X
		Replace											○	* 3		
20	PTO shaft and guard condition	Check	⊙		○											
21	3 point hitch and draw-bar condition	Check	⊙		○											
22	Secure pins	Check	⊙		○											
23	Tire pressure and damage	Check	⊙		○											
24	Parking brake condition	Check	⊙		○											
25	Toe-in	Adjust				○										Y

IMPORTANT

- **⊙ must be done after the first 10 or 50 hours of operation.**
  - *** 1 Air cleaner should be cleaned more often in dusty conditions than in normal condition.**
  - *** 2 Every year or every 6 times of cleaning.** *** 3 Replace only if necessary.**
- **The items listed above (# marked) are registered as emission related critical parts by KIOTI in U.S.EPA exhaust emission standard non-road emission regulation. As the engine owner, you are responsible for the required maintenance for the emission related parts.**

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LUBRICANTS

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

NO.	SECTION	CAPACITY, U.S. gal. (L)	LUBRICANTS
1	Fuel	7.9 (30)	Smokeless diesel
2	Coolant	2.06 (7.8)	An antifreezing solution (Ethylene glycol) + Pure water (50:50)
3	Engine oil	1.53 (5.8)	API Service Classification CC or CD SAE 15W-40
4	Transmission oil	6.87 (26)	Daedong : UTF 55 Exxonmobil: Mobilfluid 423 or 424, Exxon Hydraulic 560 Shell : DONAX-TD BP : Tractran UTH
5	Front axle	1.19 (4.5)	SAE 90 gear oil or better, or same as T/M oil
6	Grease - Ref to “Grease fitting location” in chapter 7.	A little	Multi purpose type grease

⚠ WARNING

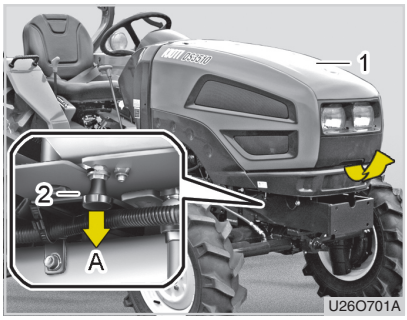
- ***Check the oil level regularly. Correct the oil level, if needed, before operating.***
- ***Always check and add oil with the tractor on a flat, level surface.***

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MAINTENANCE CODES

HOW TO DISCONNECT THE HOOD (A)



(1) Hood *(2) Handle*
(A) Pull

1. The hood can be opened by pulling the handle on the lower right of it while pressing its front down.
2. To close the hood, press its front down until it is locked in its position.
3. Do not apply excessive force to the handle to fix it. The hood can be damaged.



(1) Hood

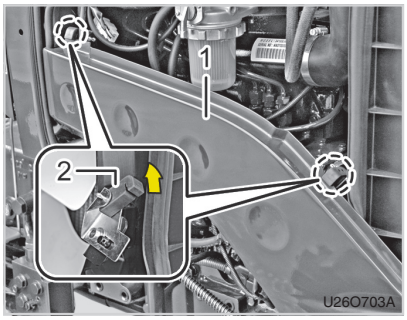
⚠ CAUTION

- **Never open the hood while the engine is running.**

NOTE

- If noise is heard from the hood during driving, check the rubber molding and replace it if damaged.

REMOVING SIDE COVER (B)



(1) Side Cover *(2) Hook*
(A) Pull

1. The side covers (LH/RH) should be removed in order to access the engine components.
2. Open the hood and disassemble the rubber clips fixed on the left and right of the side covers.
3. Remove each side cover by pulling it forward gently while lifting it up.
4. When installing them, align their pins to the groove on the tractor body and press them down. Then, fix them with the rubber clips.

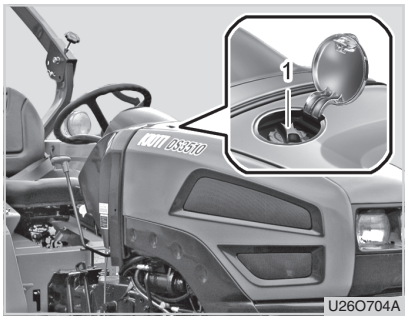
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CHECKING AND ADDING FUEL (C)

⚠ CAUTION

- **Be careful not to trap your fingers when closing the side cover.**
  Never open the side covers while the engine is running.



(1) Fuel Tank Cap

The fuel tank is installed in the middle of the tractor body. Make sure to use pure and high-quality diesel unleaded fuel.

Fuel tank capacity	7.9 U.S.gal. (30 L)

1. Turn the key switch to "ON", check the amount of fuel by fuel gauge.
2. If the needle on the fuel gauge is close to the red zone (“E”) or the fuel level is low, open the fuel tank filler cap and add the fuel.
3. After adding the fuel, close the fuel tank filler cap.

⚠ CAUTION

To avoid personal injury:

- **Do not smoke while refueling.**
- **Add the fuel in a well-ventilated area.**
- **Be sure to stop the engine before refueling.**
- **Dirt or sand contained in fuel may cause the fuel injection pump to malfunction, use the strainer when refuelling.**

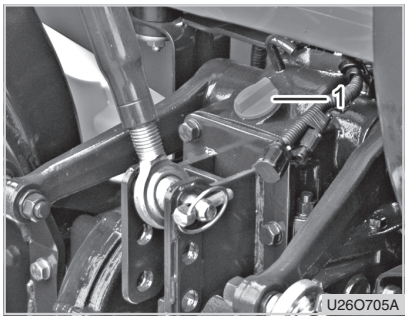
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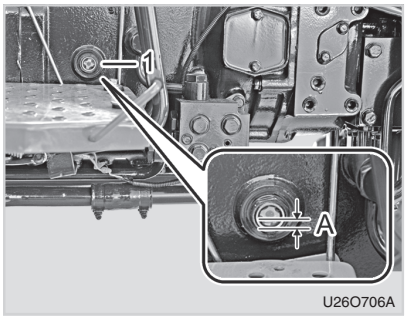
CHECKING TRANSMISSION FLUID LEVEL (D)

IMPORTANT

- **Be careful not to let the fuel tank become empty, otherwise air will enter the fuel system, necessitating bleeding before next engine start.**
- **Be careful not to spill during refueling. If a spill occur, wipe it off at once, or it may cause a fire.**
- **If unit is not used for a long time, make sure the fuel viscosity is suitable for the cold weather.**



(1) Oil Filler Plug



(1) Oil Gauge
(A) Oil Level Is Acceptable Within Range

1. Park the machine on a flat surface, lower the implement and shut "OFF" engine.
2. Depress the brake pedals and apply the parking brake.
3. Set all shift levers into the neutral position.
4. Stop the engine.
5. Check if the oil level is between the red lines.
6. If the oil level is too low, add some new oil so that the level is within the allowable range. (Refer to "Lubricant" in this chapter for fluid specs.

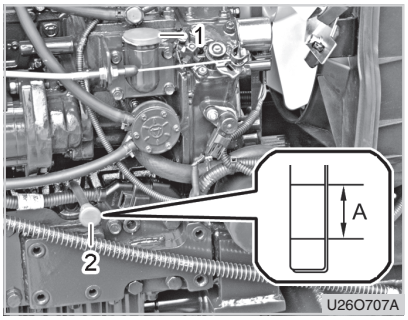
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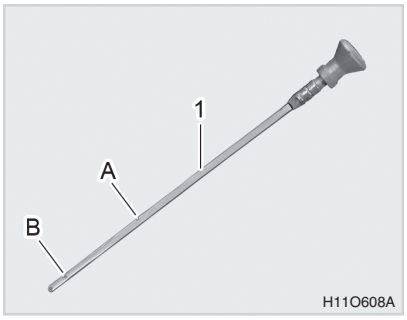
CHECKING ENGINE OIL LEVEL (E)

IMPORTANT

- **If oil level is low, do not run engine.**
- **Never add the oil over the upper limit.**
- **Be sure to check the oil level after installing hydraulic implement. Add the fluid as needed.**
- **Check the oil level with the cylinders of an implement extended and check again with cylinders retracted. Add the oil to adjust average oil level in the range of the oil limit (upper or lower).**



(1) Oil Inlet Plug (2) Gauge
(A) Oil Level is Acceptable Within This Range



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

1. Check the engine oil daily.
2. Park the tractor on a level ground and lower the implement.
3. If the engine was just running, wait for approx. 5 seconds before checking the oil level.

CAUTION

To avoid personal injury:

- **Be sure to stop the engine before checking the oil level.**

4. Pull out the oil dipstick, clean it, and then insert it into its original position. Then, pull it out again and check if the fuel level is within the specified range.
5. If the oil level is too low, add some new oil so that the level is within the allowable range.

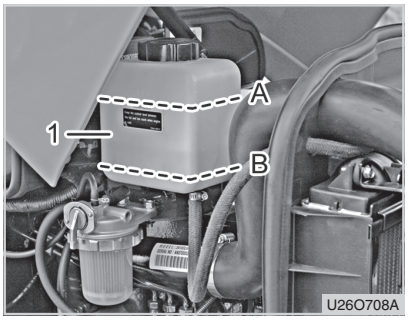
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CHECKING COOLANT LEVEL (F)

IMPORTANT

- **When using oil of different maker or viscosity from the previous one, remove all of the old oil. Never mix two different types of oil.**
- **Do not start the engine if the amount of oil is insufficient.**
- **Wipe the oil dipstick with clean cloth or tissue. If foreign material enters the tank, it can lead to malfunction of the engine.**
- **Never add the oil over the upper limit of the tank.**



(1) Reserve Tank
(A) "FULL" *(B) "LOW"*

1. Check to see that the coolant level is between the "FULL" and "LOW" marks of recovery tank.
2. When the coolant level drops due to evaporation, add water only up to the full level.

   In case of leakage, add anti-freeze and water in the specified mixing ratio up to the "FULL" level.

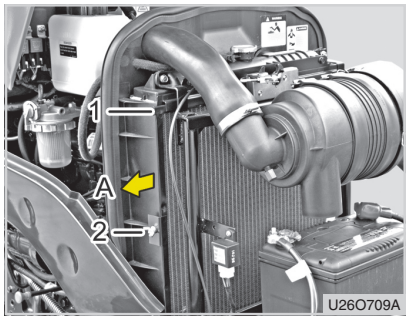
   (See "Flush Cooling System and Changing Coolant" in every 2 years maintenance.)
3. The tractor is furnished with a mixture of anti-freeze and water in a ratio of 50:50 which is usable in any season.

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CLEANING GRILL, RADIATOR SCREEN (G)



(1) Radiator Screen *(2) Nut*
(A) Detach

1. Check front grill and side screens to be sure they are clean of debris.
2. Lift out the radiator screen and remove all the foreign material.

⚠ CAUTION

To avoid accidents:

- **Be sure to stop the engine before removing the screen.**

IMPORTANT

- **Bonnet Grill and screen must be clean from debris to prevent engine from overheating and to allow good air intake for the air cleaner.**

CHECKING BRAKE AND CLUTCH PEDALS (H)

1. The brake and clutch pedals should be inspected for free travel, and smooth operation.
2. You should adjust these pedals if an incorrect measurement is found.

   (See maintenance code “O” and “R” in this chapter.)

NOTE

- When depressing the brake pedal, both of the brake pedals should be moved down to the same depth.

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CHECKING GAUGES, METER AND INDICATOR LIGHTS (I)

1. Inspect the instrument panel for broken gauge(s), meter(s) and indicator lights.
2. Replace if broken.

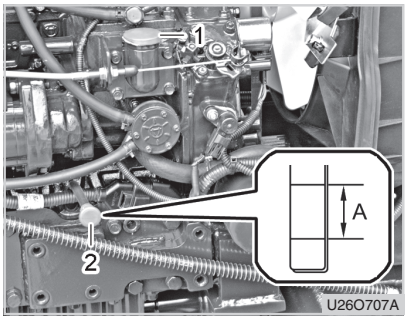
CHECKING HEAD LIGHT, HAZARD LIGHT ETC. (J)

1. Inspect the lights for broken bulbs and lenses.
2. Replace if broken.

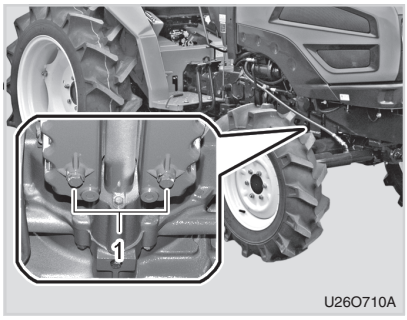
CHECKING SEAT BELT AND ROPS (K)

1. Always check condition of seat belt and **ROPS** attaching hardware before operating tractor.
2. Replace if damaged.

CHANGING ENGINE OIL AND REPLACING FILTER (L)



(1) Oil Inlet Plug (2) Gauge
(A) Oil Level is Acceptable Within This Range



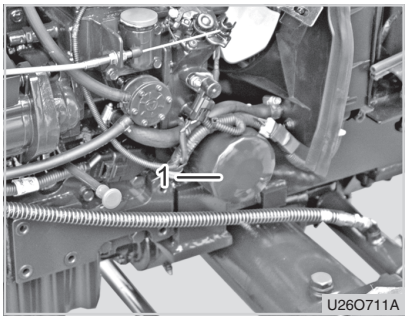
(1) Drain Plug

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

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

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(1) Engine Oil Filter

4. Remove the oil filter behind the cooling fan on the right side of the engine.
5. Apply a thin film of oil to the O-ring of a new filter and tighten the O-ring firmly by hand.
6. Add the engine oil to the specified level and tighten the oil filter to the specified torque.

Oil capacity (with filter)
1.53 U.S.gal. (5.8 L)

7. Run the start motor for approx. 10 seconds to deliver oil to each part.
8. Run the engine for approx. 5 minutes and check if the oil warning lamp comes on. If it does not come on.
9. Stop the engine. (It is normal that the oil warning lamp is “OFF” while the engine is running.
10. Check the engine oil level again with the oil dipstick. If the level is low, add more oil.

NOTE

- The engine oil filter should be replaced when changing the engine oil.

⚠ WARNING

- ***The engine oil is very hot while the engine is running or right after the engine is stopped. Be careful not to be burnt.***
- ***Avoid oil contact while changing or adding engine oil and wear eye protection to prevent eye contact.***
- ***Prolonged and repeated contact with the engine oil may cause skin disorders and skin cancer. If skin contact is made, wash thoroughly with soap or hand cleaner as soon as possible.***
- ***Keep the used oil out of reach of children.***

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REPLACING TRANSMISSION FLUID AND FILTER (M)

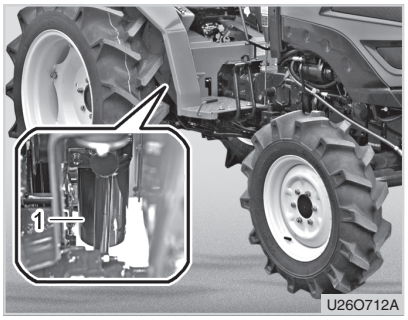
⚠ CAUTION

To avoid personal injury:

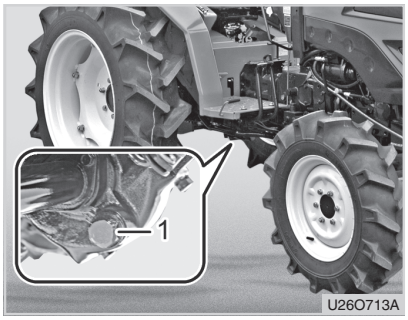
- **Be sure to stop the engine before changing the oil or replacing the filter.**
- **Check the engine oil level before every operation of the tractor. If the engine oil is insufficient, the engine can be damaged, and this is not covered by warranty. Be sure to add the engine oil when its level is below the lower limit of the oil dipstick.**
- **Do not dispose of used oil and oil filter into drainage and other places not designated by regulations. Observe applicable reg-ulations when disposing used oil and filters.**

IMPORTANT

- **Use only KIOTI genuine engine oil and filters to insure smooth operation and durability of the engine.**



(1) Oil Filter Cartridge



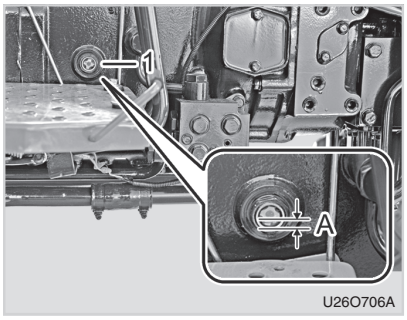
(1) Drain Plug

The transmission fluid should be changed if it is contaminated or after the transmission is serviced or every 400 hours of operation. When changing the transmission fluid, make sure to change the fluid filter. However, replace the filter only at initial 50 hours and every 200 hours operation afterward.

1. Park the tractor on a level ground and start the engine to warm it up.
2. Stop the engine, apply the parking brake, and remove the drain plug.
3. To drain the used fluid, place the oil pan under the transmission case and turn the drain plug counterclockwise to drain the fluid completely. If the fluid does not flow out freely, unscrew the plug on the side of the hydraulic cylinder on the left of the top link bracket to facilitate drainage. (Ref to next page) Reinstall the drain plugs securely afterward.
4. Unscrew the fluid filter from the rear right section on the tractor using a filter wrench.

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(1) Oil Gauge
(A) Oil Level Is Acceptable Within Range

5. Apply a thin film of clean oil onto the O-ring of a new filter.
6. Tighten the filter firmly until it contacts the mounting surface. Tighten the filter a half turn further by hand.
7. Run the engine for a few minutes and then stop it after installing a new filter.
8. Check the fluid level and add fluid to the specified level.

Oil capacity	6.87 U.S.gal. (26 L)

9. Make sure that the transmission fluid does not leak through the seal.

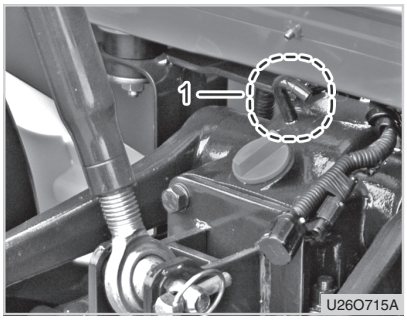
⚠ CAUTION

To avoid personal injury:

- **Be sure to stop the engine before changing the fluid or replacing the filter.**
- **Cool down the fluid sufficiently. You can get burnt by hot fluid.**

⊕ IMPORTANT

- **To prevent serious damage to the hydraulic system, use only a KIOTI genuine filter.**
- **Do not operate the tractor immediately after changing the transmission fluid. Run the engine at medium speed for a few minutes to prevent damage to the transmission.**



(1) Air Bleeding

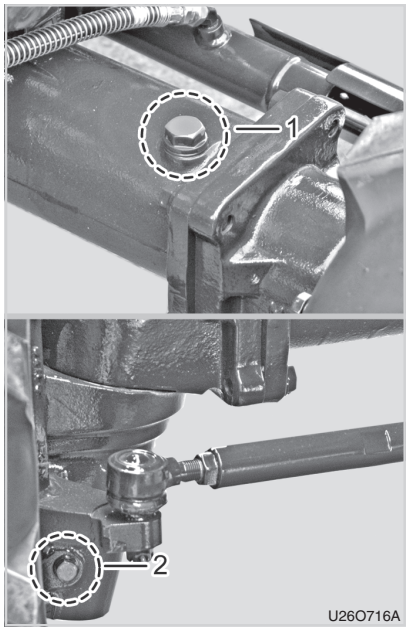
⊕ IMPORTANT

- **Be careful not to clogged the vinyl tube and clean it when changing the transmission oil.**

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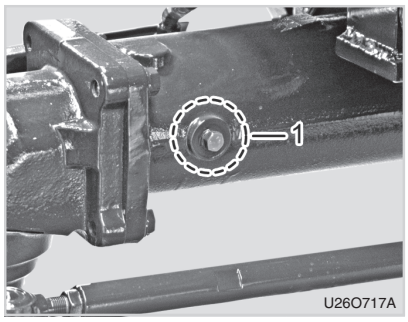
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CHANGING FRONT AXLE CASE OIL (N)



(1) Oil Filler Plug *(2) Drain Plug*

1. To drain the used oil, remove the right and left drain plugs and filling plug at the front axle case and drain the oil completely into the oil pan.
2. After draining reinstall the drain plugs.
3. Remove the oil level check plug on the left of the front axle.



(1) Oil Check Plug

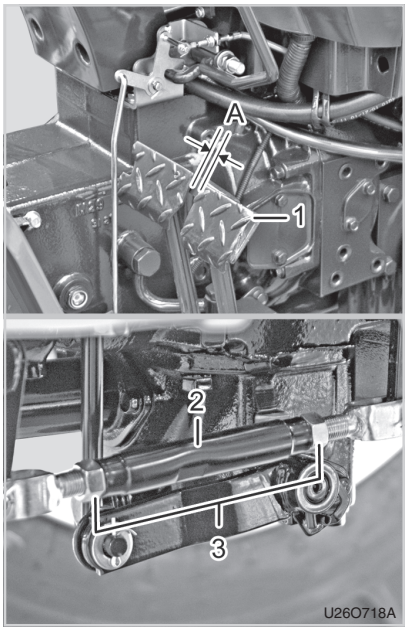
4. Add new oil to the specified level of the check plug through the oil filler. (Refer to “Lubrication” in the chapter “Service”)
5. Tighten the oil filler plug after replenishment.
6. Check the oil level in 15 minutes and add oil as necessary.

Oil capacity	1.19 U.S.gal. (4.5 L)

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ADJUSTING BRAKE PEDAL (O)



(1) Brake Pedal *(2) Brake Rod*
(3) Lock Nut *(A) Free Play*

Using the brake pedal for an extended period of time causes it to play. This may lead to deterioration of the braking performance and malfunction of the braking system.

The brake pedal can be adjusted as follows:

1. Release the parking brake
2. Slightly depress the pedals and measure the free travel at the top of the pedal stroke.
3. When adjustments are needed, loosen the locking nut and turn the turnbuckle until the rod length is at the desired and acceptable limit.
4. Re-tighten the lock nuts.
5. Perform the same procedure for the left brake pedal and measure its play.
6. Interlock the brake pedals after checking or adjusting them.

Proper brake pedal free travel (A)	0.8 ~ 1.2 in. (20 ~ 30 mm)
	Keep the free travel in the right and left brake pedals equal.

⚠ CAUTION

To avoid personal injury:

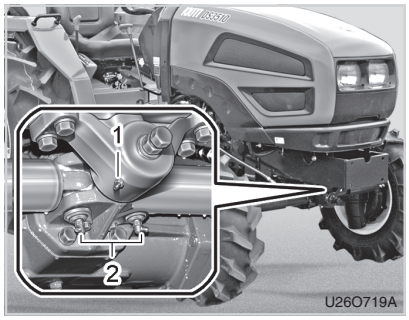
- **Stop the engine and chock the wheels before checking brake pedal.**

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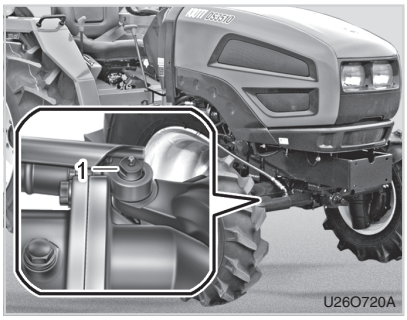
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LUBRICATING GREASE FITTINGS (P)

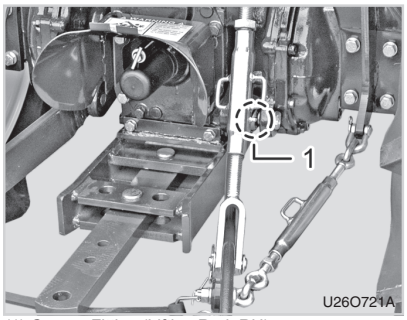
Apply high-quality multi-purpose grease onto the positions in the figure at every 50 hours of operation or whenever necessary and record the operating time when applying it.



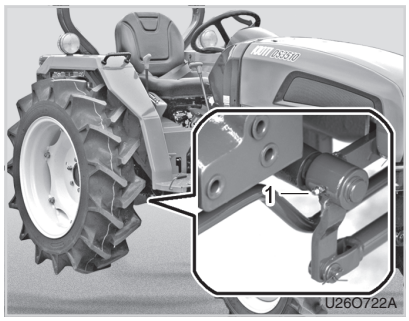
(1) Grease Fitting (Front Bracket Axle Pivot)
(2) Grease Fitting (Power Steering Cylinder) (RH,LH)



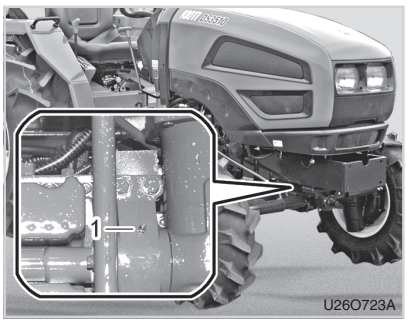
(1) Grease Fitting (Power Steering Cylinder) (RH, LH)



(1) Grease Fitting (Lifting Rod, RH)



(1) Grease Fitting (Brake Rod RH, LH)



(1) Grease Fitting (Rear Bracket Axle Pivot)

7

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CHECKING WHEEL BOLT/NUT TORQUE (Q)



(1) Front Wheel Bolt / Nut
(2) Rear Wheel Bolt / Nut

Check wheel bolts and nuts regularly especially when new. If they are loose, tighten them as follows.

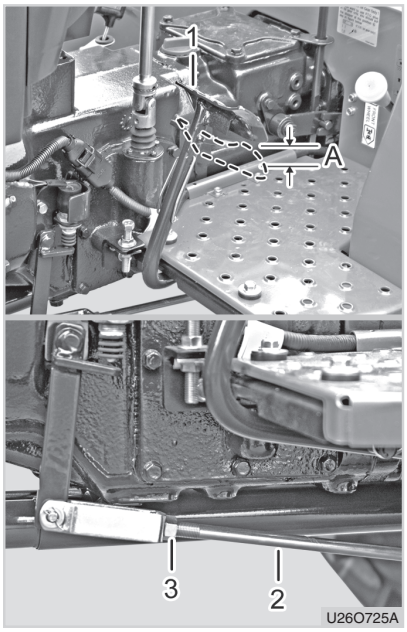
Item		Tightening torque
Front wheel	Bolt	78~90 N.m (57-67 lbf.ft)
	Nut	63~73 N.m (46-54 bf.ft)
Rear wheel	Bolt	225 N.m (166 lbf.ft)
	Nut	225 N.m (166 lbf.ft)

⚠ CAUTION

To avoid personal injury:

- **Never operate tractor with a loose rim, wheel, or axle.**
- **Any time bolts and nuts are loosened, retighten to specified torque.**
- **Check all bolts and nuts frequently and keep them tight.**

ADJUSTING CLUTCH PEDAL (R)



(1) Clutch Pedal *(2) Clutch Rod*
(A) Free Play *(4) Lock Nut*

1. If the clutch does not operate properly due to its excessive play, adjust its play using the turnbuckle.

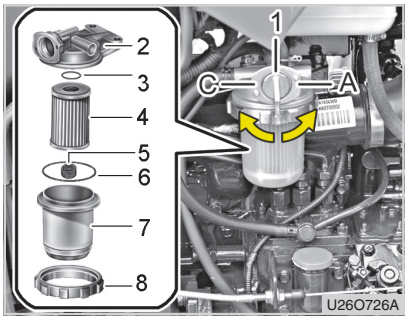
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2. To adjust the play, unscrew the lock nut and turn the turnbuckle.
3. After setting the play properly, tighten the lock nut firmly. (Manual)
4. Water can get into the clutch housing when it rains or snows or when washing the tractor. If this happens, remove the plug under the clutch housing to drain water from the housing. For details, refer to “Draining water from clutch housing” in the chapter “Service”.

Proper clutch pedal free travel (A)
0.8 ~ 1.2 in. (20 ~ 30 mm) on the pedal

REPLACING FUEL FILTER (S)



(1) Fuel Cock
(2) Fuel Filter Head
(3) O-Ring
(4) Filter Element
(A) Close
(5) Spring
(6) O-Ring
(7) Filter Bowl
(8) Screw Ring
(B) Open

The fuel filter is installed under the engine cover on the right side of the engine.

1. Close the fuel cock and clean the area around the filter bowl.
2. Remove the filter after disengaging the ring and removing the filter bowl.
3. After cleaning you should reassemble the new filter element, making sure that it is free from dust and dirt. Assure that all o-rings are in place.
4. Bleed the fuel system. (See "Bleeding the fuel System" in the service section)

IMPORTANT

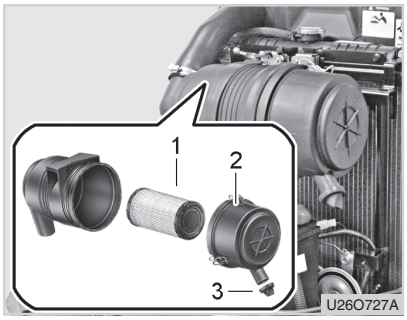
- **If dust and dirt enters the fuel system, the fuel pump and injection nozzles are subject to premature wear. To prevent this, be sure to clean the fuel filter bowl and element periodically.**

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REPLACING AIR FILTER PRIMARY ELEMENT (T)



(1) Element *(2) Cap*
(3) Evacuator Valve

1. The air cleaner uses a dry element. Never apply oil.
2. Dust should not accumulate in the dust cap or element. Remove and clean the dust cap and the element every week. If the tractor is operated in extremely dusty conditions, daily inspection is required.
3. Do not touch the filter element except in cases where cleaning is required.
4. When cleaning the element, refer to the instructions that follow.
5. If the element is stained with carbon , dust or oil, replace the filter.
6. Change the element every 6 months or every 100 hours.

To clean the element, use only clean dry compressed air on the inside of the element. Air pressure at the nozzle must not exceed (2 kgf/cm²) 29 psi. Maintain reasonable distance between the nozzle and the filter.

IMPORTANT

- **The air cleaner will only fulfill its function if it is correctly and regularly maintained. A poorly maintained air cleaner will mean loss of power, excessive fuel consumption and a reduction in engine life.**

IMPORTANT

- **Do not run the engine with filter element removed.**
- **Be sure to refit the cap with the arrow ⬆ (on the rear of cover) upright. If the cap is improperly fitted, evacuator valve will not function and dust will adhere to the element.**
- **Be sure to check any air leak or opening in the air intake system. Even the small gab or opening in the air intake system can cause the serious engine problem after a few years of operation.**

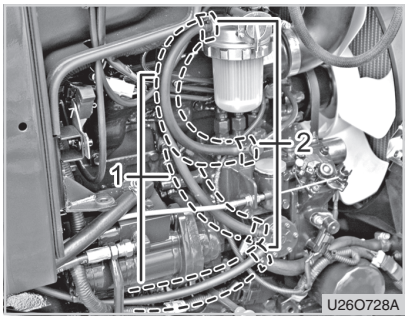
EVACUATOR VALVE

Open the evacuator valve once a week under ordinary conditions or daily when used in dusty conditions to get rid of large particles of dust and dirt.

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CHECKING FUEL LINES (U)



(1) Fuel Pipe *(2) Tightening Band*

Although checking the fuel pipe connection is recommended every 100 service hours, it should be done every 6 months if operation does not exceed 100 hours in 6 months.

1. If the hose clamps are loose, apply a slight coat of lubricant onto the threads and securely tighten it.
2. The fuel pipe is made of rubber and ages regardless of period of service. Change the fuel pipe together with the hose clamps every two years and securely tighten.
3. If the fuel pipes and hose clamps are found damaged or deteriorated earlier than two years, then change them immediately.
4. After the fuel pipe and hose clamps have been changed, bleed the fuel system.

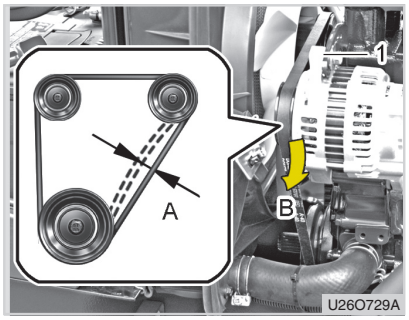
⚠ WARNING

- ***Stop the engine when checking the items above.***
- ***The fuel pipes are subject to wear and aging. Failure to perform periodic inspections may lead to a fuel leak. Fuel leaking on a hot engine could cause a fire.***

IMPORTANT

- **When changing fuel pipes, be careful not to allow dust or dirt to enter the fuel system. Contaminations in the fuel system could damage the fuel system or injection pump. Pay extra attention to the fuel pump to prevent dust from entering it.**

ADJUSTING FAN BELT TENSION (V)



(1) Adjusting Bolt
(A) Adjusting Belt Tension *(B) Pull*

In order to extend the fan belt's lifetime, the tension of the belt should be correctly adjusted if it slips. The belt tension should be inspected regularly according to the following procedure:

1. Stop the engine and apply the parking brake.
2. Open the hood and remove the left side cover.
3. Remove the mounting bolts and adjusting bolt of the alternator.

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4. In order to set the belt tight, move the upper part of the alternator backward.
5. Apply moderate thumb pressure to the belt between pulleys.

Proper fan belt tension (A)
A deflection between 0.28 ~ 0.35 in. (7 ~ 9 mm) when the belt is pressed in the middle of the span.

6. If tension is incorrect, loosen the alternator mounting bolts and, using a lever placed between the alternator and the engine block, pull the alternator out until the deflection of the belts falls within acceptable limits.
7. Replace the fan belt if it is damaged or cracked.

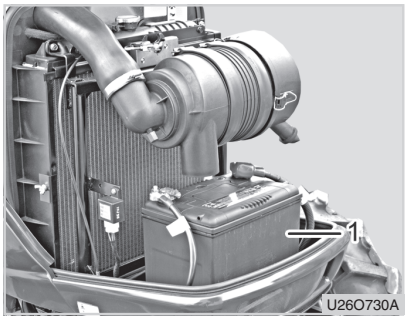
⚠ CAUTION

To avoid personal injury:

- **Be sure to stop the engine before checking belt tension.**

BATTERY (W)

PRECAUTION FOR HANDLING



(1) Battery

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

1. The battery cable should always be clean and firmly connected. When installing a new or used battery, clean its terminals.
2. Check the battery and cable for damage and corrosion.
3. Apply grease to the terminals and cable end in order to prevent corrosion.

⚠ WARNING

- ***The battery gas can explode. Do not expose the battery to flames or sparks. It may cause a fire.***
- ***The battery fluid contains sulfuric acid that can burn you. Do not allow the battery fluid to contact your eyes, skin, or painted surfaces. If you accidentally get it in your eyes or on your skin, flush with water and contact your doctor.***
- ***Be sure to wear eye protection while working on the battery. The battery fluid can hurt your eyes.***
- ***Use only the battery with the specified voltage. Otherwise, it may cause a fire.***

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CHARGING

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

Tractor model	Battery type	Volts (v)
DS3510	80D26R (80 AH)	12

⚠ CAUTION

- **The charge warning lamp comes on if the charging system is defective. If it comes on while driving, have the system checked or repaired by your local KIOTI Dealer.**
- **Keep the battery fully charged. If the battery fluid concentration is too low during the winter season, the battery may be frozen.**
- **Do not start the engine when the battery is frozen. Try to warm it up first.**
- **If the battery is not securely installed, the battery case and electrolytes could be damaged by vibration. To prevent the battery acid from contacting the terminals, apply grease around the battery terminals and con-nections.**
- **Never check the charge status of the battery by placing a metal object across the posts. Use a voltmeter or hydrometer.**

DIRECTION FOR STORAGE

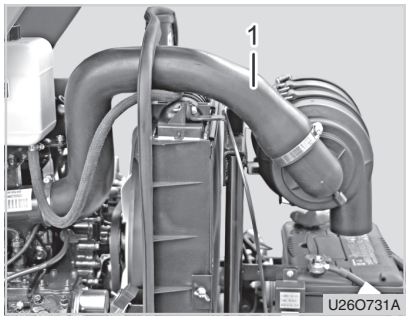
1. When storing the tractor for a long period, remove the battery from tractor, store in a dry place out of direct sunlight.
2. The battery self-discharges while it is stored.

   Recharge it once every three months in hot seasons and once every six months in cold seasons.

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CHECKING INTAKE AIR LINE (X)

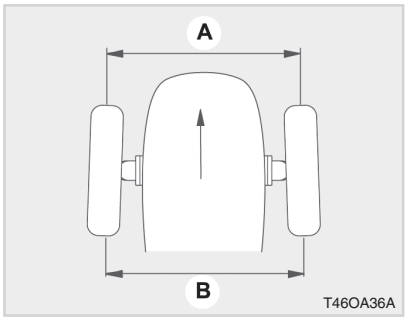


(1) Air Line Hose

1. If the hose clamps are loose, tighten clamps securely.
2. If the hoses and clamps are damaged, you must replace them at once. Failure to do so could lead to engine damage.
3. Loosen clamp may allow dust and contaminants to enter engine.

ADJUSTING TOE-IN (Y)

ADJUSTING PROCEDURE



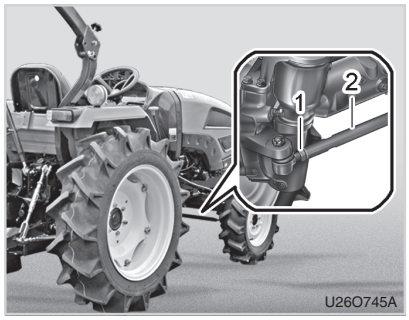
(A) Wheel - To - Wheel Distance At Front
(B) Wheel - To - Wheel Distance At Rear

1. Park tractor on a flat place.
2. Turn steering wheel so front wheels are pointed straight ahead.
3. Lower the implement, lock the parking brake and stop the engine.
4. Measure distance between tire beads (center) at front of tire and hub height.
5. Measure distance between tire beads at the rear of tire and hub height.
6. Front distance should be 2~8 mm less than rear distance. If not, adjust ball joint length.

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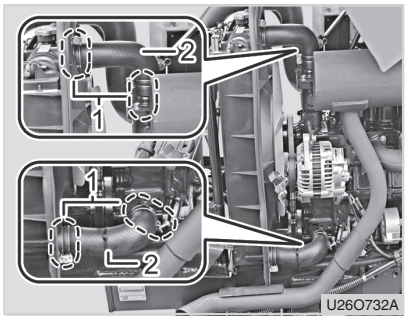
READJUSTMENT OF TIE ROD



(1) Tie Rod Lock Nut *(2) Tie Rod*

1. Loosen the lock nut and turn the turnbuckle to adjust the rod length until the proper toe-in measurement is obtained.
2. Check the toe-in value after the tie rod is adjusted.
3. Adjust again if necessary.

CHECKING RADIATOR HOSE AND CLAMP (Z)



(1) Clamp *(2) Hose*

Check to ensure the radiator hoses are free from damage and are tightened properly every 200 hours or every 6 months, whichever comes first.

1. If the hose clamps are loose or water leaks from hose, tighten clamps securely.
2. If the radiator hoses are swollen, hardened, cracked, or otherwise damaged, you must replace the hoses. Failure to do so could lead to coolant loss and engine damage.

It is a good practice to replace the radiator hoses every two years.

PRECAUTION AT OVERHEATING

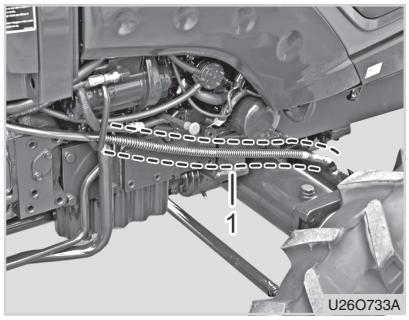
Take the following actions in the event the coolant temperature reaches the boiling point, what is called "Over-heating".

1. Stop the machine in a safe place and keep the engine idling.
2. After 5 minutes of unloaded idling, shut the engine down.
3. Keep yourself away from the tractor for another 10 minutes or until steam has stopped blowing out of the engine.
4. Make sure that there is not danger and repair the cause of the overheating according to the manual's instruction. (Make sure to refer to "Engine troubleshooting" in chapter 8 before starting the engine)

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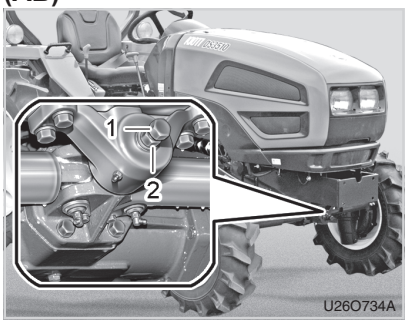
POWER STEERING LINE (AA)



(1) Power Steering Oil Line

1. Check to see that all hydraulic lines and hose fittings are tight and undamaged.
2. If damage is found you should replace the hose at once.

ADJUSTING FRONT AXLE PIVOT (AB)



(1) Adjusting Bolt *(2) Lock Nut*

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

ADJUSTING PROCEDURE

Loosen the lock nut, tighten the adjusting screw all the way, and then loosen the screw by 1/6 turn. Retighten the lock nut.

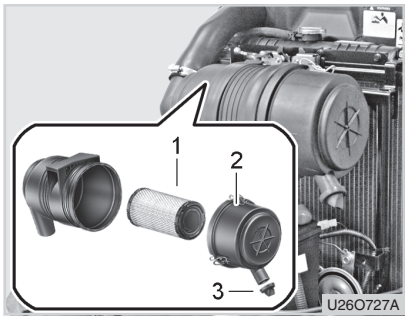
ADJUSTING ENGINE VALVE CLEARANCE (AC)

This service can be affected by the engine sensitively. Therefore, contact your local **KIOTI** Dealer for this service.

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REPLACING AIR FILTER (AD)



(1) Element *(2) Cap*
(3) Evacuator Valve

If the air cleaner is not in a good condition, the lifetime of the engine can be shortened, excessive soot can be produced, and the engine power can be deteriorated. Therefore, the filter should be inspected frequently. Its replacement interval can be changed according to driving conditions. Replace the filter according to the following proce-dure:

1. Open the hood and check the suction hose and air cleaner housing for damage.
2. Unscrew the air cleaner clip and remove the cover.
3. Clean the inside of the air cleaner housing by blowing compressed air through it.
4. Replace the filter and check the housing for damage.
5. Install the cover and fix it with the clip.

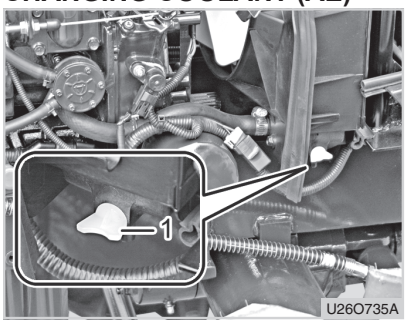
NOTE

- When installing the cover, make sure that the dust collection valve is heading down.

CAUTION

- **Use only a KIOTI genuine filter. Use of a non-recommended filter can cause damage to the engine.**
- **Make sure that no dust enters the system by installing the cover firmly.**
- **When removing the filter, be careful not to let foreign material enter the air inlet.**

FLUSH COOLING SYSTEM AND CHANGING COOLANT (AE)

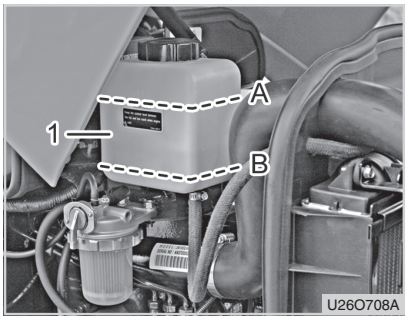


(1) Drain Cock

1. Stop the engine and let it cool.
2. To drain the coolant, open the radiator drain cock and remove radiator cap. The radiator cap must be removed to completely drain the coolant.
3. After all coolant is drained, close the drain cock.
4. Fill with clean water and cooling system cleaner.
5. Follow the cleaner manufacture's instruction.

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(1) Reserve Tank
(A) "FULL" *(B) "LOW"*

6. Install the radiator cap securely.
7. Start and operate the engine for few minutes.
8. Stop the engine and let it cool.
9. Drain water and cooling system cleaner and close drain cock, and fill with antifreeze and water mixture and close radiator cap securely.
10. Run tractor at idle until up to operating temperature.
11. Check coolant level of reservoir tank and radiator. Add coolant if necessary.

Coolant capacity
2.06 U.S.gal. (7.8 L)

⚠ CAUTION

To avoid accidents:

- **Do not remove the radiator cap while the coolant is hot. You can get burnt by hot steam. Make sure to remove it after the coolant is cooled down enough.**
- **Even though the coolant is cooled down, turn the cap to its first stop and then wait until it is depressurized before removing the cap completely.**

IMPORTANT

- **Do not start engine without cool-ant.**
- **Use clean, fresh water and anti-freeze to fill the radiator and reservoir tank.**
- **When the anti-freeze is mixed with water, the anti-freeze mixing ratio must be less than 50%.**
- **Securely tighten radiator cap. If the cap is loose or improperly fitted, water may leak out and the engine could overheat.**
- **If the radiator cap has to be removed, follow the caution above and securely retighten the cap.**
- **Use clean fresh water and anti-freeze to fill the reservoir tank.**
- **If the coolant leaks, contact your local KIOTI Dealer.**

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ANTI-FREEZE

This tractor is filled with 50% of ethylene glycol at factory.

If the anti-freeze has been replaced by tap water later on, the coolant can be frozen, leading to damage to the cylinder and radiator when the ambient temperature is below 0℃.

Therefore, make sure to change water into anti-freeze before winter season comes.

When changing the anti-freeze with one of another type, flush the cooling system several times and contact a professional for the mixture ratio.

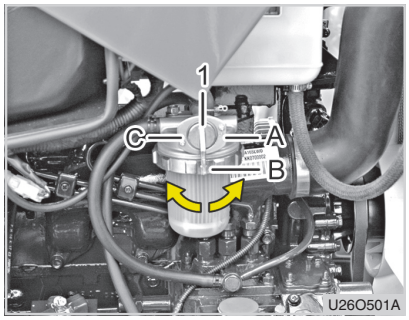
Vol. % Anti-freeze	Freezing Point		Boiling Point*	
	°F	°C	°F	°C
40	-12	-24	222	106
50	-34	-37	226	108

* At 760 mmHg pressure (atmospheric). A higher boiling point is obtained by using a radiator pressure cap.

NOTE

- The temperatures shown on the left are industry standards that necessitate a minimum glycol content in the concentrated anti-freeze.
- When the coolant level drops due to evaporation, add water only. In case of leakage, add anti-freeze and water in the specified mixing ratio.
- Anti-freeze absorbs moisture. Keep unused anti-freeze in a tightly sealed container.
- Do not use radiator cleaning agents when anti-freeze has been added to the cooling water. (Anti-freeze contains an anti-corrosive agent, which will react with the radiator cleaning agent forming sludge which will affect the engine parts.)

BLEEDING FUEL SYSTEM (AF)



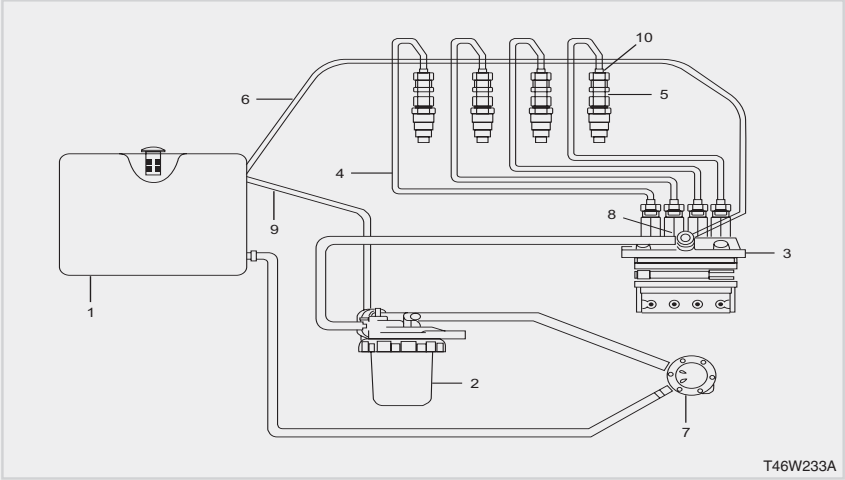
(1) Fuel Cock
(A) Close *(B) Open*
(C) Air Bleeding

1. Make sure that the amount of fuel in the fuel tank is sufficient.

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(1) Fuel Tank
(2) Fuel Filter
(3) Fuel Injection Pump
(4) Injection Pipe
(5) Injection Nozzle
(6) Fuel Overflow Pipe (Hose)
(7) Fuel Feed Pump
(8) Bleeding Bolt
(9) Bleeding Hose
(10) Nozzle Holder Nut

2. If there is air in the fuel filter, turn the filter cock to the air side and turn the ignition key to turn the start motor. Then, the air in the filter port is discharged through the bleeding hose as shown in the figure.

⚠ CAUTION

- **Do not operate the start motor for more than 10 seconds continuously. Instead, operate it for several times Instead, operate it for several times less than 10 sec each time.**

3. When the amount of the fuel in the fuel filter port goes over 3/4 full, stop cranking the engine and turn the cock in the figure to the “ON” (open) position.

NOTE

- It is not necessary to bleed the system if filling the tank with fuel before installing the fuel port.

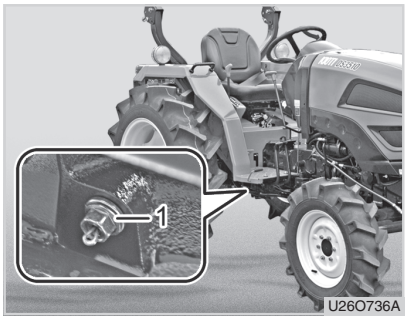
4. Unscrew the bleeding bolt in the figure and crank the engine to bleed the system. Then, tighten the bolt.
5. If the engine still cannot be started even after performing the above step, unscrew the 1 or 2 nozzle holder nuts out of 3 or 4 and crank the engine to bleed the system.

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6. When air bubbles are not seen anymore in the drained fuel, tighten the loose parts and start the engine.

DRAINING WATER FROM CLUTCH HOUSING (AG)



(1) Plug

IMPORTANT

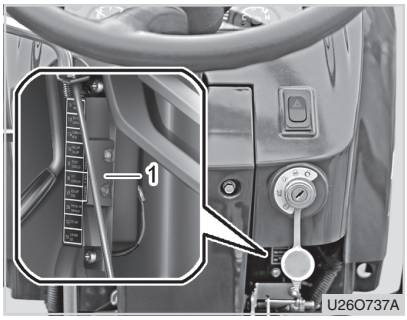
- **If you forget to install the plug, the clutch can be damaged. Foreign material can enter through the open drain hole.**

1. There is a plug under the clutch housing.
2. Drain the water completely and install the plug. Drain the water into a container and dispose of it in a proper manner for environmental protection.
3. Make sure to install the plug and not to damage the clutch severely.

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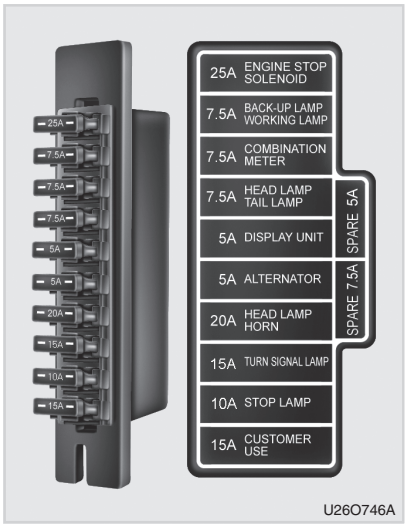
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REPLACING FUSE (AH)

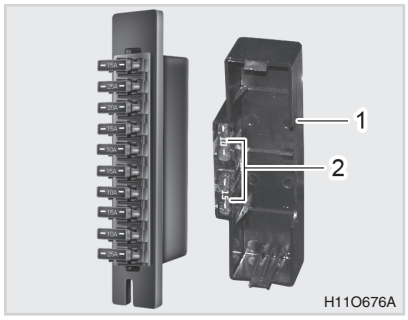


(1) Fuse Box

Fuses protect the tractor electrical system from potential damage. A blown fuse indicates that there is an overload or short somewhere in the electrical system.



For the **ROPS** model, the fuse panel is located under the left side of the instrument panel. For the cabin model, it is located under the right side of the instrument panel.



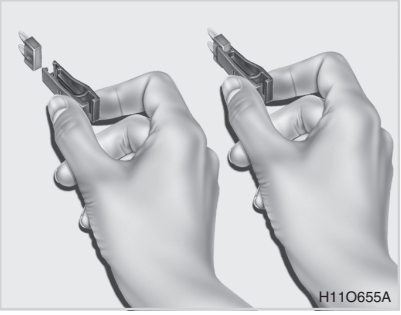
(1) Fuse Storage Case *(2) Fuse*

There are marks for the fuse capacity and location on the cover of the fuse panel. Replace the fuse according to the following procedure:

1. Turn the key switch to the “OFF” position and turn “OFF” all the electrical devices.
2. Open the fuse box cover and check the fuse in question using fuse tongs.

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3. If fuse is blow be sure to replace with a new correct capacity fuse insure that it is firmly installed.
4. Install the fuse box cover.

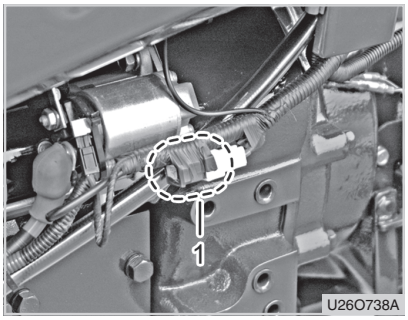
⚠ WARNING

- ***Never use a fuse with the capacity higher than specified on the fuse box cover.***
- ***If using a faulty fuse, steel wire, or foil, the electrical device can be damaged or even can catch a fire.***

NOTE

- If the replaced fuse is blown quickly, it is probable that the wiring system is faulty. In this case, contact your local **KIOTI** Dealer.
- If the fusible link, relay or other electrical component is faulty, contact your local **KIOTI** Dealer.

SLOW BLOW FUSE (AI)



(1) Slow Blow Fuse

The slow-blow fuse is to protect the electric wiring. If it is blown, find and repair the cause and replace it with a new genuine part.

Slow blow fuse	60 A

IMPORTANT

- **Using a non-approved slow-blow fuse can damage electrical systems in the tractor severely.**

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IMPORTANT

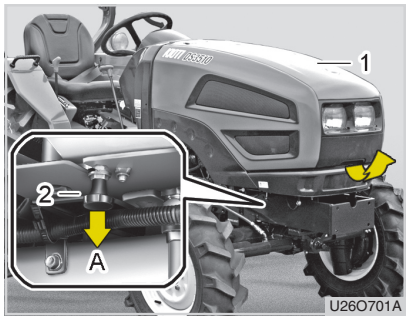
- **Refer to the chapter "Trouble-shooting" in this manual or contact your local KIOTI Dealer for specific information dealing with electrical prob-lems.**

REPLACING BULB (AJ)

The bulb and capacity used in this tractor are listed in the blow table. This section only describes proce-dures the users can handle.

NO.	Bulb		Capacity
1	Head Lamp		35W / 35W
2	Position Lamp (Front)		5W
3	Stop/Position Lamp (Rear)		21W / 5W
4	Turn Signal Lamp		21W
5	Work Lamp		21W
6	Cluster Indicator	Charging Warning Light	3W
		Others	1.4W
7	Backup Lamp		10W

HEAD LAMP

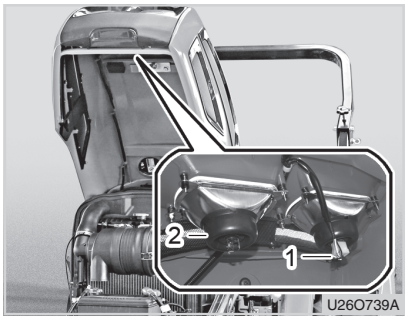


(1) Hood *(2) Handle*
(A) Pull

1. Turn the key switch to the "OFF" position and open the hood.

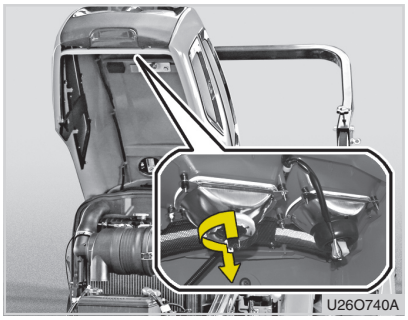
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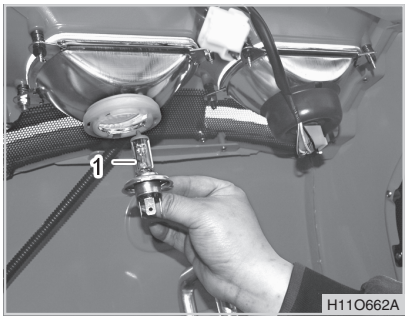


(1) Connector (2) Rubber Cover

2. Disconnect the connector.
3. Remove the rubber cover.



4. Press down the safety spring and turn it counterclockwise to remove the bulb. If the bulb is blown, replace it with a new one with the same capacity.
5. Installation is carried out in reverse order of removal.



(1) Head lamp Bulb

5. Installation is carried out in reverse order of removal.

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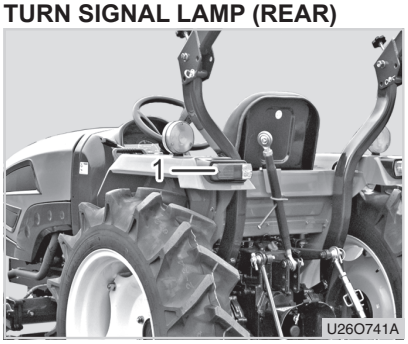
⚠ WARNING

- ***Use only recommended bulbs. Using an incorrect bulb can damage the lamp or even cause a fire.***
- ***Make sure to use bulbs with the specified capacity.***

⚠ CAUTION

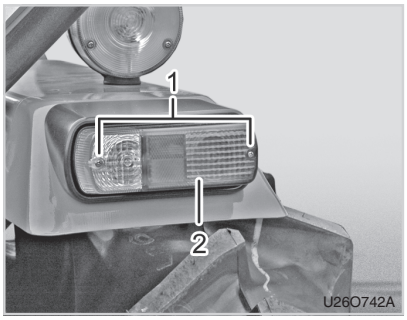
- **Make sure to use a genuine KITOI bulb. Using a non-recommended bulb can cause a fire.**
- **The head lamps can temporarily be fogged due to rain or exposure to water. This is because of the temperature difference between the inside and outside of the lamp, which is normal.**

TURN SIGNAL LAMP (REAR)



(1) Turn Signal Lamp (RR)

1. The turn signal lamp (rear) is installed on the rear fender.

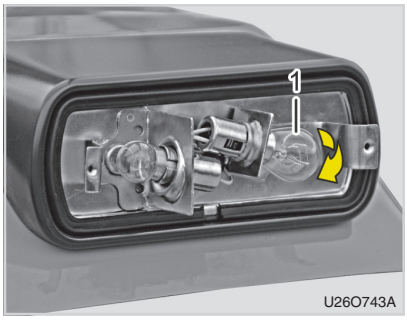


(1) Cover *(2) Bolt*

2. Unscrew 2 mounting bolts to remove the lens.

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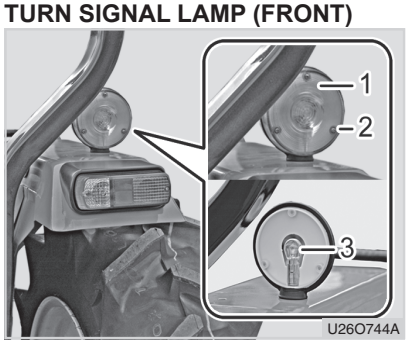
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(1) Turn Signal Lamp (RR) Bulb

3. Turn the bulb counterclockwise while pressing it down to remove it for replacement.

TURN SIGNAL LAMP (FRONT)



(1) Turn Signal Lamp (2) Mounting Bolt
(3) Turn Signal Lamp Bulb

1. Remove the lens by unscrewing its 3 mounting bolts.
2. Press the bulb gently and turn it counterclockwise to remove it from its body.
3. Fit a new bulb to the socket and turn it clockwise.

⚠ CAUTION

- **Do not touch the bulb if it is still illuminated or right after it is turned "OFF". You can be burnt by the hot bulb.**
- **For some bulbs which require delicate handling or work process, contact your local KIOTI Dealer.**
- **When separating the cover by prying it "OFF" with a screwdriver, be careful not to damage it.**
- **Before replacing a bulb, make sure to put the key switch and the switch for the corresponding bulb to the "OFF" position.**
- **Install a new bulb with the same capacity after removing the installed bulb.**

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STORAGE AND DISPOSAL

8

TRACTOR STORAGE 8-2

DAILY STORAGE 8-2
LONG-TERM STORAGE.....8-2

USING TRACTOR AFTER STORAGE 8-4

USAGE AND DISPOSAL (ENVIRONMENTAL CONCERNS) 8-4

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TRACTOR STORAGE

DAILY STORAGE

1. Keep the tractor clean when it is stored. Make sure to wash it after work.
2. Store it indoors if possible. If it should be kept outside, cover it.

⚠ WARNING

- ***When operating the tractor in an enclosed area, ventilate the area to release exhaust gas to the outside. The exhaust gas is colorless and not visible, but is harmful.***

3. Remove the battery from the tractor in winter and store it indoors.
4. Add anti-freeze to the tractor in winter season in order to prevent the radiator from freezing.
5. Remove the ignition key and store it separately.

LONG-TERM STORAGE

Follow the instructions below if the tractor is not to be used for a long period of time. This is to operate the tractor again with minimum preparation after long-term storage. Repeat this procedure if the tractor hasn't been used for one year.

IMPORTANT

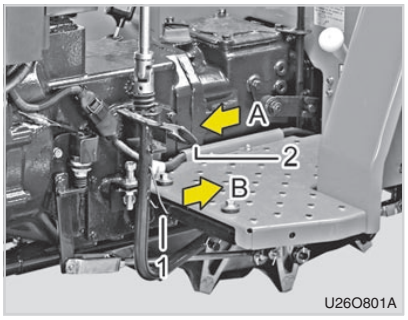
- **If the tractor is not used for an extended period of time, follow the instructions below to prevent corrosion and performance deterioration of the tractor while it is stored.**

1. Check the bolts and nuts for looseness, and tighten if necessary.
2. Apply grease to tractor areas where bare metal will rust also to pivot areas.
3. Detach the weights from the tractor body.
4. Inflate the tires to a pressure a little higher than usual.
5. Change the engine oil and run the engine to circulate oil throughout the engine parts all for about 5 minutes.
6. Use the clutch locking pin to keep the clutch disengaged. If the clutch is left engaged for a long period of time, the clutch cover may rust, making clutch disengagement impossible at the next operation.
7. With all implements lowered to the ground, coat any exposed area such as hydraulic cylinder piston rods with grease.
8. Remove the battery from the tractor. Store the battery following the battery storage procedures.
9. Keep the tractor in a dry place where the tractor is sheltered from rain. Cover the tractor.
10. Clean the engine components as well as the tractor.

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11. Add grease to all the grease fitting.
12. Flush the cooling system and drain water from it. Also, add anti-freeze as well as water.
13. Chock the frame in order to remove the weight from the tires.
14. Set all control systems neutral.
15. Plug any open exhaust pipes.
16. Attach a tag onto the tractor to inform the storage condition of the tractor.



(1) Latch *(2) Clutch Pedal*
(A) Depress *(B) Fix*

17. Interlock the brake pedals and apply the parking brake. Hook the clutch pedal latch.

⚠ CAUTION

To avoid injury:

- **Never clean the tractor body while the engine is running.**
- **Never run the engine in an enclosed area without proper ventilation system in order to prevent poisoning by exhaust gas.**
- **When storing the tractor, remove the key from the switch and store it separately in order to prevent an unauthorized person from operating the tractor and being injured.**
- **Cover the tractor after the muffler and the engine have cooled down.**
- **If the battery is not to be removed, disconnect its negative terminal at least. The wiring can be gnawed by rodents, leading to a fire.**

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USING TRACTOR AFTER STORAGE

1. Check the tire air pressure and inflate the tires if they are low.
2. Install a fully charged battery.
3. Check the fan belt tension.
4. Check all fluid levels.

   (Engine oil, transmission/hydraulic oil, engine coolant and any attached implements.)
5. Remove grease from the exposed cylinder rod.
6. Apply grease to the lubrication points.
7. Remove the cover from the exhaust pipe.
8. Get onto the tractor and start the engine.
9. Check if the instrument panel and all parts operate correctly while running the engine for a few minutes.
10. Drive the tractor outside and check if it is operating properly. Park the tractor outside and idle engine for at least 5 minutes. Stop the engine and visually inspect the tractor. Check if there is leakage.
11. Start the engine, release the parking brake, and check the brake condition while driving forward. Adjust the brake pedals if necessary.
12. Stop the engine and check for leakage. Repair any part as required.

USAGE AND DISPOSAL (ENVIRONMENTAL CONCERNS)

In order to protect the environment, use and dispose of the tractor keeping the following in mind:

1. When changing the oil or coolant by yourself, be careful not to spill it and dispose used oil and coolant properly according to the applicable regulations.
2. Never leave or discard the expired tractor or implement, but contact your local **KIOTI** Dealer to dispose it according to the regulations.
3. Avoid working under high load as it can cause excessive exhaust gas, which is harmful to the environment.

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TROUBLESHOOTING

9

ENGINE TROUBLESHOOTING 9-2

TRACTOR TROUBLESHOOTING 9-4

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This troubleshooting chart summarizes simple service items for users who are familiar with mechanical systems.
For more detailed service items, contact your local **KIOTI** Dealer.

ENGINE TROUBLESHOOTING

Cause		Countermeasures
1. When engine is difficult to start	• Fuel is thick and doesn't flow.	• Check the fuel tank and fuel filter.
		• Remove water, dirt and other impurities.
		• As all fuel will be filtered by the filter, if there should be water of other foreign matters on the filter, replace the filter.
	• Air or water mixed in fuel system.	• If air is in the fuel filter or injection lines, the fuel pump will not work properly.
		• To attain proper fuel injection pressure, check carefully for loosened fuel cap nut, etc.
		• Loosen air vent screw over fuel filter and fuel injection pump to eliminate all the air in the fuel system.
	• Thick carbon deposits on orifice of injection nozzle.	• This is caused when water or dirt is mixed in the fuel. Clean the nozzle injection piece, being careful not to damage the orifice.
		• Check to see if nozzle is working properly or not, if not, install a new nozzle.
	• Valve clearance is wrong.	• Adjust valve clearance (when the engine is cold) - Cotact your local KIOTI dealer.
	• Engine oil become thick in cold weather and engine cranks slow.	• Change grade of oil according to the weather (temperature).

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Cause		Countermeasures
1. When engine is difficult to start	• Start motor does not rotate when key switch is turned	• Depress the clutch pedal unless depressed (Manual type).
		• Put the P.T.O switch to the “OFF” position.
		• If the switch or start motor is faulty, have it repaired in a workshop.
		• If any terminal is loose or corroded, clean or fix it firmly.
2. When output is insufficient	• Valve out of adjustment	• Adjust to proper valve clearance. - Cotact your local KIOTI dealer.
	• Air cleaner is dirty	• Clean or replace the element at every 100 to 200 hours of operation.
	• Fuel injection pressure is wrong	• Adjust it to 150 to 160 kgf/cm^2 or replace the injection nozzle.
3. When color of exhaust is specially bad	• Fuel is of extremely poor quality	• Select good quality fuel. Temperature — Fuel type - Above 14°F (-10°C) — NO.2 Diesel - Below 14°F (-10°C) — NO.1 Diesel
	• Nozzle is bad	• If necessary, replace with new nozzle.

※ If you do not find the cause of trouble, consult your dealer for assistance.

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TRACTOR TROUBLESHOOTING

CAUSE		COUNTERMEASURES
1. When tractor does not move while engine is running	• Shift lever is in neutral position	• Check the shift levers.
	• Parking brake is applied	• Release the parking brake.
2. Clutch is not operated properly	• Clutch slips (idles)	• Check and adjust the clutch pedal play.
		• The clutch lining is worn or stuck. Have it replaced in a workshop.
	• Clutch cannot be disengaged	• The clutch lining is corroded. Have it repaired in a workshop.
		• The pedal is incorrectly adjusted. Adjust the pedal play.
3. Brake is not operated properly	• Brake does not operate or only one brake pedal operates	• The brake pedal play is excessive. Adjust the play.
		• The brake lining is worn or stuck. Have it replaced in a workshop.
	• Brake pedal does not return properly	• The brake return spring is damaged. Replace it.
		• Grease is insufficient on each mating surface. Remove rust and apply grease.
4. Steering wheel does not operate properly	• Steering wheel is heavy or vibrates	• The toe-in is incorrect. Adjust it again.
		• The tire inflation pressure is different. Inflate the left and right tires into the specified pressure.
		• Each connection is loose. Re-tighten each connection and replace the part.
	• Steering wheel play is excessive	• The steering wheel shaft is worn. Have it repaired in a workshop. Metal parts are worn. Have them repaired in a workshop. Each connection has play. Tighten the connection again.

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CAUSE		COUNTERMEASURES
5. Hydraulic system is faulty	• Oil is leaked from pipe or hose	• The pipe clamp is loose. Re-tighten it.
		• The pipe is cracked. Have it repaired in a workshop.
	• 3-point hitch cannot be lowered	• Set the lowering speed control lever to the lowering position if it is set to the stop position.
		• The valve and cylinder are damaged. Have them repaired in a workshop.
	• 3-point hitch cannot be lifted	• The transmission fluid is insufficient. Add it to the specified level.
		• There is air in the intake pipe. Bleed the pipe.
		• The oil filter is clogged. Clean or replace it.
		• The hydraulic filter, valve and cylinder are malfunctioning. Have them repaired in a workshop.
	• 3-point hitch vibrates by itself	• Set the draft control lever to the “Deep” position.
		• Select the highest top link hole.
6. Electric system is faulty	• Headlamps cannot be turned on or are dim.	• The fuse is blown. Check the wiring and replace the fuse.
		• The bulb is blown. Replace it.
		• The ground and terminal wirings are poorly contacted. Check and clean them.
		• The battery electrolyte level is low. Charge the battery.

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CAUSE		COUNTERMEASURES
6. Electric system is faulty	• Battery cannot be charged	• Check the battery and alternator.
	• Horn does not sound	• The horn switch is faulty. Replace it.
		• The wiring is faulty. Repair it.
		• The horn is damaged. Repair or replace it.
	• Turn signal lamps do not blink	• The bulb is blown. Replace it.
		• The blinking device is faulty. Repair or replace it.
		• The ground and terminal wiring are poorly connected. Check and clean them.
	• Work lamps do not come on	• The bulb is blown. Replace it.
		• The ground and terminal wirings are poorly connected. Check and clean terminals.

※ If you do not find the cause of trouble, consult your dealer for assistance.

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