



FOREWORD

Congratulations, and welcome to the fabulous world of **L3503/LK45** ownership, where serious work is made fun again!

This versatile tractor is a culmination of the entire tractor and diesel knowledge gained by the Daedong Industrial Co.,LTD over the years 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 L3503/LK45**, 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/concerns.



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 on about technology for easier operation.



NOTE

This indicates that interesting or helpful information is being provided.



ABBREVIATION LIST

ABBREVIATIONS	DEFINITIONS
4WD	Four Wheel Drive
API	American Petroleum Institute
ASAE	American Society of Agricultural Engineers, USA
ASTM	American Society of Testing and Materials, USA
fpn	Feet Per Minute
Hi-Lo	High Speed-Low Speed
HST	Hydrostatic Transmission
m/s	Meters Per Second
P.T.O	Power Take Off
RH/LH	Right-hand and Left-hand sides are determined by facing in the direction of forward travel
ROPS	Roll-Over Protective Structures
m ⁻¹ (rpm)	Revolutions Per Minute
S ⁻¹ (r/s)	Revolutions Per Second
SAE	Society of Automotive Engineers, USA
SMV	Slow Moving Vehicle



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		Headlight-Low Beam		Preheat
	Engine Coolant-Temperature		Headlight-High Beam		QT lamp
	Parking Brake		Four-Wheel Drive-ON		H low beam
	Battery Charging Condition		Fast		L low beam
	Engine Oil-Pressure		Slow		Auto draft work light
	Turn Signal		Creep		Auto level work light
	Power Take-Off Clutch Control-Off Position		High Range		Auto tilling depth work light
	Power Take-Off Clutch Control-ON Position		Middle Range		Turn up light
	Differential Lock		Low Range		Back up light
	Position Control-Lowered Position		Neutral Position		Auto Auto switch
	Hazard Warning Lights		Coolant		Single brake light



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SAFETY PRECAUTIONS

1

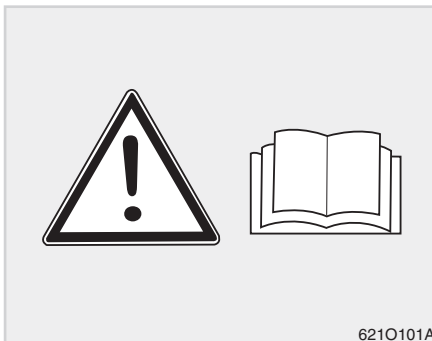
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BEFORE OPERATING THE TRACTOR

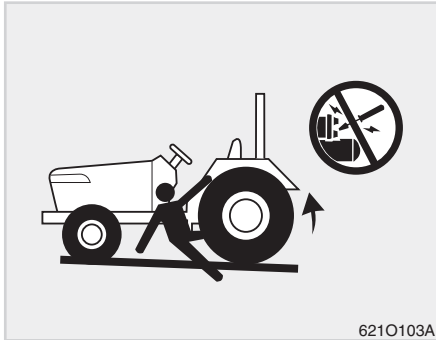
A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, use these safety precautions, and pay attention to the job at hand. If you can prevent an accident, your time will have been well spent.



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 1-14~16.



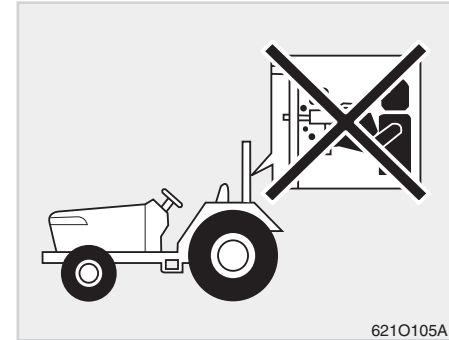
5. Keep safety decals clean of dirt and debris.
6. Watch where you are going at all times so that you are able to avoid obstacles that can cause injury or damage to your tractor.
7. When starting the tractor make sure your path is clear of people to avoid accidents caused by sudden movements.
8. Before making reverse movements with your tractor, you should always check to see that the path is clear.



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, handholds 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 without first consulting your **KIOTI** dealer.



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

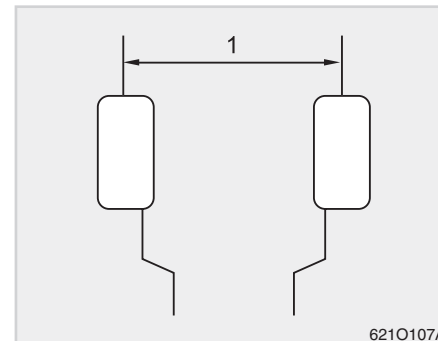
20. For your safety **ROPS** with a seat belt is recommended for most applications.

NOTE

- Always use seat belt when the tractor is equipped with a **ROPS**. Never use the seat belt when tractor is not equipped with a **ROPS**. (**ROPS**: Roll-Over Protective Structures)

A **ROPS** 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.

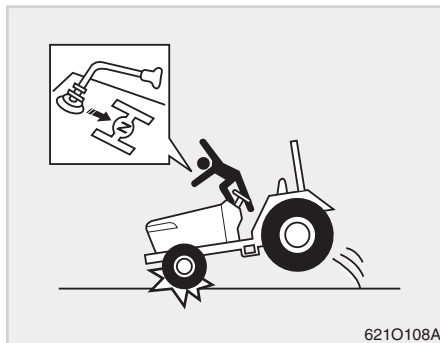


(1) Tread

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 5-39.



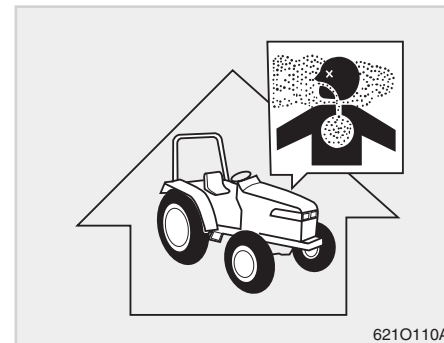
OPERATING THE TRACTOR



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.

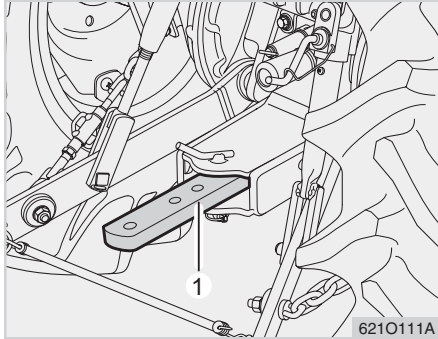


3. Do not operate your tractor in an enclosed building without the proper ventilation. Exhaust fumes can cause serious injury or death.



1-6

L3503 / LK45



621O111A

(1) Drawbar



621O112A



621O113A

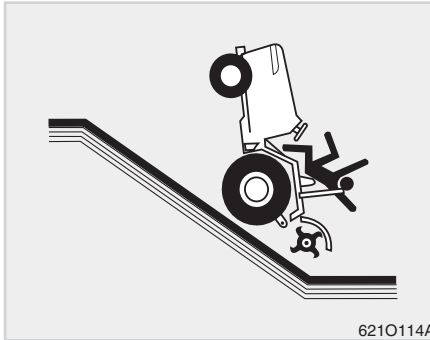
4. Make sure that all pressure lines are tight before starting the tractor.
5. Pull only from the drawbar. Never hitch anything to the axle housing or any other point except the drawbar. Pulling from any other location only increase the risk of serious personal injury or death.

6. If The front of the tractor tends to rise up when heavy implements are attached to the three point hitch, the weights should be installed on the tractor. Do not operate the tractor with a light front end.

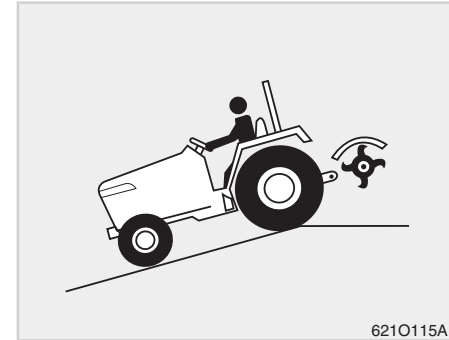
7. Always use the proper ballast weight on your tractor when using rear implements.
8. Watch front and rear for and avoid obstacles at row ends, near trees and around other obstructions.



9. Do not leave equipment 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.



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.



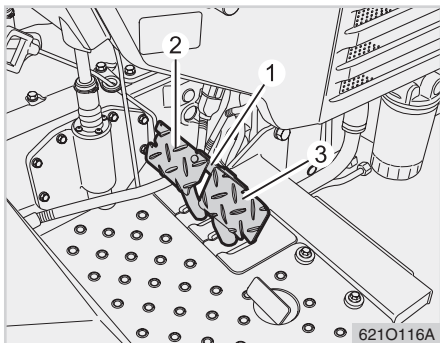
15. When working in groups, always let the others know what you are going to do before you do it.
16. Never "freewheel". Disengaging the clutch or shifting into neutral while descending a slope as this could lead to a loss of control.
17. Do not operate near ditches, holes, embankments, or other terrain features which may collapse under the tractor's weight. The risk of tractor upset is even higher when the ground is loose or wet.



1-8

L3503 / LK45

DRIVING THE TRACTOR

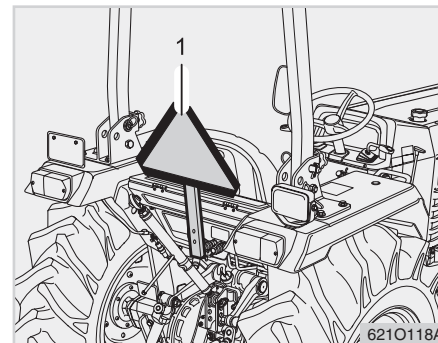


(1) Brake Pedal Lock (2) Brake Pedal (L)
(3) Brake Pedal (R)

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.



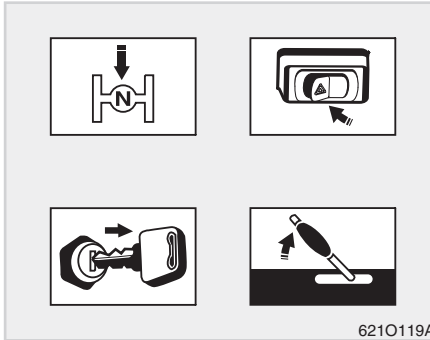
(1) SMV Emblem

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



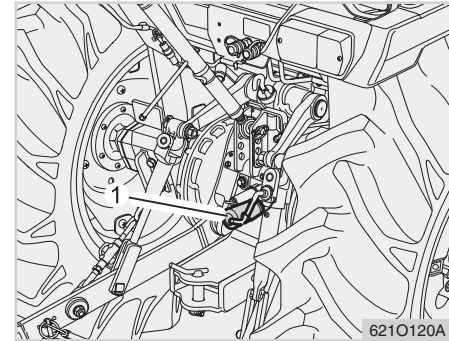
PARKING THE TRACTOR

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.



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.

OPERATING THE P.T.O

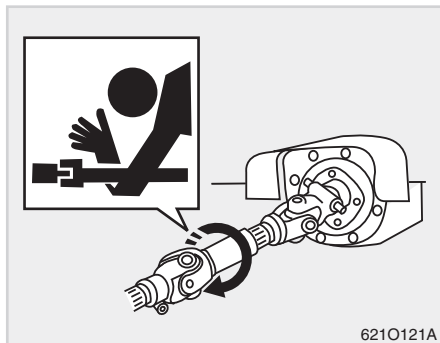


(1) P.T.O Shaft Cover

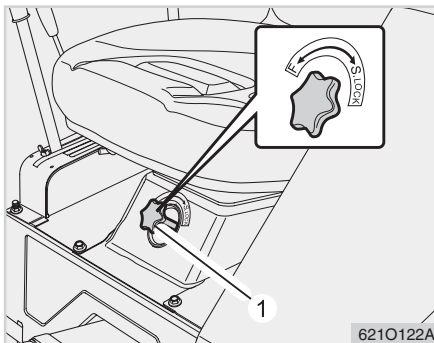
1. Make sure the tractor is completely stopped, gears are in neutral and all moving components have completely stopped before connecting, disconnecting, adjusting, cleaning or servicing any P.T.O driven equipment.
2. Keep the P.T.O shaft cover in place at all times. Replace the P.T.O shaft cap when the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



USING 3-POINT HITCH



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.



(1) 3-point hitch lowering speed knob

F "FAST"

L "LOCK"

S "SLOW"

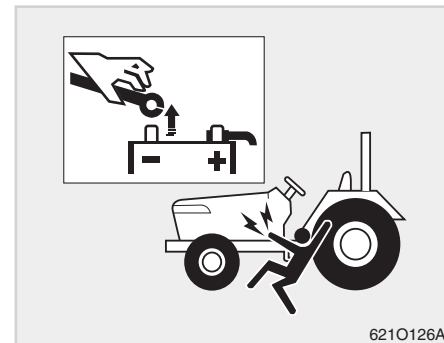
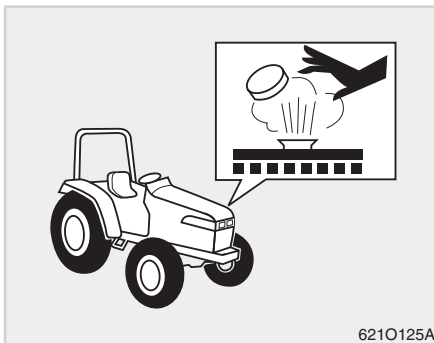
1. Use the 3-point hitch only with equipment designed for 3-point hitch usage.
2. When using a 3-point hitch mounted implement, be sure to install the proper counterbalance weight on the front of the tractor.
3. When transporting on the road, set the implement lowering control in the "LOCK" position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

SERVICING THE TRACTOR



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 it gives off hydrogen and oxygen... especially when recharging.

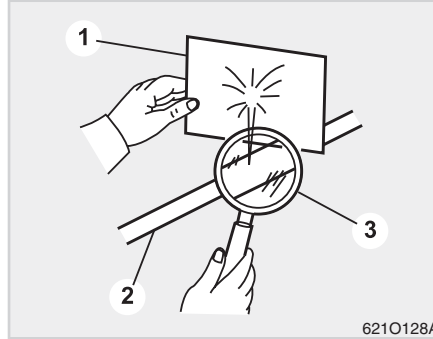


1

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. 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.

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.



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



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.

14. Fluid escaping from pinholes may be invisible. 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.



1

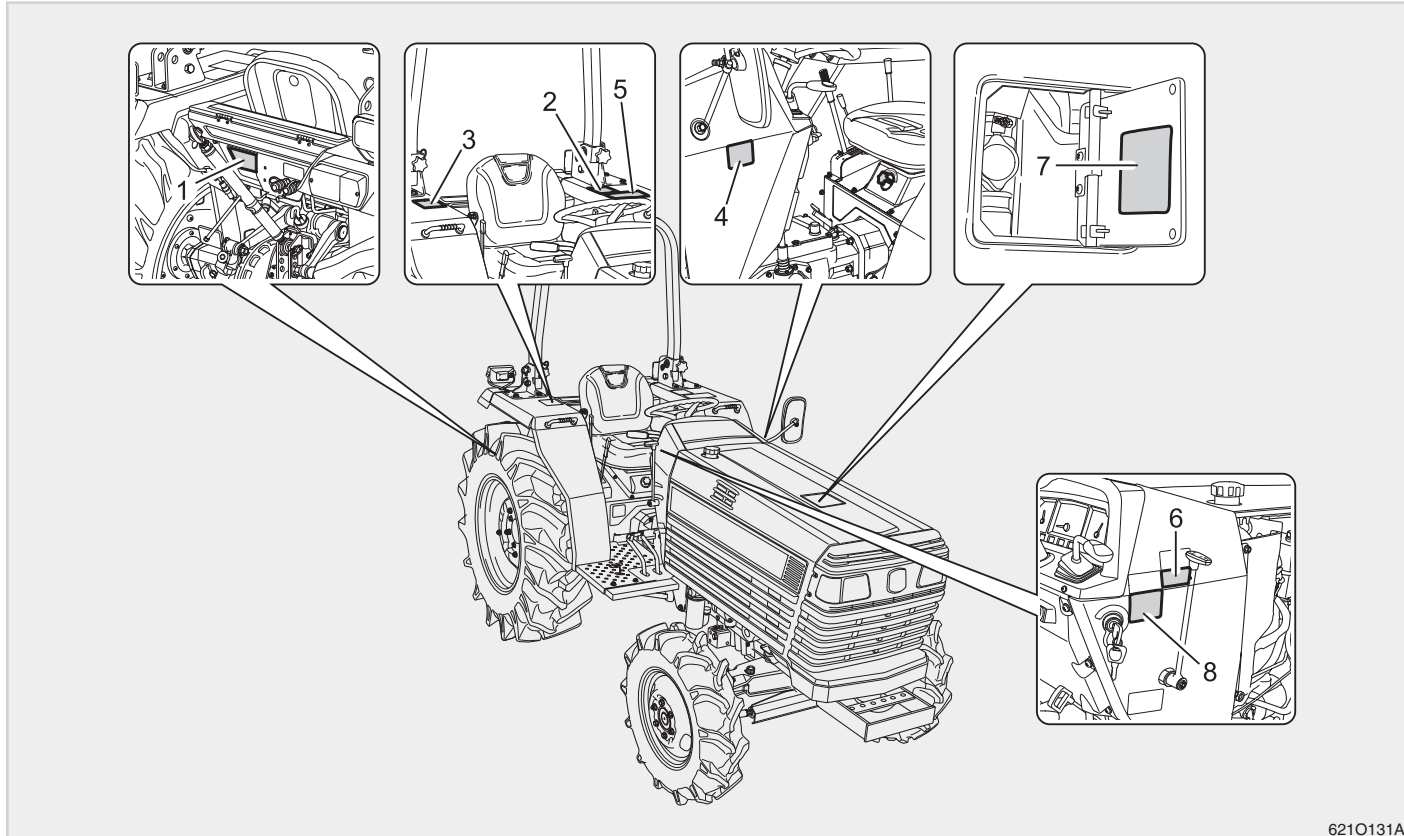
15. Keep the environmental pollution in mind. When replacing cooling water or oil, dispose it to the right way.

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



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TRACTOR SAFETY LABELS

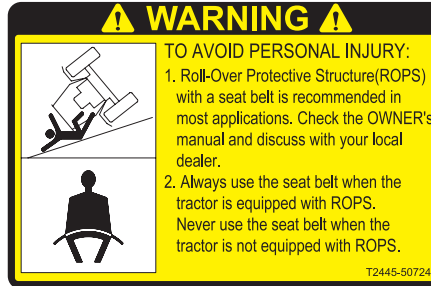


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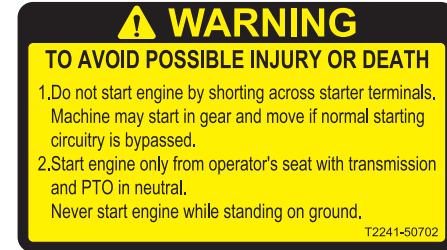
(1) Part No. : T2325-50743



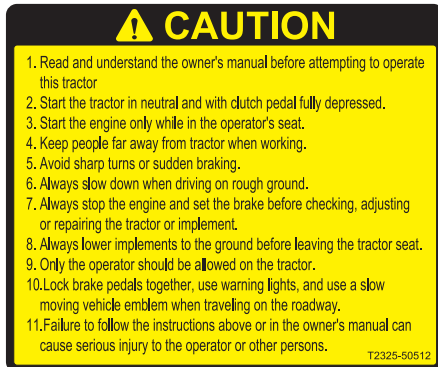
(3) Part No. : T2445-50724



(5) Part No. : T2241-50702



(2) Part No. : T2325-50512



(4) Part No. : T2625-55111



(6) Part No. : T2615-54112





(7) Part No. : T2615-53561



(8) Part No. : T2325-50701





SERVICING OF TRACTOR

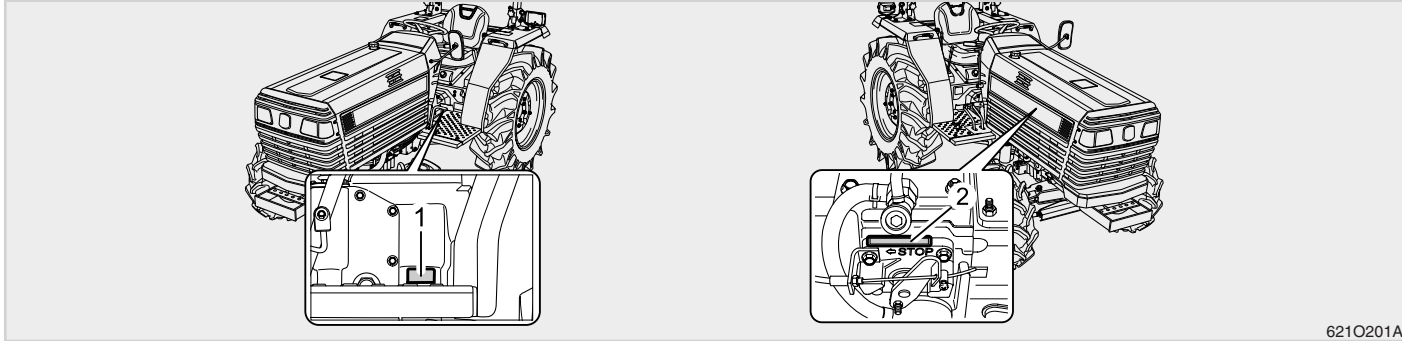
SERVICING..... 2-2

2

2



SERVICING



(1) Statutory Plate

Your dealer is interested in your new tractor and has the desire to help you get the most value 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 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.

(2) Engine Serial Number

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

The tractor serial number is located on the front axle support on the left side of the tractor. The engine serial number is located on the upper side of the engine head cover. Locate the serial numbers now and record them in the space provided.

Before using implements not sold by **KIOTI DISTRIBUTOR**, contact your nearest dealer, regarding safety in its application.

• Identification No.

• Engine Serial No.

• Transmission Serial No.

• Date of Purchase

To be filled in by purchaser



SPECIFICATIONS

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3

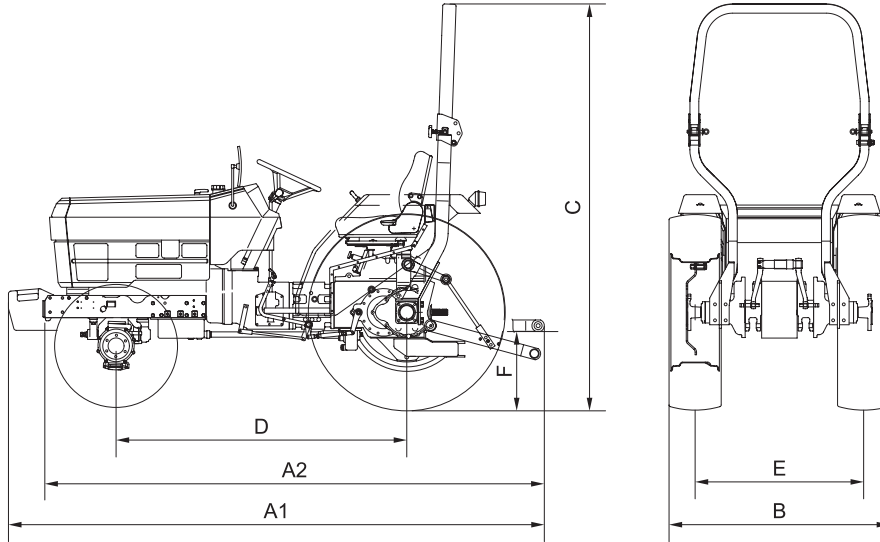
3



3-2

L3503 / LK45

SPECIFICATIONS EXTERNAL DIMENSIONS



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

6210301A

mm(in.)

ITEM	MODEL		ITEM	MODEL	
	L3503	LK45		L3503	LK45
1. Overall length (A1)	3,510 (138.2)	←	5. Wheel base (D)	1,780 (70.1)	1,792 (70.6)
2. Overall length (A2)	3,153 (124.1)	←	6. Front wheel tread (E)	1,130 (44.5)	1,165 (45.9)
3. Overall width (B)	1,460 (57.5)	1,480 (58.3)	7. Rear wheel tread (E)	1,024 ~ 1,414 (40.3 ~ 55.7)	1,066 ~ 1,440 (42.0 ~ 56.7)
4. Overall height (C)	2,140 (84.2)	2,415 (95.1)	8. Groundclearance (F)	336 (13.2)	370 (14.6)

※ A1 : Overall length including weight and 3 point hitch / A2 : Overall length excluding weight



GENERAL SPECIFICATIONS

ITEM			MODEL	
			L3503	LK45
Engine	Model		TD1700B	4A220A
	Number of cylinders		4	4
	Total displacement	cc	1,732	2,197
	Bore and stroke	mm(in.)	82 × 82 (3.2 × 3.2)	87 × 92.4 (3.4 × 3.6)
	Engine gross power	KW(HP)	26.1 (35)	33.56 (45)
	PTO Power	KW(HP)	21.15 (28.3)	28.2 (37.8)
	Rated revolution	rpm	2,800	2,600
Capacities	Fuel tank	L(u.s.gal.)	42 (11.1)	←
	Transmission oil	L(u.s.gal.)	28 (7.40)	26 (6.87)
	Front axle oil	L(u.s.gal.)	8 (2.11)	6 (1.59)
Drive train	Clutch		Mechanical	←
	Transmission	Shuttle	Mechanical	←
		Main	Partial synchro (3RD, 4TH)	←
		Range	Constant 2	←
		Speeds	8F × 8R	←



3-4

L3503 / LK45

ITEM			MODEL	
			L3503	LK45
Drive train	Ground speed (Tire for agricultural) km/h(m/h)	Forward 2,800/2,600 rpm	2.0 ~ 24.1 (1.24 ~ 14.98)	1.95 ~ 23.4 (1.21 ~ 14.54)
		Reverse (Max) 2,800/2,600 rpm	1.8 ~ 21.7 (1.11 ~ 13.48)	1.75 ~ 21.4 (1.09 ~ 13.30)
	4-wheel drive		Mechanical	←
	Quick turn (QT)		-	-
	Brake		Wet disc type	←
	Differential lock		Standard for rear axle	←
Tires	Agricultural	Front	8-16/4PR	9.5-16/6PR
		Rear	13.6-24/6PR	13.6-26/6PR
	Industrial	Front	-	-
		Rear	-	-
	Turf	Front	-	-
		Rear	-	-
Hydraulic system	Pump capacity L/min(gpm)		56.0 (14.78)	37.15 (9.81)
	Steering		Hydrostatic power steering	←
	Hydraulic lift control		Position	←
	3-point hitch		SAE Category I	←
	Max. lifting capacity kg(lbs)	24in.Behind	800 (1,764)	1,143 (2,520)
		Lower link end	1,204 (2,654)	-



ITEM			MODEL	
			L3503	LK45
PTO	Rear	Type	Dependent	←
		PTO shaft	∅ 35 mm × 6 Splines	←
		Speed (PTO rpm/engine rpm)	622/2,800, 781/2,800, 1,077/2,800, 1,286/2,800	578/2,600, 725/2,600
	Mid (optional)	PTO shaft	-	-
		Speed (PTO rpm/engine rpm)	-	-
Min. turning radius (with one rear wheel braked) m(feet)			2.65 (8.69)	2.95 (9.51)
Weight (with CABIN) kg(lbs)			1,680 (3,704)	1,580 (3,483)
Max. Drawbar vertical load kg(lbs)			250 (551)	250 (551)
Max. Trailer loading weight kg(lbs)			1,000 (2,205)	1,500 (3,307)



3-6

L3503 / LK45

TRAVELING SPEED

* AT RATED ENGINE RPM WITH STANDARD TIRES.

km/h(m/h)

Operating the lever		L3503		LK45	
Hi-Low	Main	Forward	Reverse	Forward	Reverse
Low	1	2.01 (1.25)	1.80 (1.12)	1.94 (1.21)	1.75 (1.09)
	2	2.52 (1.57)	2.27 (1.41)	2.44 (1.52)	2.2 (1.37)
	3	3.47 (2.16)	3.13 (1.94)	3.36 (2.09)	3.03 (1.88)
	4	6.21 (3.86)	5.60 (3.48)	6.02 (3.74)	5.42 (3.37)
High	1	7.78 (4.83)	7.01 (4.36)	7.54 (4.69)	6.8 (4.23)
	2	9.77 (6.07)	8.81 (5.47)	9.47 (5.88)	8.54 (5.31)
	3	13.47 (8.37)	12.14 (7.54)	13.06 (8.12)	11.77 (7.31)
	4	24.07 (14.96)	21.69 (13.48)	23.35 (14.51)	21.04 (13.07)



IMPLEMENT LIMITATIONS

The **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 the **KIOTI** tractor may result in malfunctions or failures of the tractor, damage to other property and injury to the operator or others. [Any malfunctions or failures of the tractor resulting from use with improper implements are not covered by the warranty.]

mm(in.)

Model \ Item	Tread (max. width)		Lifting Capacity max. loading weight (24 in. aft of hitch)
	Front	Rear	
L3503	1,130 (44.5)	1,414 (55.7)	800 kg (1,764 lbs)
LK45	1,165 (45.9)	1,440 (56.7)	1,143 kg (2,519 lbs)

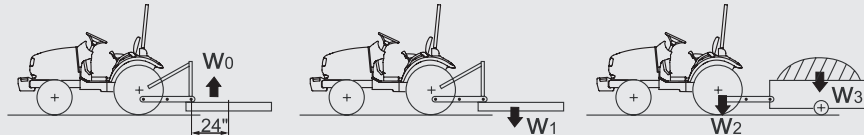
Model \ Item	Actual figures		Trailer loading weight W_3 Max. capacity
	Implement weight W_1 and / or size	Max. Drawbar Load W_2	
L3503	As in the following list (shown in the next page)	250 kg (551 lbs)	1,000 kg (2,205 lbs)
LK45			1,500 kg (3,307 lbs)

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. drawbar load W_2

Trailer loading weight The max. loading weight for trailer (without trailer's weight) : W_3



621O301A

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



MEMO





DESCRIPTION OF OPERATING SYSTEM

EXTERIOR VIEW	4-2
INSTRUMENT PANEL AND SWITCHES	4-4
FOOT AND HAND CONTROLS	4-5

4

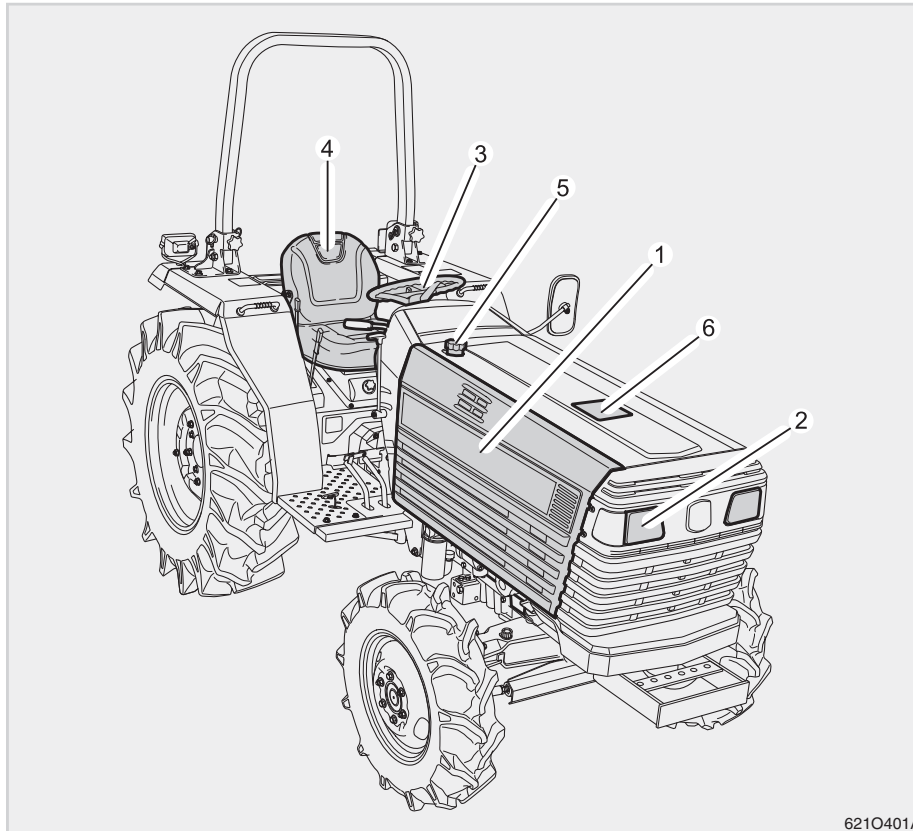
4



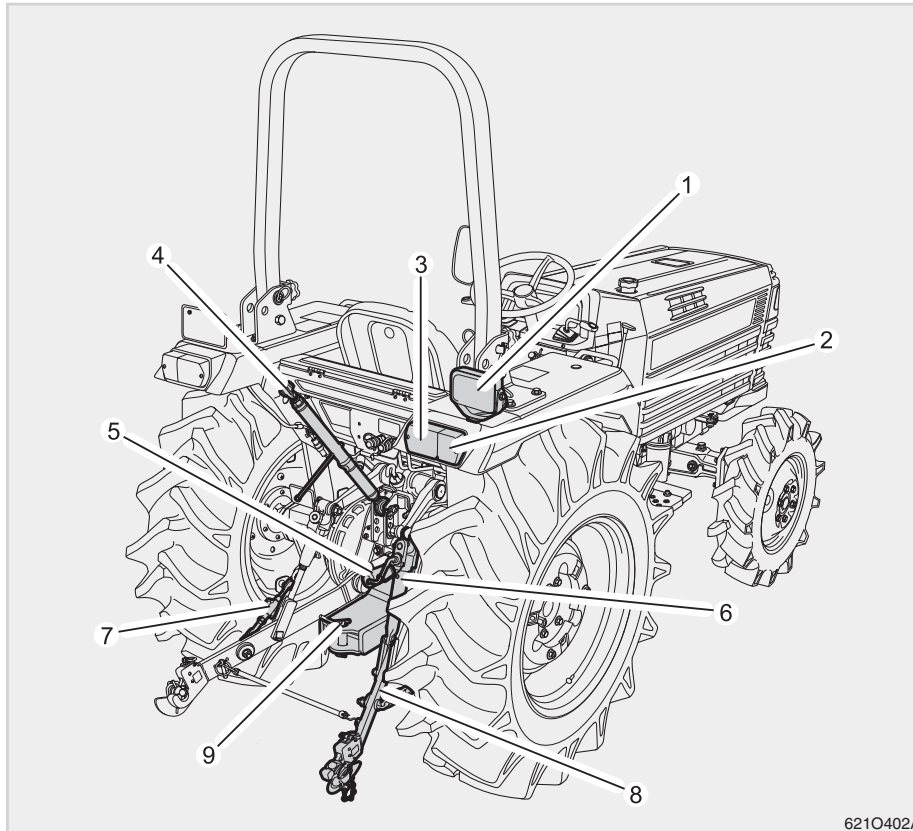
4-2 L3503 / LK45

EXTERIOR VIEW

ROPS MODEL



- (1) Bonnet (RH)
- (2) Head Light
- (3) Steering Wheel
- (4) Seat
- (5) Fuel Inlet Cover
- (6) Cover



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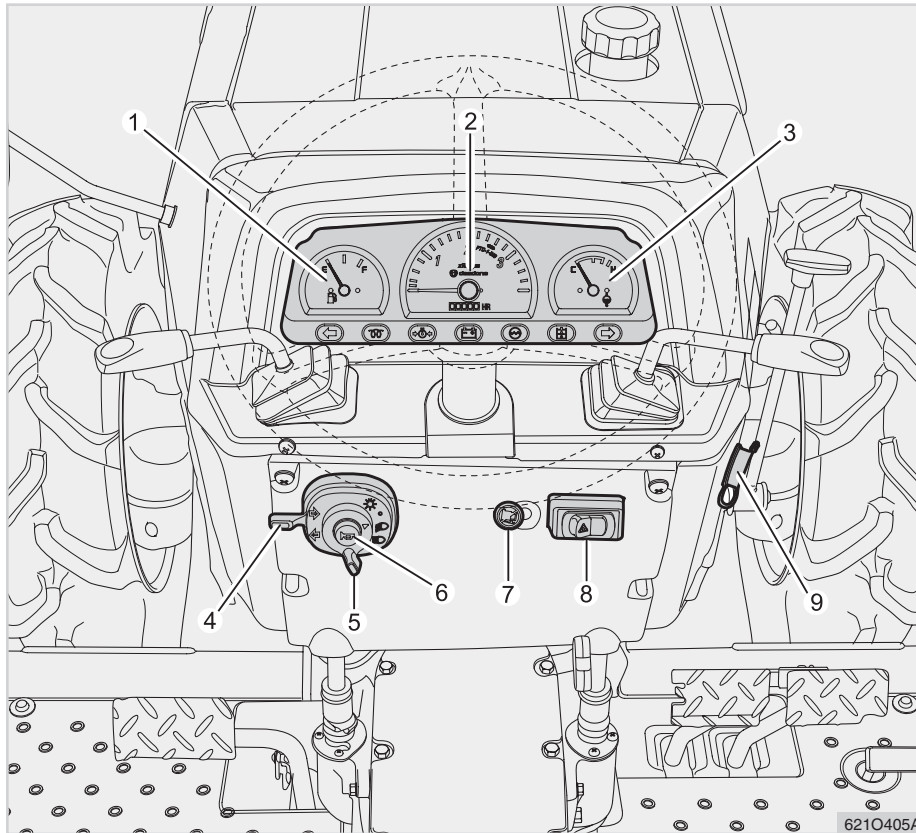
- (1) Working Lamp
- (2) Turn Signal Lamp
- (3) Brake Lamp
- (4) Top Link
- (5) PTO Shield Cover
- (6) Lifting Rod
- (7) Ass'y, Check Chain
- (8) Lower Link
- (9) Draw Bar



4-4

L3503 / LK45

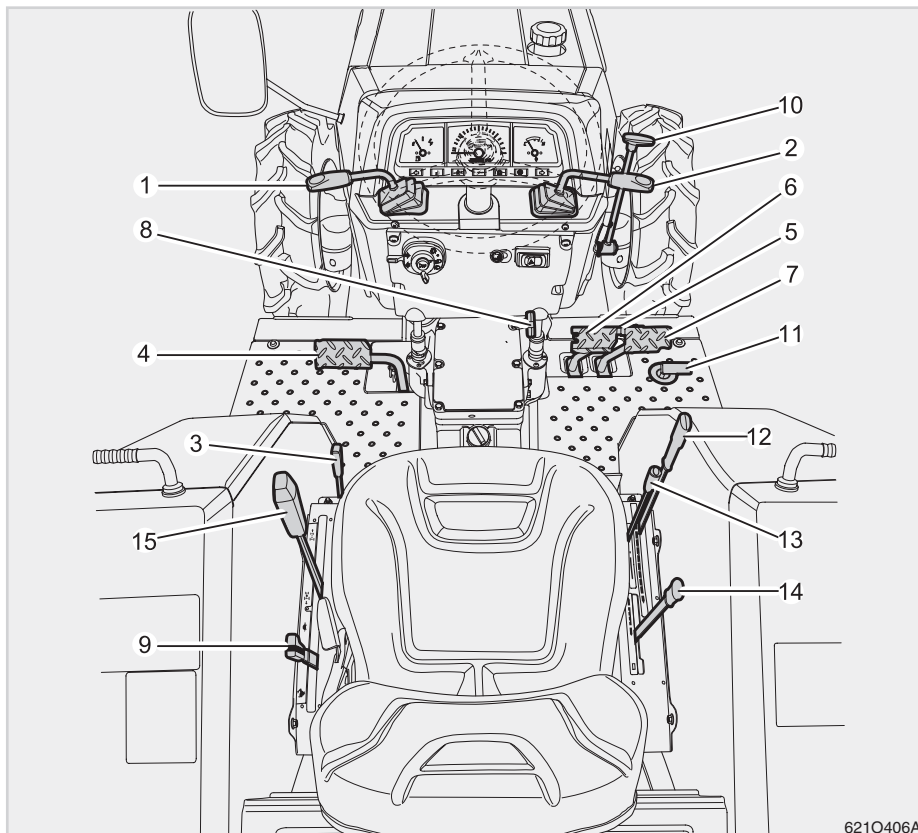
INSTRUMENT PANEL AND SWITCHES



- (1) Fuel Gauge
- (2) Engine Revolution Gauge
- (3) Cooling Water Temp. Gauge
- (4) Turn Signal Switch
- (5) Head Light Switch
- (6) Horn Switch
- (7) Engine Emergency Switch
- (8) Hazard Lamp Switch
- (9) Key Switch



FOOT AND HAND CONTROLS



- (1) PTO Shift Lever
- (2) Main Shift Lever
- (3) Front Wheel Drive Lever
- (4) Clutch Pedal
- (5) Brake Pedal Lock
- (6) Brake Pedal (L)
- (7) Brake Pedal (R)
- (8) Parking Brake Lock Lever
- (9) Hi-Lo Shift Lever
- (10) Hand Throttle
- (11) Foot Throttle
- (12) Position Control Lever
- (13) Double Acting Lever
- (14) Draft Control Lever
- (15) Shuttle Lever



MEMO





OPERATION

5

PRE-OPERATION.....	5-2
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OPERATING THE TRACTOR.....	5-11
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PRE-OPERATION DAILY 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

To avoid personal injury:

- **Be sure to check and service the tractor on a level surface with the engine shut off and the parking brake “ENGAGED”.**
- **Refuel (See “DAILY CHECK” in periodic service section.)**
- **Care of danger, warning and caution labels (See “DANGER, WARNING AND CAUTION LABELS” in safety precautions section.)**

CHECK ITEM

- Walk around inspection.
- Check the engine oil level
- Check the transmission oil level
- Check the coolant level
- Clean the grill and radiator screen.
- Check the air cleaner and evacuator valve.
- Check the brake pedal
- Check all dash gauges and indicators
- Check head lights, tail lights, and all working lights.
- Check accessible wiring harness for any damage.
- Check the seat belt and **ROPS** for damage.
- Refuel (See "daily check" in the periodic service section)
- Check all danger and warning labels.

OPERATING NEW TRACTOR

How a new tractor is handled and maintained determines the life of the tractor.

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



tractor, it is very important to properly break-in your tractor.

In handling a new tractor, the following precautions should be observed.

- You should not operate your tractor at full speed for the first fifty hours of use.
- Avoid sudden starts and stops.
- In cold climates, allow your tractor plenty of time to warm up.
- Do not run the engine at speeds faster than necessary.
- Use due caution when operating your tractor on rough roads or terrain.

The above precautions are not limited to new tractors only, but are a good practice for tractors regardless of their age.

CHANGING LUBRICATING OIL FOR NEW TRACTORS

Special attention should be given to new tractors lubrication oil. New parts are not accustomed to each other and are not broken in properly. Small metal grit can develop in the lubricating system as metal parts begin to "break in" and continuous use of the contaminated oil can cause damage and failure.

Therefore you should change the tractor's oil after the break-in period.

For further details of the oil change and service schedule, see "maintenance" section.

OPERATING THE ENGINE



CAUTION

To avoid personal injury:

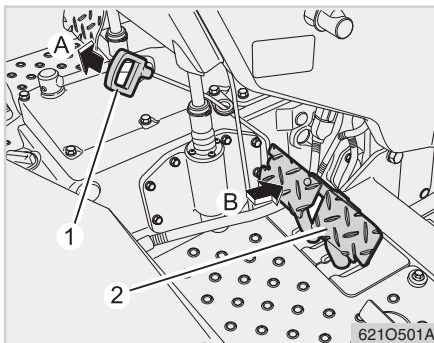
- **You must read and understand the warning and caution labels on your tractor.**
- **Proper ventilation is required when operation your tractor inside a building or enclosed area. Remember that exhaust fumes can be deadly.**
- **Never start your tractors engine while standing on the ground. This can prevent unexpected accident from happening.**



⊕ IMPORTANT

- Using starting fluid or ether to start your tractor will cause damage and void your tractors warranty.
- A good way to start your tractors engine after a long storage period you should pull the stop knob and turn the key over. This will allow time for oil to reach every part of the tractors engine before starting.
- To avoid damage to the starter and battery you should never continuously start your tractor for more than 10 second at a time.

STARTING THE ENGINE



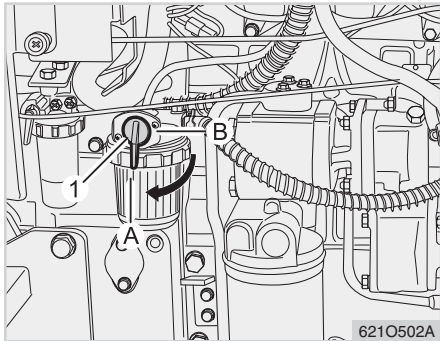
- (1) Parking Brake Lever
(2) Interlock the Brake Pedals
(A) "PULL"
(B) "DEPRESS"

1. 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 parking brake pedals are fully depressed before pulling the parking brake lever up.

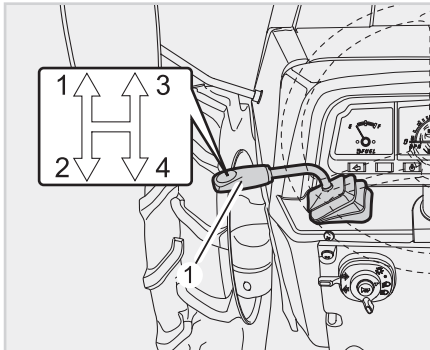


(1) Fuel Cock

(A) OPEN

(B) CLOSE

2. MAKE SURE THE FUEL COCK IS IN THE OPEN POSITION.

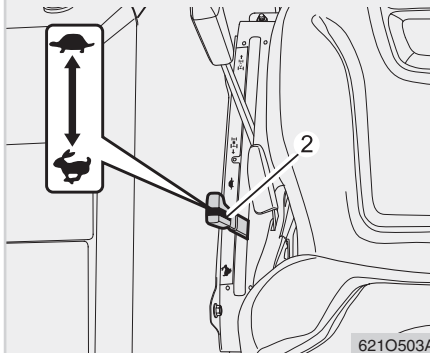


(1) P.T.O Clutch Lever

(2) Range Gear Shift Lever (Hi-Lo)

🐎 "HIGH SPEED"

🐎 "LOW SPEED"

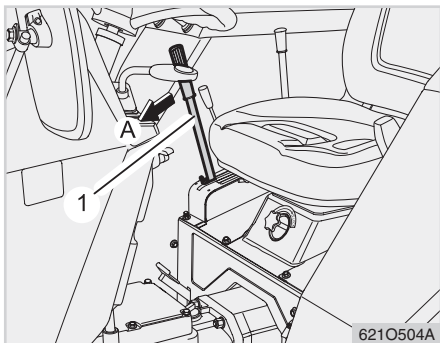


3. PLACE THE P.T.O CLUTCH LEVER IN "NEUTRAL" POSITION.

4. PLACE THE RANGE GEAR SHIFT LEVER (HI-LO) IN "NEUTRAL" POSITION.

MAIN GEAR SHIFT LEVER & HI-LO GEAR SHIFT LEVER

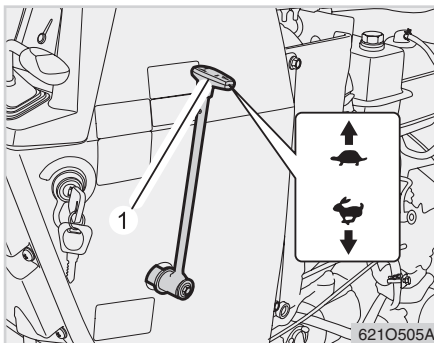
The main gear shift lever pattern is in the form of an "H". The hi-lo gear shift lever moves two stages, "high" and "low". By combination and use of the main gear shift lever and the hi-lo gear shift lever, it is possible to obtain four speeds forward and reverse in "high" range and four speeds forward and reverse in "low" range, or a total of eight speeds forward and eight speeds reverse.



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

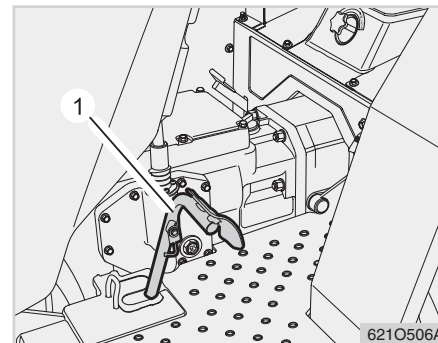
5. MOVE THE POSITION CONTROL LEVER FORWARD.

To lower implement, move the position control lever forward.



(1) Hand Throttle Lever
↑ "INCREASE"
↓ "DECREASE"

6. SET THE THROTTLE LEVER TO ABOUT HALF WAY



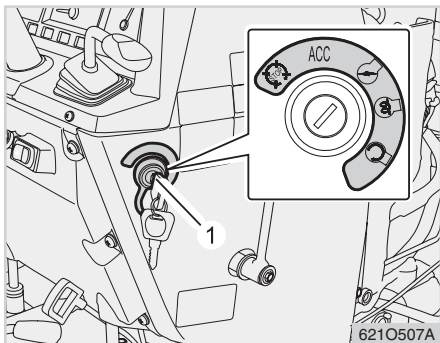
(1) Clutch Pedal

7. DEPRESS THE CLUTCH PEDAL.

8. TURN THE KEY TO "START" POSITION AND RELEASE WHEN THE ENGINE STARTS.

⊕ IMPORTANT

- The engine will not start unless the range gear shift lever (Hi-Lo) and the P.T.O clutch lever are in the "OFF" position.



(1) Key Switch

ACC ACC

GLOW

STOP

KEY ON

START

Insert the key, turn it once clockwise, and then it is located on ACC position and the work lamp and wiper can be operated. turn it once more clockwise and then electric circuit is connected and it is located on KEY ON position. At KEY ON position, the engine oil pressure lamp (red) and the electric charging warning lamp (red) illuminate, preheating is automatically operated, the preheating lamp (Orange) illuminates

for about 8 sec., and then turned off. If the key switch is fully turned right with the clutch pedal depressed, the starter motor is started and the engine is run. If the key is free from the hand, it is returned to the KEY ON position. The engine is run, the engine oil pressure warning lamp and electric charging warning lamp are turned off. In case of manual preheating, hold the key on the preheating position during the preheating time between KEY ON and STARTER.

⊕ IMPORTANT

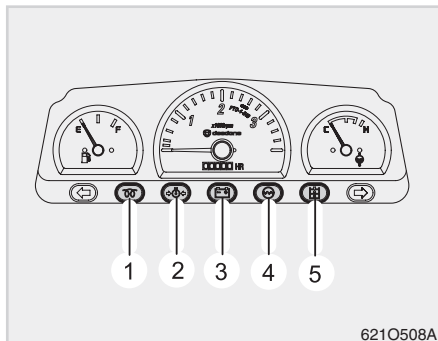
- Because of the safety device, the engine may not be started except when the clutch is disengaged.

📖 NOTE

- When ambient temperatures are colder, a longer pre-heat time is necessary.

⚠ WARNING

- Do not operate the starter motor continuously for more than 10 seconds.
- If the engine does not start; turn the switch to "OFF", wait 30 seconds, and repeat the starting procedure.
- Never engage the starter motor before the engine stops turning.



- (1) Preheat Indicator
- (2) Engine Oil Pressure Warning Lamp
- (3) Electric Charge Warning Lamp
- (4) Coolant Level Warning Lamp
- (5) Hydraulic Warning Lamp

9. CHECK TO SEE THAT ALL THE LAMPS ON THE EASY CHECKER ARE "OFF".

10. RELEASE THE CLUTCH PEDAL.

If the lamp is still on, immediately stop the engine and determine the cause.

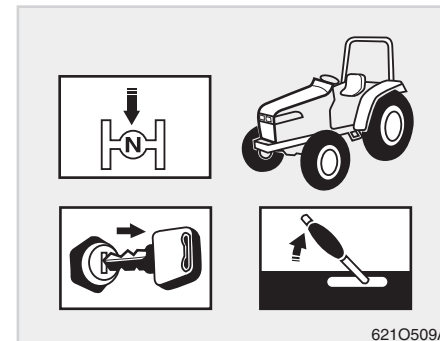
[CHECK EASY CHECKER LAMPS]

1. When the key is turned "ON", lamps (2), (3) should come on. If trouble should occur at any location while the engine is running, the warning lamp corresponding to that location comes on.
2. Glow plug indicator (1) also comes on when the key is turned "ON" to preheat the engine and goes off automatically when preheat is completed.

⊕ IMPORTANT

- Daily checks with the Easy Check only, are not sufficient. Never fail to conduct daily checks carefully by referring to Daily Check. (See "DAILY CHECK" in Section 10)

STOPPING THE ENGINE



1. You must first slow the engine to the idle position before turning the engine off.
2. Remove the key.



WARMING UP

CAUTION

- During warm up of the engine, be sure that the parking brake is set.
- During warm up of the engine, make sure that all shift levers are in the neutral position.

After starting your tractor's engine allow five minute warm up before applying any load to the tractor. This will allow time for oil to reach every part of the engine. If a load is applied to the tractor before it has time to warm up, serious damage, such as can occur premature wear, breakage, or seizure.

WARM-UP AND TRANSMISSION OIL IN THE LOW TEMPERATURE RANGE

- Hydraulic oil serves as transmission fluid. In cold weather, the oil may be cold with increased viscosity. This can cause delayed oil circulation or abnormally low hydraulic pressure for some time after engine start-up. This in turn can result in trouble in the hydraulic system. To prevent the above, observe the following instructions:
- Warm up the engine at about 50 % of rated rpm according to the table below:

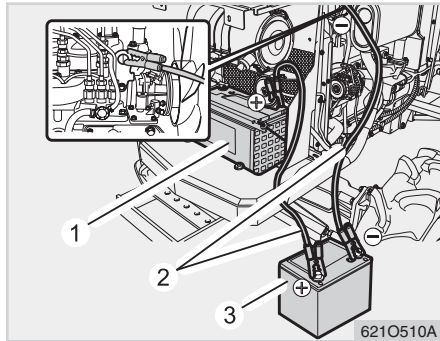
Ambient temperature	Warm-up time requirement
Above 0°C (32°F)	At least 5 minutes
0 ~ -10°C (32 ~ 14°F)	5 ~ 10 minutes
-10 ~ -20°C (14 ~ -4°F)	10 ~ 20 minutes
Below -20°C (-4°F)	More than 20 minutes

IMPORTANT

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



JUMP STARTING



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

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

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

1. Use a battery of the same voltage as the disabled tractor to jump start the tractor. Locate the good battery in a safe place where the jumper cables will reach.
2. Engage the parking brake of the tractor and shift the transmission gear to neutral position.

3. Put on safety goggles and rubber gloves.
4. Place the battery hole caps to proper position.
5. Attach the red clamp to the positive terminal of the dead battery, and attach the other end to the positive terminal of the helper battery.
6. Clamp the black cable to the Engine hooks, and attach the other end to the negative cable of the helper battery.
7. If the helper battery is in another vehicle, do not allow the tractor and the other vehicle to touch. Start the vehicle's engine after connecting the cables and let it run for a few moments. Turn off all accessories on both vehicles. Then start the disabled tractor.
8. Disconnect the battery cables in the exact opposite order as they were attached.

⚠ WARNING

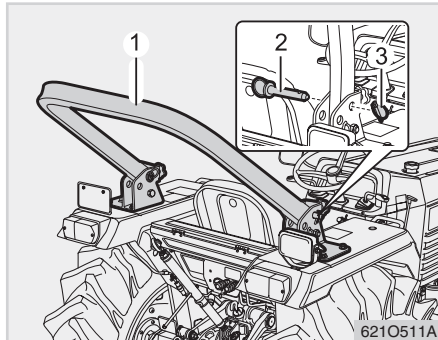
- **Keep sparks, open flames and smoking materials away from batteries at all times. Gases emitted from batteries are explosive.**

⊕ IMPORTANT

- **This tractor has a 12 volt negative ground starting system. Use only the same voltage for jump starting the tractor.**
- **The use of a higher voltage system for jump starting can cause severe damage to the tractors electrical system.**
- **Use only a matching voltage source when "Jump Starting" a dead battery.**



OPERATING THE TRACTOR OPERATING ROPS TO FOLD THE ROPS



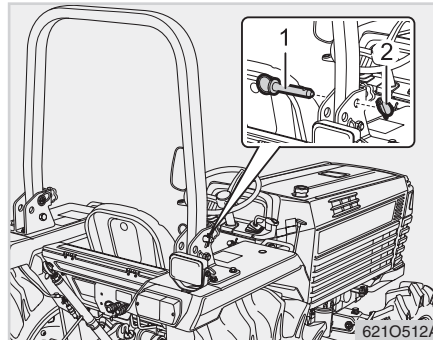
- (1) ROPS
(2) Set Pin
(3) Snap Pin

1. Remove the clip pin and set pin.

CAUTION

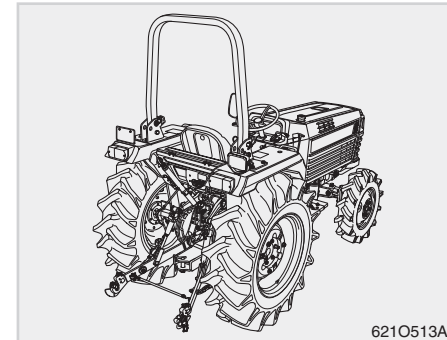
- You should always stop the engine, remove the key and set the parking brake before raising or folding the rops.
- Always perform such tasks from a safe and stable position at the rear of the tractor.
- Folding the ROPS should only be done when absolutely necessary, and should be returned to the up-right position as soon as possible.

FOLD ABLE ROPS



- (1) Set Pin
(2) Snap Pin

The standard fold-down roll bar makes it quick and easy to maneuver in low-clearance areas when equipped with the fold able ROPS is replaced with a sturdy 4-post ROPS with a steel plate roof for added safety.



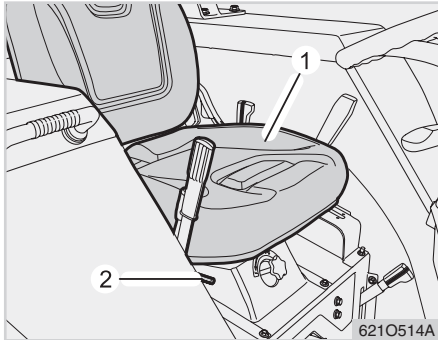
CAUTION

To avoid personal injury:

- Make sure the pin are properly installed and secured.



STARTING



(1) Seat

(2) Position Adjust Lever

1. ADJUSTING THE OPERATOR'S POSITION

(1) OPERATOR'S SEAT

CAUTION

To avoid personal injury:

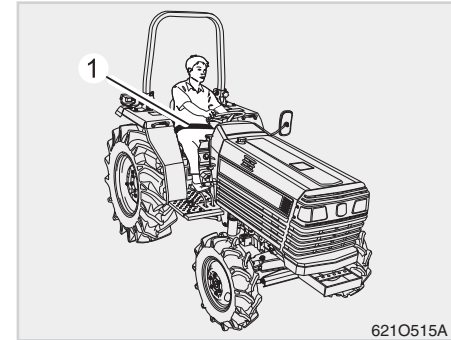
- Make sure that the seat is completely secured after each adjustment.
- Do not allow any person other than the driver to ride on the tractor.

(2) TRAVEL ADJUSTMENT

Pull out the position adjust lever and slide the seat backward or forward, as required. The seat will lock in position when the lever is released.

IMPORTANT

- After adjusting the operator's seat, be sure to check that the seat is properly locked.
- The seat can be tipped forward so that there would be no fear of the seat getting wet in the rain.



(1) Seat Belt

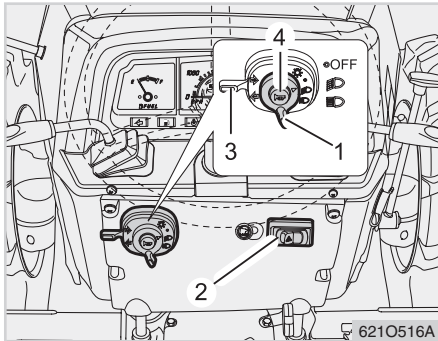
(3) SEAT BELT

CAUTION

To avoid personal injury:

- Always use your seat belt when the ROPS is installed.
- Do not use the seat belt if your tractor is not equipped with a ROPS or when it is removed.

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



- (1) Head Light Switch
- (2) Hazard Switch
- (3) Turn Signal Light Switch
- (4) Horn Switch

2. SELECTING LIGHT SWITCH POSITIONS

(1) HEAD LIGHT SWITCH

OFF : Head lights OFF.

☰○ : Head lights - Low Beam ON.

☷○ : Head lights - High Beam ON.

(2) HAZARD LIGHT SWITCH

When hazard light switch is pushed to the  position, the hazard lamps blink.

(3) TURN SIGNAL LIGHT SWITCH

To indicate a right turn, pull to upward.

To indicate a left turn, push down turn to downward.

When the left or right turn signal is activated in combination without the hazard lights, the indicated turning light will flash and the other will be off.

↔ : Turn signal light and tail light ON

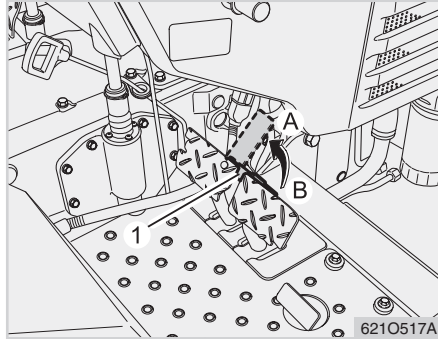
(4) HORN SWITCH

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

 : Horn switch

NOTE

- Be sure to return switch to center position after turning.



(1) Brake Pedal Lock
(A) Release (B) Lock

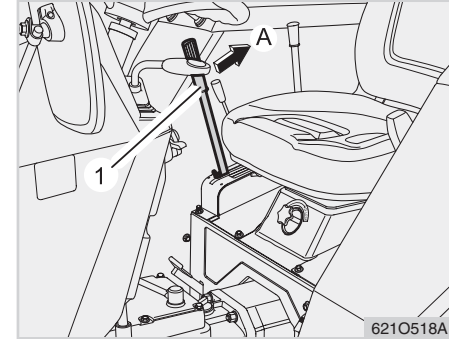
3. CHECKING THE BRAKE PEDAL

WARNING

To avoid personal injury:

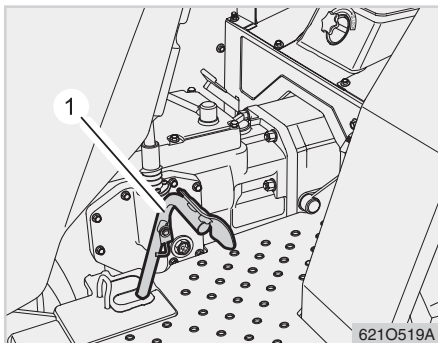
- **Applying one rear wheel brake at a time can cause the tractor to swerve or roll over at high speeds.**

- (1) Before operating the tractor on the road or before applying the parking brake, be sure to interlock the right and left pedals as illustrated.
- (2) Use individual brakes to assist in making sharp turns at slow speeds (Field Operation Only).
Disengage the brake pedal lock and depress only one brake pedal.
- (3) Be sure brake pedals have equal adjustment when using locked together.



(1) Position Control Lever
(A) UP

4. RAISE THE IMPLEMENT. (SEE “HYDRAULIC UNIT” SECTION)



(1) Clutch Pedal

⊕ IMPORTANT

To help prevent premature clutch wear.

- The clutch pedal must be engaged slowly and disengaged quickly.
- Do not rest your foot on the clutch pedal.
- Select the proper gear and engine speeds according to the type of job you are doing.

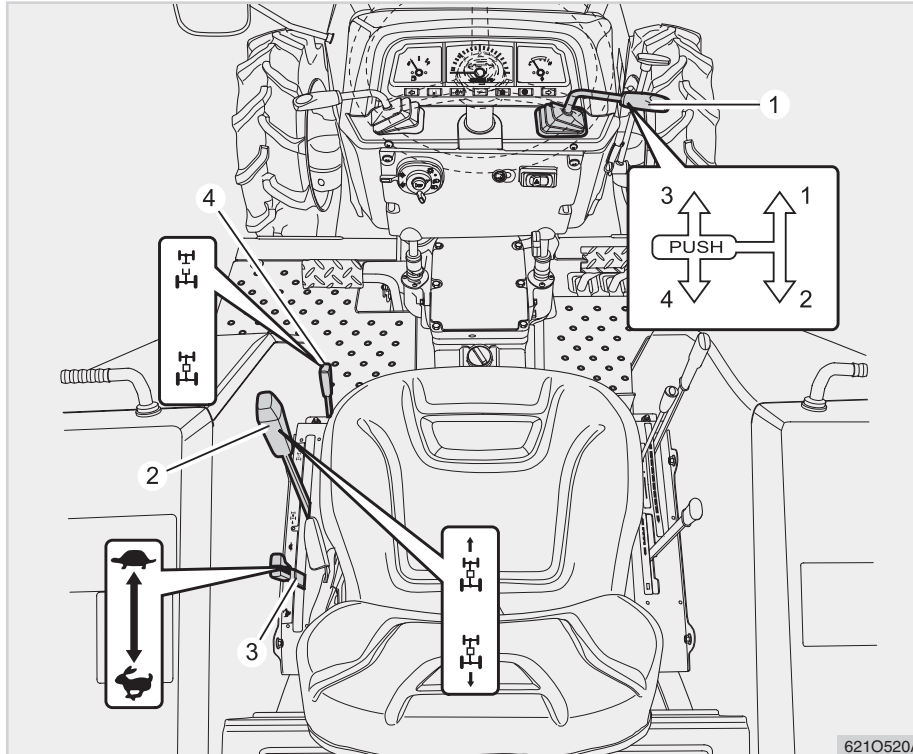
5. DEPRESS THE CLUTCH PEDAL.

⚠ CAUTION

To avoid personal injury:

- Do not release the clutch suddenly, it may cause the tractor to lunge forward unexpectedly.

The clutch is disengaged when the clutch pedal is fully pressed down.



- (1) Main Gear Shift Lever
(2) Shuttle Shift Lever
(3) Range Gear Shift Lever (Hi-Lo)
(4) Front Wheel Drive Lever

(N) Neutral Position

⬆ "HIGH"
⬆ "LOW"

⬆ - FORWARD
⬆ - REVERSE

⬆ "2WD"
⬆ "4WD"

6. SELECTING THE TRAVEL SPEED.

(1) MAIN SHIFT LEVER

The main shift is fully synchronized to shift without stopping just by depressing the clutch pedal.

(2) SHUTTLE SHIFT LEVER

Push forward or pull backward to select forward or reverse. The direction of travel can be changed without changing the main shift.

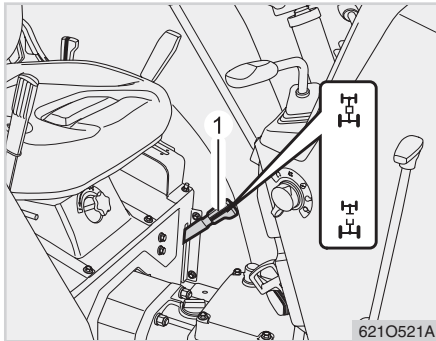
(3) HI-LOW SHIFT LEVER

it is difficult to shift the range gear, take the following actions.

- 1) Be sure the range gear shift lever is in neutral position.
- 2) Release clutch pedal.
- 3) Release the speed control pedal to neutral.
- 4) Depress clutch pedal and then shift the range gear shift lever.

⊕ IMPORTANT

- To avoid transmission damage, depress clutch pedal and stop tractor before shifting between ranges.



(1) Front Wheel Drive Lever

↑ "ON"

↓ "OFF"

(4) FRONT WHEEL DRIVE LEVER

The front wheel drive should always be engaged when the tractor is stopped. Shift the lever to the "ON" position to engage the front wheel.

FRONT WHEEL DRIVE IS EFFECTIVE FOR THE FOLLOWING JOBS:

1. When greater pulling force is needed, such as working in a wet field, when pulling a trailer or when working with a front-end loader.
2. When working in sandy soil.
3. When working on a hard soil where a rotary tiller might push the tractor forward.



IMPORTANT

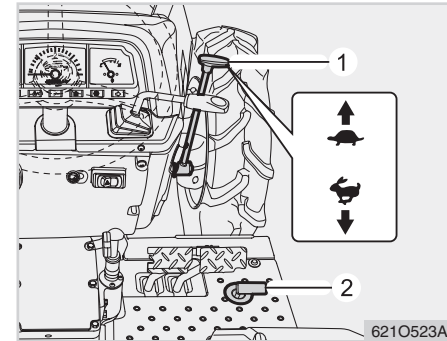
To avoid personal injury:

- **You should not engage your front wheel drive while traveling at road speeds. This can cause your tractor to stop quickly, and unexpectedly.**



CAUTION

- **Depress the clutch pedal before engaging the front wheel drive lever.**
- **Tires will wear quickly if front wheel drive is engaged on paved roads.**



(1) Hand Throttle Lever

(2) Foot Throttle

↑ INCREASE

↓ DECREASE

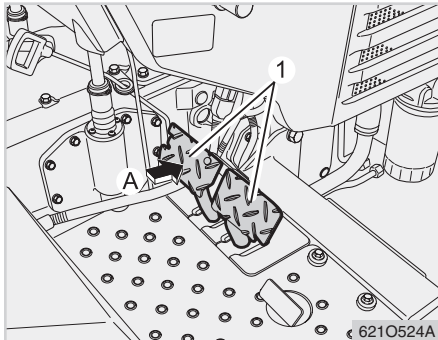
7. ACCELERATE THE ENGINE

(1) HAND THROTTLE LEVER

When the hand throttle is pushed forward, the engine speed will decrease. When pulled backward, the engine speed will increase.

(2) FOOT THROTTLE

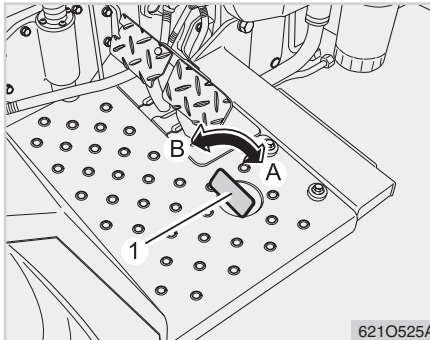
Use the foot throttle when traveling on the road. Press down on it for higher speed. The foot throttle is interlocked with the hand throttle lever; when using the foot throttle, keep the hand throttle lever in low idling position.



(1) Brake Pedals
(A) Depress

8. UNLOCK THE PARKING BRAKE AND SLOWLY RELEASE THE CLUTCH PEDAL.

To release the parking brake, simply depress the brake pedals again.



(1) Foot Thorottle
(A) Increase (B) Decrease

The shuttle shift lever may be shifted while the tractor is moving slowly and the clutch is depressed. Sudden gear shift changes may cause transmission damage.

⚠ WARNING

To avoid personal injury:

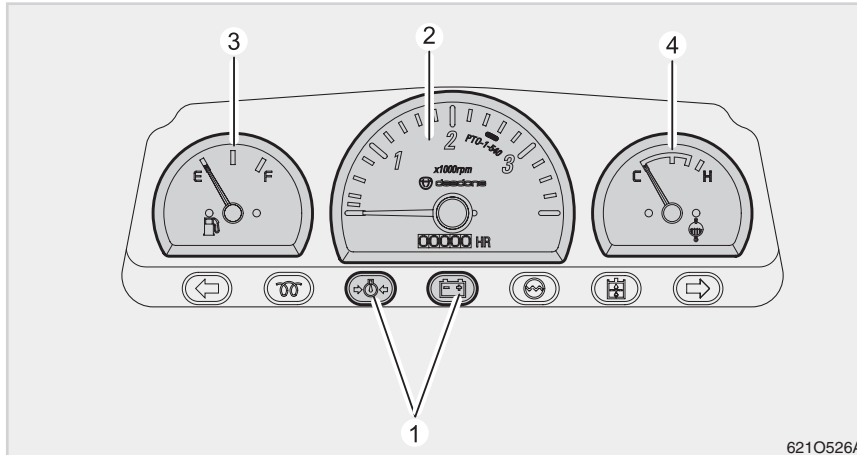
- If your tractor moves while on level ground with your foot of the control pedal, do not operate the tractor.
- Consult your KIOTI dealer.

STOPPING

1. Slow the engine to idle
2. Depress the clutch and brake pedal. (Manual model)
3. After the tractor has stopped, disengage the P.T.O, lower the implement, shift the transmission into neutral, release the clutch pedal and set the parking brake.



CHECK DURING DRIVING IMMEDIATELY STOP THE ENGINE IF



(1) Easy Checker
(2) Hourmeter/Tachometer

(3) Fuel Gauge
(4) Coolant Temperature Gauge

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

While driving make the previous checks to ensure that all parts are functioning properly.

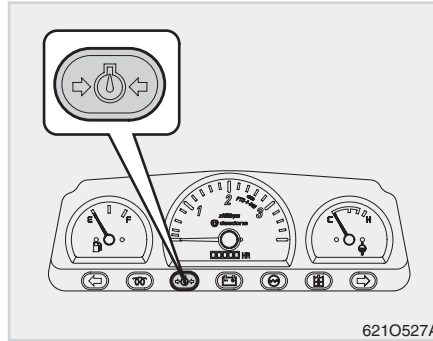


EASY CHECKER

If warning lamps come on while operating the engine, immediately stop the engine and check for the cause.

Never operate the tractor while warning lamps are on.

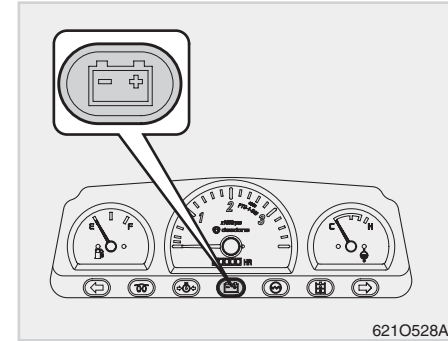
ENGINE OIL PRESSURE INDICATOR



When the oil pressure in the tractors engine falls below the prescribed level, the warning lamp will illuminate.

If this should happen during tractor operation and it does not go off when the engine is accelerated above 1,000 rpm, check the engine oil level.

ELECTRICAL CHARGE INDICATOR



If the alternator is not charging the battery, the warning lamp in the Easy Checker will come on.

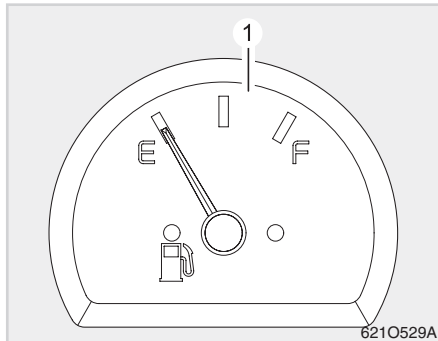
If this should happen during operation, check the electrical charging system or consult your local **KIOTI** dealer.

NOTE

- For checking and servicing of your tractor, consult your local **KIOTI** dealer for instructions.



FUEL GAUGE



(1) Fuel Gauge
"E" EMPTY "F" FULL

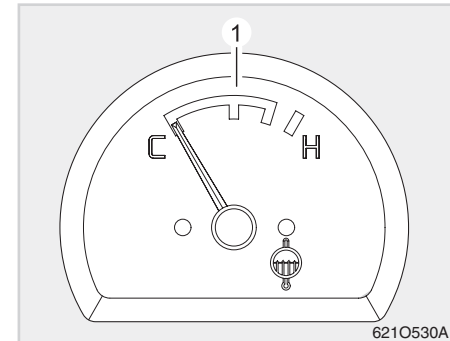
When the key switch is on, the fuel gauge indicates the fuel level.
Be careful not to empty the fuel tank. Otherwise air may enter the fuel system.

Should this happen, the system should be bled (See "Bleeding Fuel System" in as required in Periodic Service Section.)

Wait until engine is warm enough.
Do not operate tractor before temp.

Be careful not to exceed cooling water temperature over heated (red mark on temp meter) before operating tractor, always check the amount of cooling water in the radiator.

COOLANT TEMPERATURE GAUGE



(1) Coolant Temperature Gauge
"C" COOL "H" HOT



CAUTION

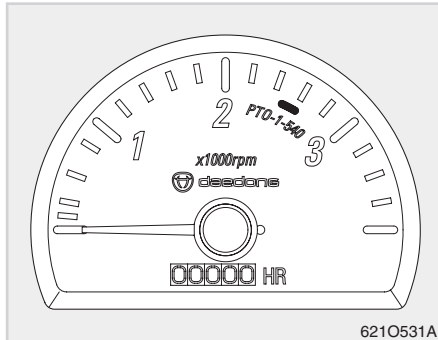
To avoid personal injury:

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

1. When the key switch is turned "ON" this gauge indicates the temperature of the coolant. "C" is for cold, and "H" is for hot.



HOURLMETER / TACHOMETER



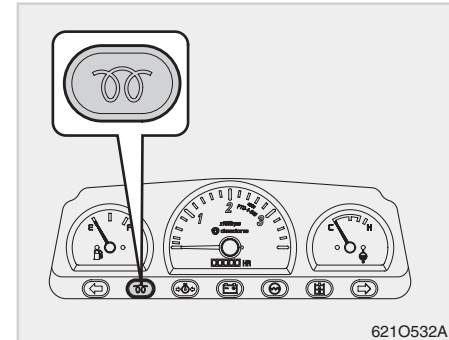
HOURL METER

Below the tachometer is the hour meter which indicates the total hours of engine operation. It is used for determining service intervals. (Refer to the Maintenance section of this manual).

TACHOMETER

The tachometer shows engine speed in RPM's (Revolutions Per Minute) as indicated by the arm of the meter. Note the place on the tachometer which marks the speed in first gear of the Power Take Off (PTO). When the engine is running at the indicated RPM's of the PTO mark, the PTO shaft will turn at 540 RPM's.

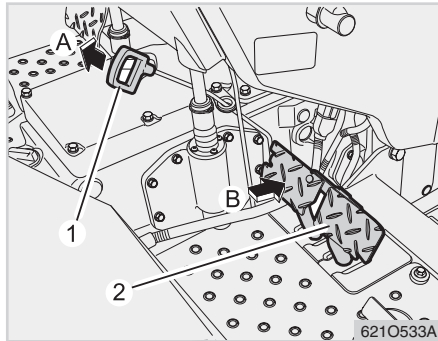
GLOW PULG LAMP



When the key switch is turned ON, the preheating lamp illuminates, and when the preheating is completed, it is automatically turned off.



PARKING PARKING BRAKE LEVER



(1) Parking Brake Lever

(2) Interlock the Brake Pedals

(A) PULL "Lock" (B) DEPRESS

⚠ CAUTION

To avoid personal injury:

- Always set the parking brake and stop the engine before leaving the tractor seat.

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

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.

⚠ WARNING

- **Apply the parking brake and place the chocks at the rear wheels when parking.**
- **When parking the vehicle on a hill, position the shift lever at low forward (1st gear) for uphill and low reverse (1st gear) for downhill. Set the parking brake and chock the wheels.**
- **Do not park on steep hills. The vehicle may roll down and cause an accident.**
- **Leaving transmission in gear with the engine stopped will not prevent tractor from rolling. Park on level ground whenever possible.**

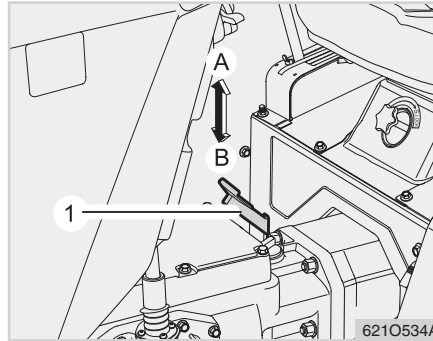
⊕ IMPORTANT

- To prevent damage to the parking brake lever, make sure that brake pedals are fully depressed before pulling the parking brake lever up.



2. Before getting off the tractor, disengage the P.T.O, lower all implements, place all control levers in their neutral positions, set the parking brake, stop the engine and remove the key.
3. If it is necessary to park on an incline, be sure to chock the wheels to prevent accidental rolling of the machine.

OPERATING TECHNIQUES DIFFERENTIAL LOCK



(1) DIFFERENTIAL LOCK
(A) DISENGAGED (B) ENGAGED

⚠ WARNING

To avoid personal injury due to loss of steering control.

- *Do not operate the tractor at high speeds with the differential lock engaged.*
- *Do not attempt to turn with the differential lock engaged.*

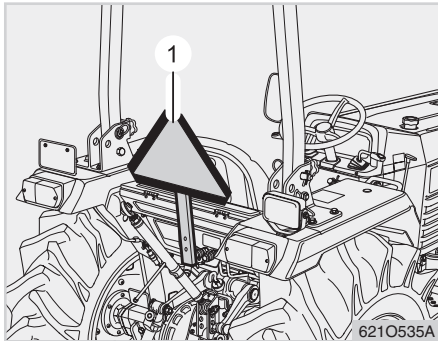
If one of the rear wheels should slip, use the differential lock. This will cause both wheels to turn together. The differential lock is engaged only when the pedal is depressed.

⊕ IMPORTANT

- **When using the differential lock, always slow the engine and press the differential lock down.**
- **To prevent damage to power train, do not engage differential lock when one wheel is spinning and the other is completely stopped.**
- **If the differential lock cannot be released in the above manner, step lightly on the brake pedals alternately.**



OPERATING THE TRACTOR ON A ROAD



(1) SMV



CAUTION

To avoid personal injury:

- To help assure straight line stops when driving at transport speeds, lock the brake pedals together. Uneven braking at road speeds could cause the tractor to roll-over.
- When traveling on road with 3-point hitch mounted implement attached, be sure to have sufficient front weight on the tractor to maintain steering ability.

You should make sure that the warning lamps and SMV sign are clean and visible at all times. If you are towing rear mounted equipment or implements you will need to install the warning lamps and SMV sign on the equipment.



CAUTION

To avoid personal injury:

- Always back up when going up a steep slope. Driving forward could cause the tractor to tip over backward. Stay off hills and slopes too steep for safe operation.
- Avoid changing gears when climbing or descending a slope.
- If operating on a slope, never disengage the clutch or shift levers to neutral. Doing so could cause loss of control.
- Do not drive the tractor close to the edges of ditches or banks which may collapse under the weight of the tractor. Especially when the ground is loose or wet.

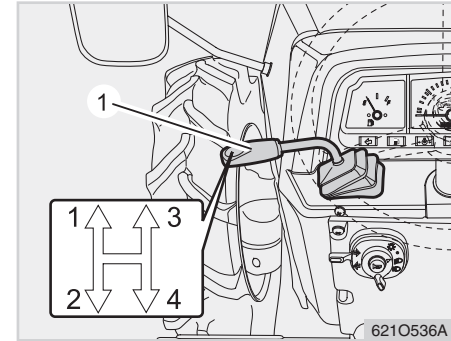


1. Be sure that the wheels are adjusted to provide the maximum stability possible.
2. You should slow down for rough roads, slope and sharp turns. This is especially important when you are transporting heavy equipment on the rear of the tractor.
3. Use gears according to the decent of the slope, and try to avoid using the brake.

DIRECTIONS FOR USE OF POWER STEERING

1. Power steering is activated only while the engine is running. Slow engine speeds make the steering a little heavier. While the engine is stopped, the tractor functions in the same manner as tractors without power steering.
2. When the steering wheel is turned all the way to the stop, the relief valve is activated. Do not hold the steering wheel in this position for a long period of time.
3. To avoid tire wear and front-end damage only turn steering wheel while moving.
4. The power steering mechanism makes the steering easier. Be careful when driving on an road at high speeds.

P.T.O OPERATION REAR P.T.O GEAR SHIFT LEVER



(1) P.T.O Shift Lever



CAUTION

To avoid personal injury:

- Disengage P.T.O, stop engine, and allow all rotating components to come to a complete stop before connecting, disconnecting, adjusting, or cleaning any P.T.O driven equipment.



1. The tractor has four P.T.O speeds position.
2. P.T.O shifting needs clutch operation. Press the clutch pedal down completely to stop the tractor movement and any P.T.O driven equipment movement before shifting the P.T.O gear shift lever.

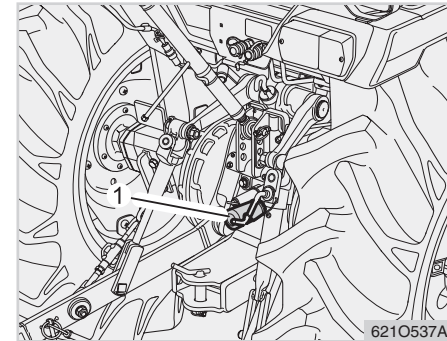


IMPORTANT

- To avoid shock loads to the P.T.O, reduce engine speed when engaging the P.T.O, then open the throttle to the recommended speed:
- To avoid damage of transmission, before shifting the P.T.O gear shift lever, fully disengage the main clutch.

Model	P.T.O Speed (rpm)	
L3503	1st	622
	2nd	781
	3rd	1,077
	4th	1,286
LK45	1st	578
	2nd	725

P.T.O SHAFT CAP



(1) P.T.O Shaft Cap

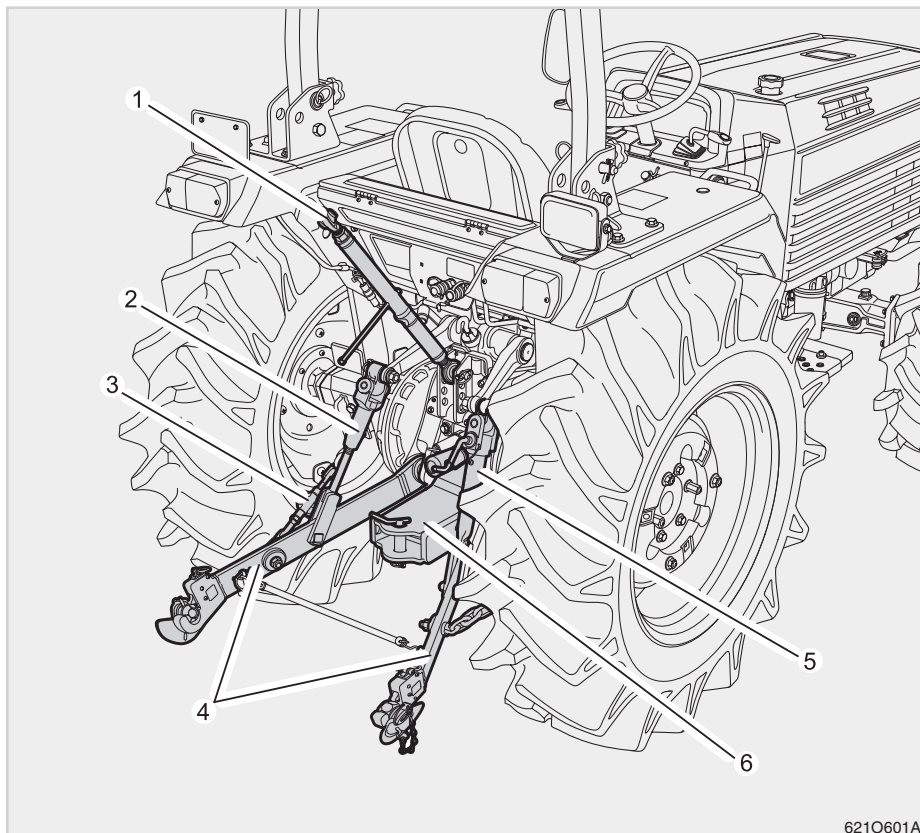
5

Replace the P.T.O shaft cap when the shaft is not in use.



5-28 L3503 / LK45

THREE-POINT HITCH & DRAWBAR

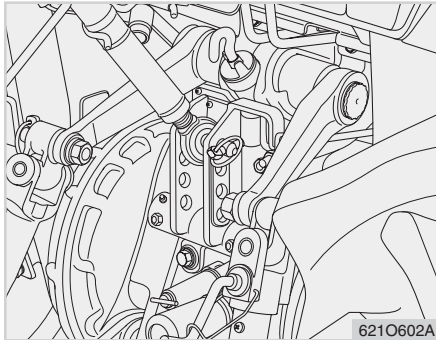


- (1) Top Link
- (2) Lifting Rod (Left)
- (3) Ass'y, Check Chain
- (4) Lower Link
- (5) Lifting Rod (Right)
- (6) Drawbar

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3-POINT HITCH MAKE PREPARATIONS FOR ATTACHING IMPLEMENT



DRAFT HITCH

It must only be used for an attachment which the tractor is designed to employ.

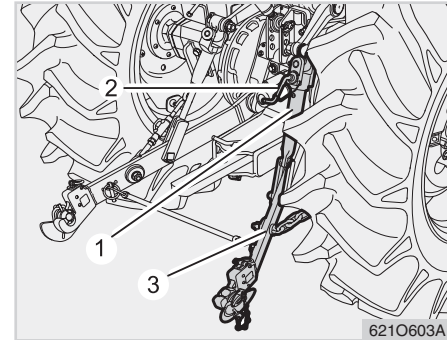
⊕ IMPORTANT

- Use the draft hitch when drafting. Do not hitch to the top linkage bracket or the safety frame. Failure to follow this instruction may cause an overturn, which may result in damage, injury or an accident.

SELECTING THE TOP LINK MOUNTING HOLES

When installing the implement, select the proper hole not interfered with other objects around the implement.

ATTACHING AND DETACHING IMPLEMENTS



(1) Lifting Rod (Right)

(2) Handle

(3) Lower Link

5

ADJUSTMENT OF LIFTING ROD

- 1) Adjust the position of the implement evenly by moving the lifting rod.
- 2) After the adjustment is completed secure with the stopper.
- 3) Correct positioning of the lifting rod to the lower link is shown below positioning varices according to the type of implement being uses.



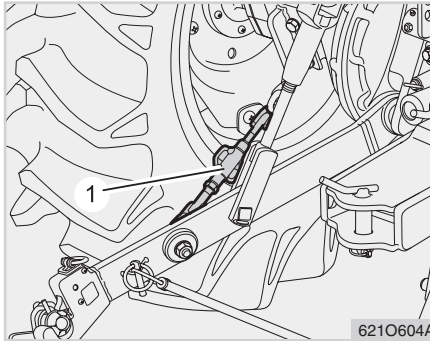
TOP LINK

1. Adjust the angle of the implement to the desired position by shortening or lengthening the top link.
2. The proper length of the top link varies according to the type of implement being used.

CAUTION

To avoid personal injury:

- Be sure to stop the engine.
- Do not stand between tractor and implement unless parking brake is applied.
- Before attaching or detaching implement, locate the tractor and implement on a firm level surface.
- Whenever an implement or other attachment is connected to the tractor 3-point hitch, check full range of operation for interference, binding or P.T.O separation.



(1) Check chain

CHECK CHAIN

Check Chain are used to adjust the side sway that your implement has while in use. Check Chain are also used to center the implement on the rear of the tractor.

WARNING

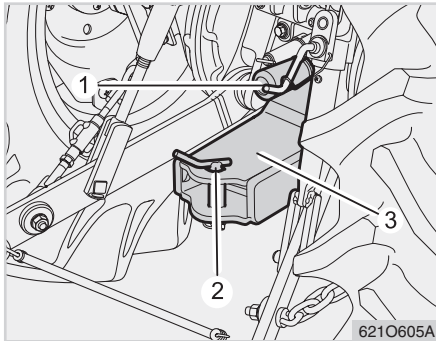
- *Use caution when adjusting the check chain. Heavy implement can move causing harm.*

Adjust the check chain so that the implement can move 5 to 6 cm(2.0 to 2.4 in.) laterally.

Check chain should be tight enough to prevent excessive implement movement when implement is in raised position.



DRAWBAR ADJUSTING DRAWBAR LENGTH



(1) P.T.O Shaft (3) Drawbar
(2) Drawbar Pin

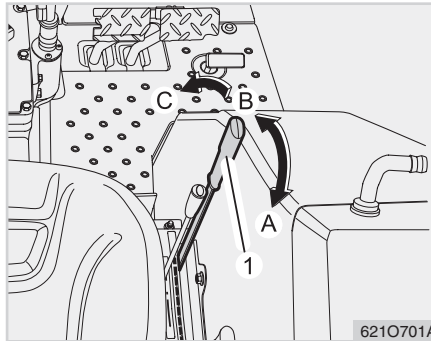
⚠ WARNING

To avoid personal injury:

- **Never pull from the top link, the rear axle or any point above the drawbar. Doing so could cause the tractor to tip over rearward causing personal injury or death.**

The drawbar load is referred to "IMPLEMENT LIMITATIONS" section.

3-POINT HITCH CONTROL SYSTEM HYDRAULIC CONTROL



(1) Position Control Lever
(A) "UP" (B) "DOWN"
(C) "FLOAT"

Operating the Position control lever actuates the hydraulic lift arm. This controls the elevation of the 3-point hitch mounted the implement.

Place the draft control lever to the suitable position and set the implement pull with the position control lever.

HYDRAULIC SYSTEM

1) Implements such as rotary mower, rear mounted equipments are raised and lowered hydraulically with the hydraulic control levers.

To lower equipment, push the lever forward to raise equipment, pull the lever back.

2) The system has a position control device set the stopper to the position you desire.

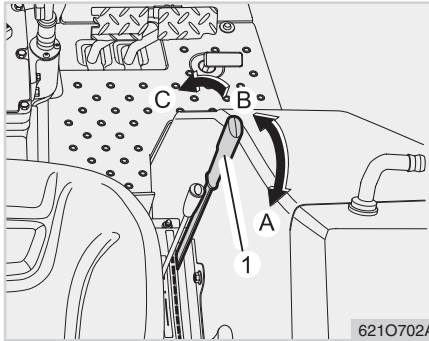
If raising the height of the implement, raise the lever and the implement is stopped.



⊕ IMPORTANT

- If the 3-point hitch can not be raised by setting the hydraulic control lever to the “UP” position after long term storage or when changing the transmission oil, follow these air bleeding procedures.
 1. Stop the engine.
 2. Set the hydraulic control lever to the “DOWN” position and start the engine.
 3. Operate the engine at low idle speed for at least 30 seconds to bleed air from the system.
- Do not operate until the engine is warmed up. If operation is attempted when the engine is still cold, the hydraulic system may be damaged.
- If noises are heard when implement is lifting after the hydraulic control lever has been activated, the hydraulic mechanism is not adjusted properly. Unless corrected the unit will be damaged. Contact your KIOTI dealer for adjustment.

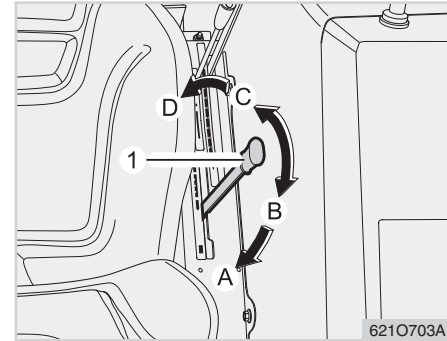
POSITION CONTROL



(1) Position Control Lever
(A) “UP” (C) “FLOAT”
(B) “DOWN”

The position of an attachment can be freely controlled within the range of position control, using the lever. An attachment will completely lower when the lever is in the floating range.

DRAFT CONTROL LEVER

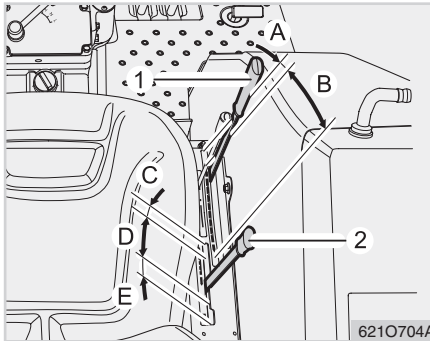


(1) Draft Control Lever
(A) “UP” (B) “SHALLOW”
(C) “DEEP” (D) “FLOAT”

1. The draft control is used to do draft work with an attachment, like a plow, attached to the 3-point linkage.
2. In the floating range, the attachment will completely lower.
3. In the draft control range, the hydraulic unit will have a force to lift the attachment. In this stage, it is possible to do stable work without slipping.



4. If the draft force is higher than the resistance of the attachment, the attachment will be lifted up. If it is lower than the resistance of the attachment, the attachment will be restored to its original state.
5. By placing the lever closer to D, the attachment can be lifted up by smaller draft resistance. (See the above figure.)
6. The attachment can be completely lifted up by pushing the lever up completely.



- (1) Position Control Lever
(2) Draft Control Lever
(A) Floating Range (B) Position Control Range
(C) Floating Range (D) Draft Control Range
(E) Up

		Lever direction	An attachment
Position control	Position control range	A direction B direction	Down Up
Floating range		Before A	The attachment lowers but control does not work.

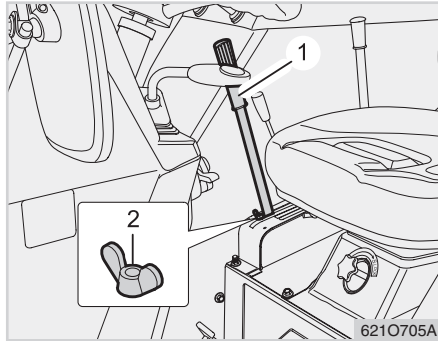


NOTE

- Levers not to be used must always be placed in the up position.



IMPLEMENT LOWERING LIMIT

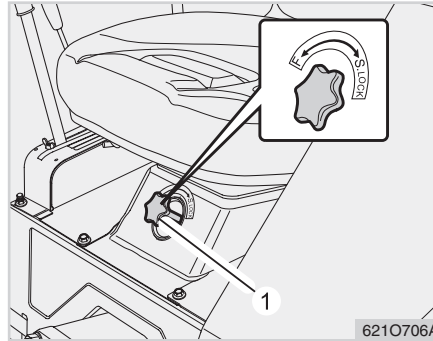


(1) Position Control Lever
(2) Lock Bolt

POSITION CONTROL LEVER

The three point arms are controlled by the position control lever. The lever is drawn back towards the rear of the tractor to raise the three-point arms, and pushed forward to lower the three-point arms. When the control lever is pushed completely forward, the three-point is in the float position. In the float position the three-point is free to move up or down with the weight of the implement.

3-POINT HITCH LOWERING SPEED



(1) 3-point hitch lowering speed knob
F "FAST" L "LOCK"
S "SLOW"



CAUTION

To avoid personal injury:

- Fast lowering speed may cause damage or injury. Lowering speed of implement should be adjusted to two or more seconds.

The lowering speed of the 3-point hitch can be controlled by adjusting the 3-point lowering speed knob.

AUXILIARY HYDRAULICS



CAUTION

- Escaping hydraulic fluid under pressure can have sufficient force to penetrate skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to system, be sure all connections are tight and that lines, pipes, and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.



POWER EXTRACTION OF THE HYDRAULIC BLOCK

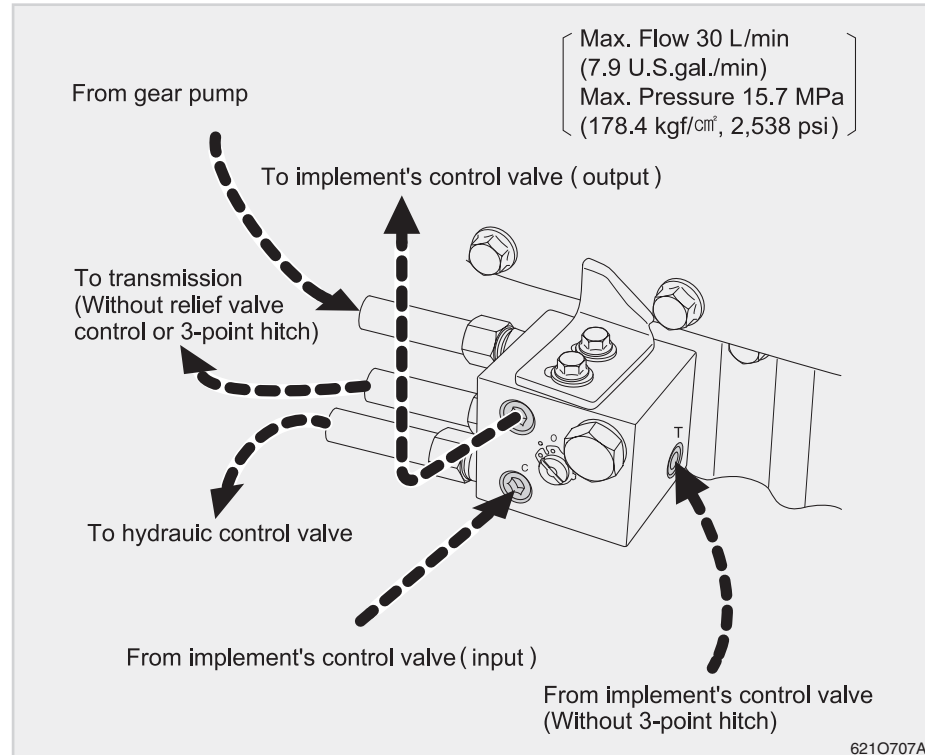
Hydraulic block type outlet is useful when adding hydraulic operated equipment such as : front end loader, front blade, etc.

⊕ IMPORTANT

- When the implement is not in use, turn the directional valve clock-wise(O) completely. If not, the relief valve will operate.

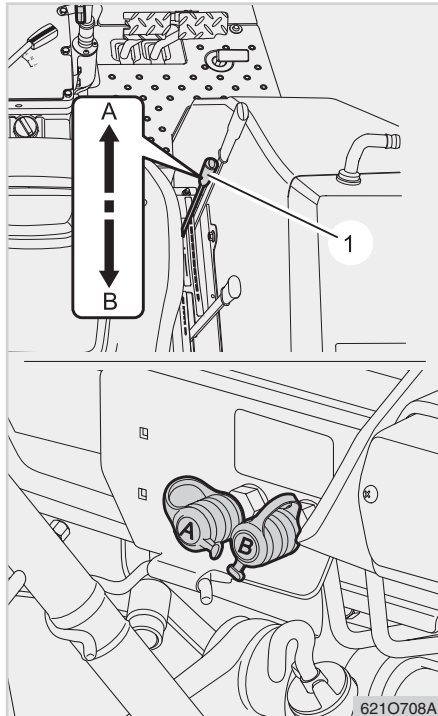
WITH AN ATTACHMENT MOUNTED

1. Remove the plug.
2. Connect the hoses to both the inlet and outlet (PT3/8") of an attachment as shown in the figure.
3. When mounting an attachment, completely turn the adjusting screw counter-clockwise(C).





DOUBLE ACTING LEVER (IF EQUIPPED)



(1) Double Acting Lever
(A) A PORT
(B) B PORT

Pressure →		← Returning	
Port		Push	Pull
Lever1	A	In ←	Out →
	B	Out →	In ←
		Coupler Size	
Port A, B		PT 1/2"	

Move the lever up or down and hold. This will raise or lower the implement. Lever will return to neutral when released.

⊕ IMPORTANT

- Do not hold the lever in the “pull” or “push” position once the remote cylinder has reached the end of the stroke, as this will cause oil to flow through the relief valve.
- To enlarge the front loader output, when using the hydraulic system of the tractor, do not operate the boom and the bucket cylinder simultaneously.

COUPLER CONNECTING AND DISCONNECTING



CAUTION

To avoid personal injury:

- Stop the engine and relieve pressure before connecting or disconnecting lines.
- Do not use your hand to check for leaks.

CONNECTING

1. Clean both couplers.
2. Remove dust plugs.
3. Insert the implement coupler to the tractor hydraulic coupler.
4. Pull the implement coupler slightly to make sure couplers are firmly connected.



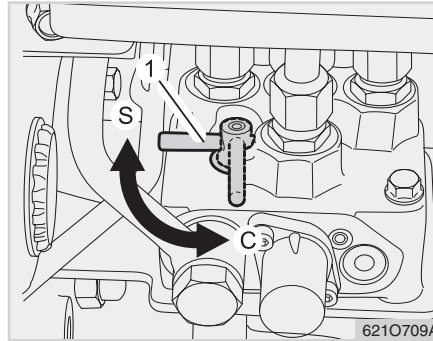
DISCONNECTING

1. First lower the attachment on the ground to remove the hydraulic pressure in the hose.
2. Clean the couplers.
3. Relieve pressure by moving hydraulic control levers with engine shut off. Pull the hose straight from the hydraulic coupler to release it.
4. Clean oil and dust from the coupler, then replace the dust plugs.

NOTE

- Your local **KIOTI** Dealer can supply parts to adapt couplers to hydraulic hoses.

USING EXTERNAL OIL PRESSURE (SINGLE-ACTING, DUMP TRAILER)



(1) Single, Double-acting valve adjusting lever
(S) Single-acting (C) Double-acting

When operating dump trailer, use the single, double-acting cylinder coupler, how to use it is as follows.

1. Place the single, double-acting valve adjusting lever in the single-acting (S) position.
2. Insert the male couplers of a dump trailer into the female A couplers of a dump trailer into the female A coupler of the tractor.
3. When the single, double-acting valve is placed in the A position, an external cylinder will start extending.
4. If you put the single, double-acting valve adjusting lever on the neutral position, the flow of external oil pressure is stopped.
5. When you place the single, double-acting valve adjusting lever in the B position, the cylinder return (lower) to the home position by the dump trailer weight.



TIRES

WARNING

To avoid personal injury:

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

IMPORTANT

- **Do not use tires larger than specified.**
- **When you intend to mount different size of tires from equipped ones, consult your dealer about front drive gear ratio for details. Excessive wear of tires may occur due to improper gear ratio.**

INFLATION PRESSURE

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

Model		Tire sizes	Inflation Pressure
L3503	Front	8-16 (4PR) / 9.5-16 (6PR)	157kPa (1.6kgf/cm ² , 22psi) [196kPa (2.0kgf/cm ² , 28psi)]
	Rear	13.6-24 (6PR) / 13.6-26 (6PR)	157kPa (1.6kgf/cm ² , 22psi)
LK45	Front	8-16 (4PR) / 9.5-16 (6PR)	157kPa (1.6kgf/cm ² , 22psi) [196kPa (2.0kgf/cm ² , 28psi)]
	Rear	13.6-24 (6PR) / 13.6-26 (6PR)	157kPa (1.6kgf/cm ² , 22psi)

* IND... for Industrial
[] ... equipped front load

NOTE

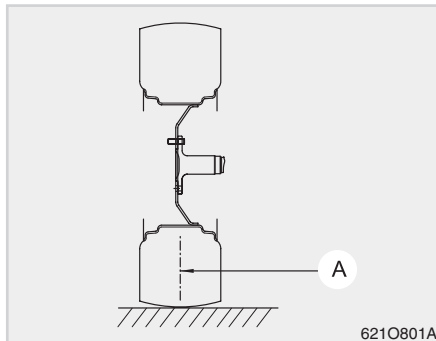
- Maintain the maximum pressure in front tires, if using a front loader or when equipped with a full load of front weights.

TREAD FRONT WHEELS

Front tread can not be adjusted.

⊕ IMPORTANT

- Do not turn front discs to obtain wider tread.



(A) Tread

Tire	Tread
8-16	1,130 mm (44.5 in.)
9.5-16	1,165 mm (45.9 in.)

* IND... for Industrial

REAR WHEELS

Rear wheel tread width can be adjusted as shown with the standard equipment tires.

To change the tread width.

1. Remove the wheel rim and the disk mounting bolts.
2. Change the position of the rim and disk to the desired position, and then tighten the bolts.

Model							
All	1,426 mm (56.1 in.)	1,328 mm (52.2 in.)	1,252 mm (49.2 in.)	1,226 mm (48.2 in.)	1,154 mm (45.4 in.)	1,128 mm (44.4 in.)	1,052 mm (41.4 in.)

(A) Tread

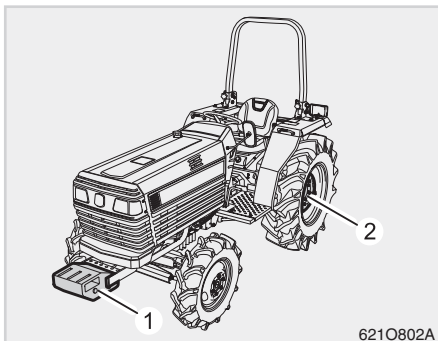
⊕ IMPORTANT

- 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 : 197~210 N·m (20~21 kgf·m, 145~155 lbf·ft)



BALLAST (OPTION) FRONT BALLAST



(1) Front End Weights
(2) Rear Wheel Weights

⚠ CAUTION

To avoid personal injury:

- Additional ballast will be needed for transporting heavy implements. When the implement is raised, drive slowly over rough ground, regardless of how much ballast is used.
- Do not fill the front wheel with liquid to maintain steering control.

FRONT END WEIGHTS

Front end weights can be attached to the front of the tractors bumper. You should consult your implement owner's manual for the required amount of weight or contact your local **KIOTI** dealer for a recommendation.

⊕ IMPORTANT

- Never overload the tires.
- Do not add more weight than is necessary, or is indicated in chart.

Maximum weight	17 kg × 6 Pieces (150 lbs.)
----------------	--------------------------------

REAR BALLAST

Weight should be added to the rear wheels only if it is needed to improve traction or stability. The amount of weight should directly correspond to the job at hand and should be removed when not needed.

The weight should be added to the tractor in the form of liquid ballast, rear wheel weights or both.

REAR WHEEL WEIGHTS

The rear wheel weights can be attached to the rear wheel. See your implement owner's manual for the proper amount of weight or consult your local **KIOTI** dealer.

⊕ IMPORTANT

- Do not overload tires.
- Add no more weight than indicated in chart.

Maximum weight per wheel	25 kg × 6 Pieces (331 lbs.)
-----------------------------	--------------------------------



PERIODIC SERVICE

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6



MAINTENANCE CHECK LIST

DAILY CHECK CHART

SERVICE SCHEDULE		REFERENCE PAGE
ITEM	SERVICE REQUIRED	
Engine Oil	Check the oil level and add needed. Do not overfill.	6-7
Hydraulic (Trans / Diff) Fluid	Check level and add as needed.	6-7
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.	6-13
Engine Cooling System	Clean debris from oil cooler, radiator, screen and grills. Check coolant level cold, add premixed coolant as needed.	6-10, 6-11, 6-27
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.	6-10, 6-16
General Items	Check for loose or broken parts, damaged operator cab, instrument operation, loose wheel nuts / bolts, oil leaks and damaged or missing signs (decals). Replace floor mat if damaged or missing.	6-17, 6-24
PTO	Inspect the splines. Replace 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.



SERVICE INTERVALS

NO.	MAINTENANCE INTERVAL		RUN HOUR								RUN AGE		REMARKS	REFERENCE PAGE
			50	100	200	400	600	800	1500	3000	1year	2year		
1	Engine oil	Change	⊙	○										6-7
2	Engine oil filter	Replace	⊙		○									6-13
3	Transmission oil filter	Replace	⊙		○									6-14
4	Transmission fluid	Change	⊙			○								6-15
5	Front axle case oil	Change	⊙			○								6-16
6	Greasing	Apply	○											6-17
7	Engine start system	Check	○											
8	Wheel bolt torque	Check	○											6-17
9	Battery condition	Check		○									* 3	6-21
10	Air cleaner element	Clean		○									* 1	6-18
		Replace									○		* 2	6-27
11	Fuel filter element	Clean		○										6-19
		Replace				○							#	6-26
12	Fan belt	Adjust		○									* 3	6-23
13	Clutch	Adjust	⊙	○										6-16
14	Brake	Adjust	⊙	○										6-20
15	Radiator hose and clamp	Check			○									6-24
		Replace										○		6-29



NO.	MAINTENANCE INTERVAL ITEM		RUN HOUR								RUN AGE		REMARKS	REFERENCE PAGE	
			50	100	200	400	600	800	1500	3000	1year	2year			
16	Power steering oil line	Check			○										6-25
		Replace										○			6-29
17	Fuel line	Check		○										#	6-20
		Replace										○			6-29
18	Toe-in	Adjust			○										6-25
19	Front axle shaft rolling control	Adjust					○								
20	Engine valve clearance	Adjust						○							6-27
21	Cooling system	Flush						○							6-27
22	Coolant	Change										○			6-27
23	Fuel system	Bleed										○	* 3		6-30
24	Clutch housing water	Drain					As required								6-30
25	Fuse	Replace					As required						* 3		6-31
26	Light bulb	Replace					As required						* 3		6-32

⊕ IMPORTANT

- ⊙ must be done after the first 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 performance of the required maintenance on the above instruction.



LUBRICANTS

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

No.	Locations	Capacities L(U.S.gal.)		Lubricants	
		L3503	LK45		
1	Fuel	42 (11.1)	←	No.2-D diesel fuel No.1-D diesel fuel if temperature is below -10°C (14°F)	
2	Coolant	8.4 (2.2)	7.1 (1.88)	Fresh clean water with anti-freeze	
3	Engine crankcase	8.0 (2.11)	5.8 (1.53)	Engine oil: API Service Classification CC or CD	
				Above 25°C (77°F)	SAE30, SAE10W-30 or 10W-40
				0 to 25°C (32 to 77°F)	SAE20, SAE10W-30 or 10W-40
				Below 0°C (32°F)	SAE10W, SAE10W-30 or 10W-40
4	Hydraulic pump holder	0.1 (0.026)	←	Exxonmobil Mobilfluid 423 or 424 Exxon Hydraul 560	
5	Power steering oil	2 (0.53)	←		
6	Transmission case	28 (7.40)	26 (6.87)		
7	Front axle case	8 (2.11)	-	SAE 90 gear oil	
8	Front axle support	-	6 (1.59)		
9	Apply grease • Battery terminal • Lift Rod (RH) • Front axle support • Clutch pedal • Brake pedal • Pedal shaft push	A little	←	Multipurpose type grease	

⚠ WARNING

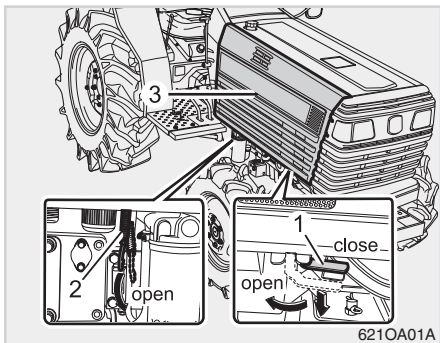
- **Check the oil level regularly.**
- **Correct the oil level, if needed, before operating.**
- **Always check and add oil with the tractor on a flat, level surface.**
- **To prevent personal injury, always stop the engine and set the parking brake before performing any kind of service.**



6-6

L3503 / LK45

HOW TO OPEN THE HOOD



(1) Knob

(2) Hook

(3) Side Cover

CAUTION

To avoid personal injury from contact with moving parts:

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

DAILY CHECK

For your own safety and maximum service life of the machine, make a thorough daily inspection before starting and operating the machine.

CAUTION

To avoid personal injury:

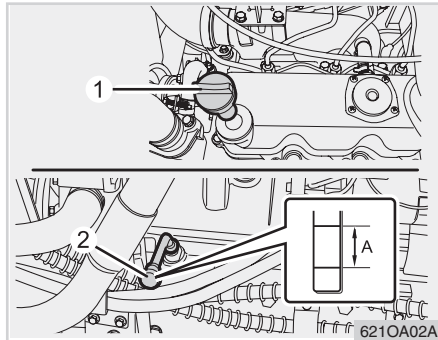
- **Be sure to check and service the tractor on a flat place with the engine shut off and the parking brake "ON".**

WALK AROUND INSPECTION

Look around and under the tractor for such items as loose bolts, trash build-up, oil or coolant leaks, broken or worn parts.



CHECKING ENGINE OIL LEVEL



(1) Oil Inlet (2) Dipstick
(A) Oil Level is Acceptable Within This Range.

⊕ IMPORTANT

- When using an oil of different maker or viscosity from the previous one, remove all of the old oil. Never mix two different types of oil.
- If oil level is low, do not run engine.



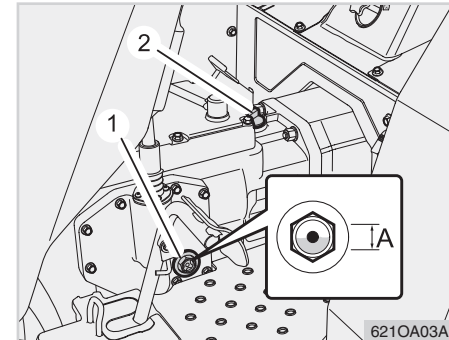
CAUTION

To avoid personal injury:

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

1. Park the machine on a flat surface.
2. Check engine oil before starting the engine or 5 minutes or more after the engine has stopped.
3. To check the oil level, draw out the dipstick, wipe it clean, replace it, and draw it out again. Check to see that the oil level lies between the two notches. If the level is too low, add new oil to the prescribed level at the oil inlet.
(See "LUBRICANTS" in Maintenance Section)

CHECKING TRANSMISSION FLUID LEVEL



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

1. Park the machine on a flat surface, lower the implement and shut off engine.
2. Check the fluid level on the fluid level dipstick. If the level is too low, add new oil to the prescribed level at the oil inlet. (See "LUBRICANTS" in Maintenance Section)

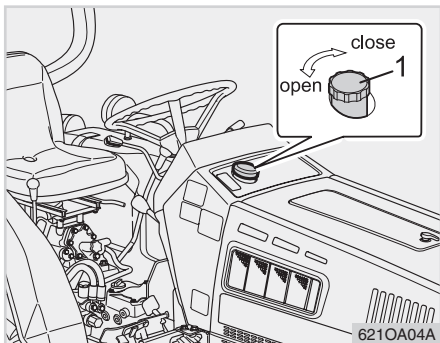


IMPORTANT

- If oil level is low, do not run engine.



CHECKING AND REFUELING



(1) Fuel Tank Cap

Fuel tank capacity	42 L (11.1 U.S.gal.)
--------------------	----------------------

CAUTION

To avoid personal injury:

- Do not smoke while refueling.
- Be sure to stop the engine before refueling.

1. Turn the key switch to "ON", check the amount of fuel by fuel gauge.
2. Fill fuel tank when fuel gauge shows 1/4 or less fuel in tank.
3. Use grade No.2-Diesel fuel at temperatures above -10°C (14°F).

IMPORTANT

- Do not permit dirt or trash to get into the fuel system.
- 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 spills occur, wipe it off at once, as it may cause a fire.
- To prevent condensation (water) accumulation in the fuel tank, fill the tank before parking overnight.



NOTE

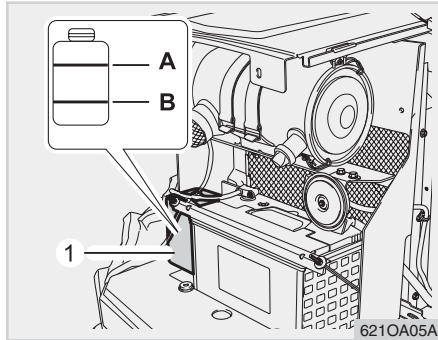
- No.2-D is a distillate fuel of lower volatility for engines in industrial and heavy mobile service. (SAE J313 JUN87)
- Grade of Diesel Fuel Oil According to ASTM D975.

Flash Point, °C (°F)	Water and Sediment, volume %	Carbon Residue on, 10 percent Residuuum, %	Ash, weight %
Min	Max	Max	Max
52 (125)	0.05	0.35	0.01

Distillation Temperatures, °C (°F) 90% Point		Viscosity Kinematic cSt or mm ² /s at 40°C		Viscosity Saybolt, SUS at 100°F		sulfur, weight %	Copper Strip Corrosion	Cetane Number
Min	Max	Min	Max	Min	Max	Max	Max	Min
282 (540)	338 (640)	1.9	4.1	32.6	40.1	0.50	No.3	40



CHECKING COOLANT LEVEL



(1) Recovery Tank

(A) FULL

(B) LOW

CAUTION

- Do not remove radiator cap while coolant is hot. When cool, slowly rotate cap to the first stop and allow sufficient time for excess pressure to escape before removing the cap completely.

The coolant level is safest to inspect when the engine is at room temperature. After removing the radiator cap, look into the top of the radiator to check the coolant level. The level should be close to the top of the radiator (approximately one inch below the neck).

ADDING COOLANT

For most applications, a mix of half water and half antifreeze is recommended. The mix required for your area may be different. Be sure to use clean, fresh water when mixing with antifreeze. Refer to the specifications section for the correct type of antifreeze. If the coolant requires replacement, refer to the how to service subsection.

CHECKING BRAKE AND CLUTCH PEDALS

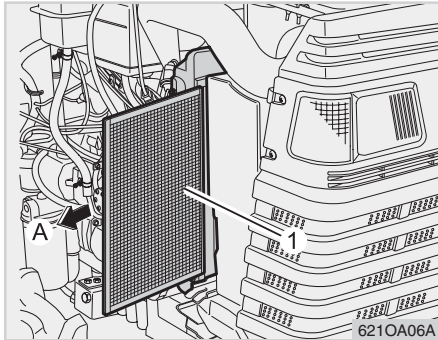
1. The brake and clutch pedals should be inspected for free travel, and smooth operation.
2. You should adjust these pedals if an incorrect measurement is found. (See "adjusting clutch and brake pedals" in the 100 hour maintenance schedule.)

NOTE

- Brake pedals should be equal when depressed.



CLEANING GRILL, RADIATOR SCREEN



(1) Radiator Screen
(A) DETACH

CAUTION

To avoid personal injury:

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

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

IMPORTANT

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

CHECKING GAUGES, METER AND EASY CHECKER

1. Inspect the instrument panel for broken gauge(s), meter(s) and Easy Checker lamps.
2. Replace if broken.

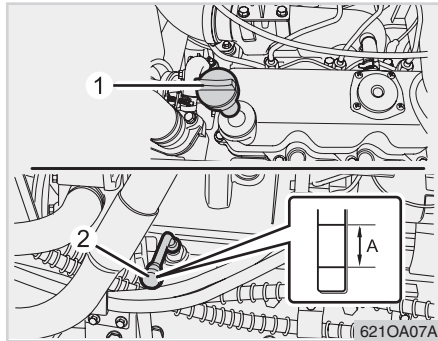
CHECKING HEAD LIGHT, HAZARD LIGHT ETC.

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

CHECKING SEAT BELT AND ROPS

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

INITIAL 50 HOURS CHANGING ENGINE OIL

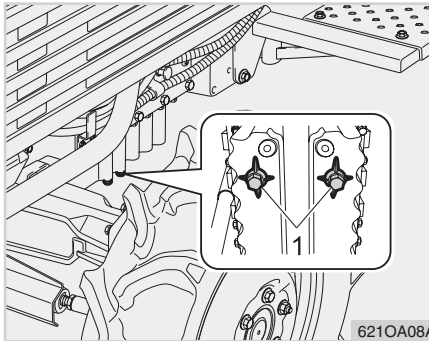


(1) Oil Inlet (2) Dipstick
(A) Oil level is acceptable within this range

⚠ CAUTION

To avoid personal injury:

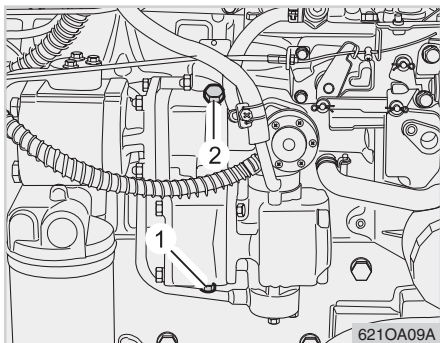
- Be sure to stop the engine before changing the oil.
- Allow engine to cool down sufficiently, oil can be hot and can burn.



(1) Drain Plug

Model	Oil capacity with filter
L3503	8.0 L (2.11 U.S.gal.)
LK45	5.8 L (1.53 U.S.gal.)

1. 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.
2. After draining reinstall the drain plug.
3. Fill with the new oil up to the upper notch on the dipstick.



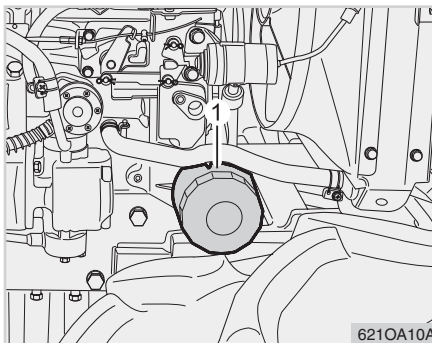
(1) Drain Plug

(2) Feeding Plug

4. Loosen the drain plug of upper from hydraulic pump and drain the oil.
5. After draining reinstall the drain plug.
6. Open the feeding plug on the top of the hydraulic pump holder and feed the engine oil.

Oil capacity	0.1 L (0.026 U.S.gal.)
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REPLACING ENGINE OIL FILTER



(1) Engine Oil Filter



IMPORTANT

- To prevent serious damage to the engine, use only a KIOTI genuine filter.



CAUTION

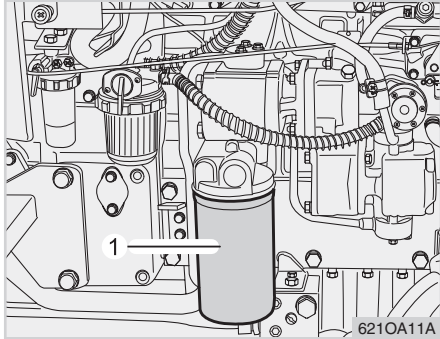
To avoid personal injury:

- Be sure to stop the engine before changing oil filter cartridge.
- Allow engine to cool down sufficiently, oil can be hot and can burn.

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



REPLACING HYDRAULIC OIL FILTER



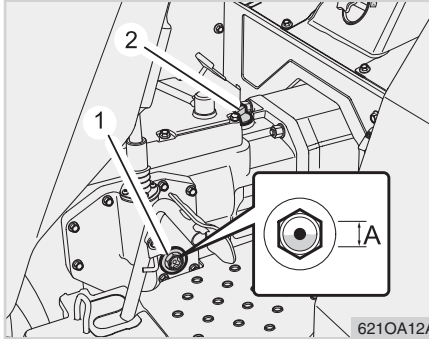
(1) Hydraulic Oil Filter

CAUTION

To avoid personal injury:

- Be sure to stop the engine before changing oil filter cartridge.

1. Remove the oil filter.
2. Place a film of clean transmission fluid of the rubber seal of the new filter.
3. Tighten the filter firmly until it contacts the mounting surface. Then tighten the filter, by hand, an additional half turn only.



(1) Level Gauge (2) Oil Filling Plug
(A) Oil level is Acceptable Within this Range.

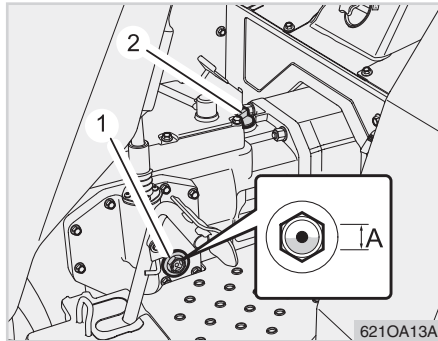
IMPORTANT

- To prevent serious damage to the hydraulic system, use only a genuine KIOTI filter.

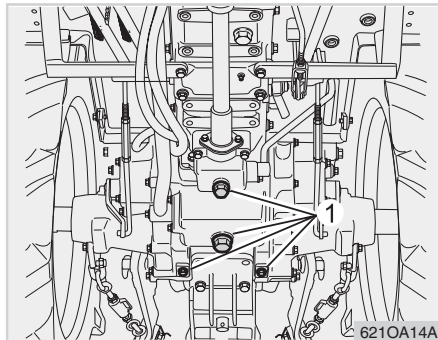
4. After the new filter is in place, fill the transmission up with oil to the upper line of the oil gauge.
5. After running the engine for a few minutes, stop it and check the oil level again, add oil to the prescribed level.
6. Make sure that the transmission fluid doesn't leak through the seal.



CHANGING TRANSMISSION FLUID



(1) Level Gauge (2) Oil Filling Plug
(A) Oil level is Acceptable Within this Range.



(1) Drain Plugs

⊕ IMPORTANT

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

⚠ CAUTION

To avoid personal injury:

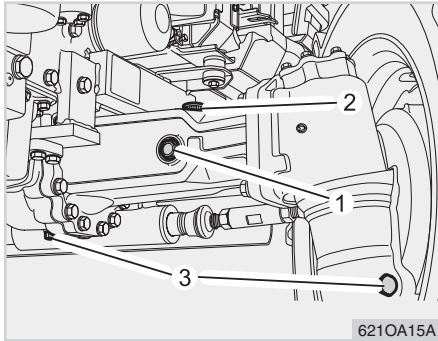
- Allow engine to cool down sufficiently, oil can be hot and can burn.

4. After running the engine for a few minutes, stop it and check the oil level again; add oil to prescribed level.

Model	Oil capacity
L3503	28 L (7.40 U.S.gal.)
LK45	26 L (6.87 U.S.gal.)



CHANGING FRONT AXLE CASE OIL

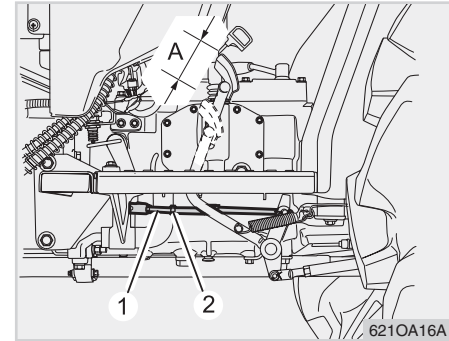


- (1) Check Plug (2) Filling Plug
(3) Drain Plug

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.
4. Fill with the new oil up to the check plug port. (See "LUBRICANTS" in Maintenance Section)
5. After filling, reinstall the filling plug and check plug.

Model	Oil capacity
L3503	8 L (2.11 U.S.gal.)
LK45	6 L (1.59 U.S.gal.)

ADJUSTING CLUTCH PEDAL



- (1) Clutch Rod (2) Nut
(A) Free Travel

Proper clutch pedal
free travel (A)

20 ~ 30 mm
(0.8 ~ 1.2 in.)
on the pedal

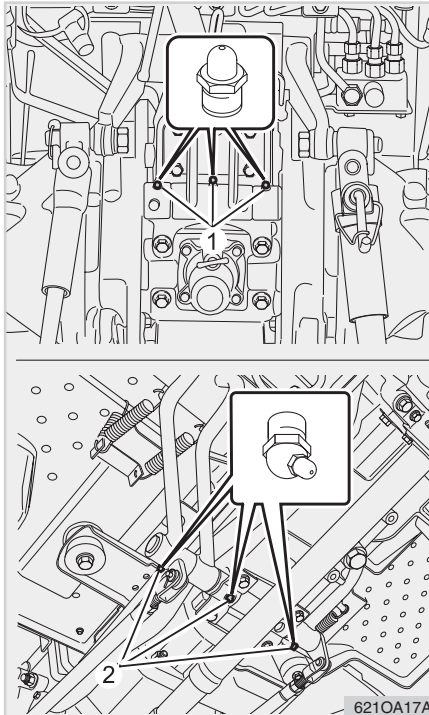
1. Stop the engine and remove the key.
2. Slightly depress the clutch pedal and measure free travel at top of pedal stroke.
3. If adjustment is needed, loosen the lock nut, remove the clevis pin and adjust the rod length within acceptable limits.
4. Retighten the lock nut and replace the clevis pin.



EVERY 50 HOURS LUBRICATING GREASE FITTINGS

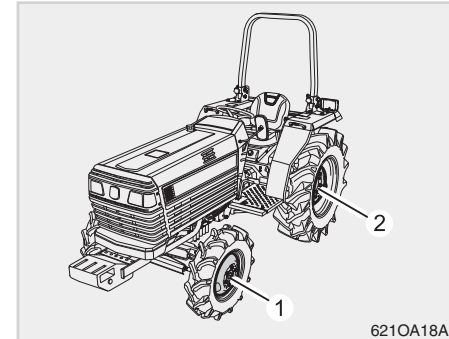
You should apply a small amount of multi-purpose grease to the following points every 50 hours or as needed.

If your tractor is operated in extremely wet, muddy, or dusty conditions you should lubricate the fittings more often.



- (1) Grease Fittings (Top Link Holder)
(2) Grease Fitting (Brake Pedal, Clutch Pedal)

CHECKING WHEEL BOLT TORQUE



- (1) 176 N·m (18 kgf·m, 130 lbf·ft)
(2) 284.4 N·m (29 kgf·m, 290.7 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.

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



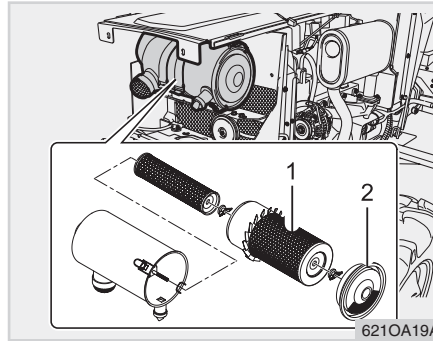
EVERY 100 HOURS CHANGING ENGINE OIL

See "Initial 50 hours" in page 10-12.

ADJUSTING CLUTCH PEDAL

See "Initial 50 hours" in page 10-16.

CLEANING AIR CLEANER PRIMARY ELEMENT



(1) Element

(2) Cover

1. Remove the air cleaner cover and element.
2. Clean the element:
 - 1) When dry dust adheres to the element, blow compressed air from the inside, turning the element. Pressure of compressed air must be under 686kPa (7 kgf/cm², 99 psi).

- 2) When carbon or oil adheres to the element, soak the element in detergent for 15 minutes then wash it several times in water, rinse with clean water and dry it naturally. After element is fully dried, inspect inside of the element with a light and check if it is damaged or not.

3. Replace air cleaner element:

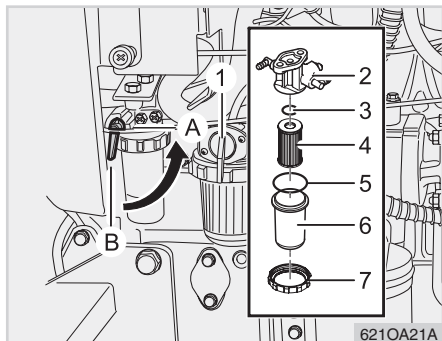
Once yearly or after every sixth cleaning, whichever comes first.

IMPORTANT

- The air cleaner uses a dry element, never apply oil.
- Do not run the engine with filter element removed.



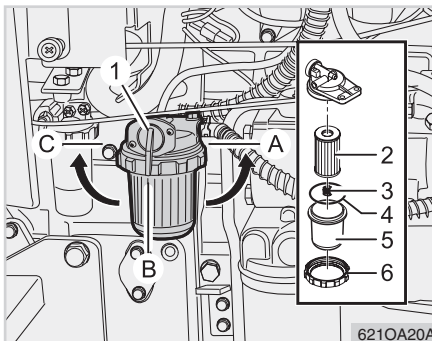
CLEANING FUEL FILTER FUEL FILTER ASSEMBLY 1



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

If water is pooled in the filter, the red floating ring is floated. At this time turn the cock to LOCK position, loosen the STOP nut, eliminate water from the cap, clean the filter and re-install it.

FUEL FILTER ASSEMBLY



- | | |
|----------------------|--------------------|
| (1) Fuel Cock | (2) Filter Element |
| (3) Spring | (4) O-Ring |
| (5) Fuel Filter Bowl | (6) Screw Ring |
| (A) Close | (B) Open |
| (C) Airbleeding | |

⊕ IMPORTANT

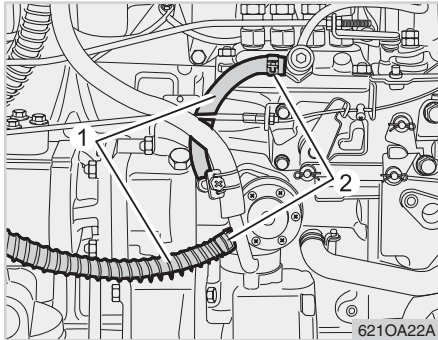
- If dust and dirt enters the fuel system, the fuel pump and injection nozzles are subject to premature wear. To prevent this, be sure to clean the fuel filter bowl and element periodically.

This job can be done in the field but in a clean place.

1. Close the fuel cock.
2. Unscrew the ring and remove the filter bowl. Rinse the inside with fresh diesel fuel or kerosene.
3. Take the filter element out and dip it in the diesel / the kerosene to clean.
4. After cleaning you should reassemble the filter element, making sure that it is free from dust and dirt. Asure that all o-rings are in place.
5. Bleed the fuel system. (See "Bleeding the fuel System" in the service section)



CHECKING FUEL LINE



(1) Fuel Lines

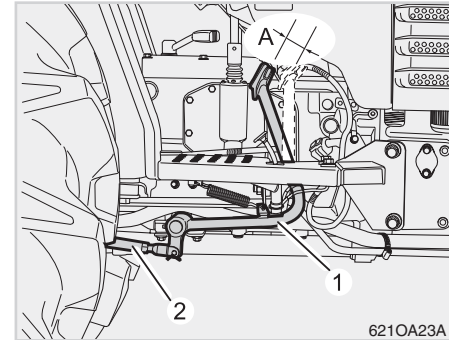
(2) Clamp Bands

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

NOTE

- If the fuel line is removed, be sure to properly bleed the fuel system.
(See "Bleeding Fuel System" in as required maintenance)

ADJUSTING BRAKE PEDAL



(1) Brake Rod

(2) Lock Nut

(A) Free Travel

CAUTION

To avoid personal injury:

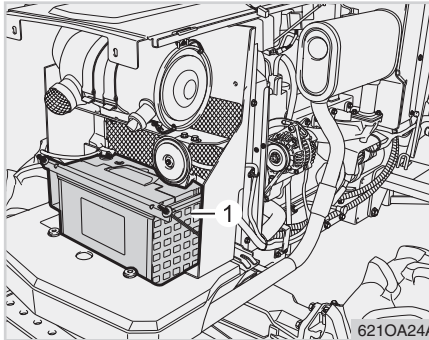
- Stop the engine and chock the wheels before checking brake pedal.



Proper brake pedal free travel (A)	20 ~ 30 mm (0.787 ~ 0.181 in.) on the pedal.
	Keep the free travel in the right and left brake pedals equal.

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.

BATTERY



(1) Battery

Mishandling or abuse of the battery can shorten the service life and adds to maintenance cost of the tractor.

If the battery is weak it will cause the engine to be hard to start and also make lights dim. It is important to check the battery periodically.



CAUTION

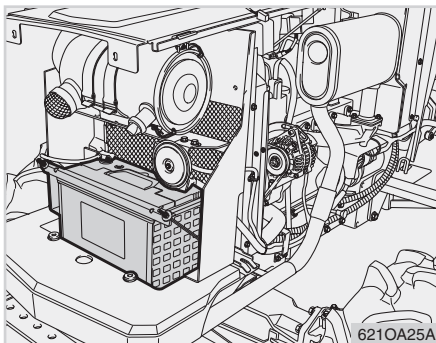
To avoid personal injury:

- Keep electrolyte away from eyes, hands and clothes. If you are spattered with it, wash it away completely with water immediately and get medical attention.
- Wear eye protection and rubber gloves when working around the battery.

BATTERY CHARGING**CAUTION**

To avoid personal injury:

- When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.
- The vent caps are securely in place. (If equipped)
- When disconnecting the cable from the battery, start with the negative terminal first.
- When connecting the cable to the battery, start with the positive terminal first.
- Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydro-meter.



1. To slow charge the battery, connect the battery positive terminal to the charger positive terminal and the negative to the negative, then recharge in the standard fashion.
2. A boost charge is only for emergencies. It will partially charge the battery at a high rate and in a short time.

When using a boost-charged battery, it is necessary to recharge

the battery as early as possible.

Failure to do this will shorten the battery's service life.

3. When the specific gravity of electrolyte is between 1.27 and 1.29 the charging is completed.
4. When exchanging an old battery for a new one, use battery of equal specification shown in table 1.

Table 1

Tractor model	Battery type
L3503	12V, 35A
LK45	12V, 80A

DIRECTION FOR STORAGE

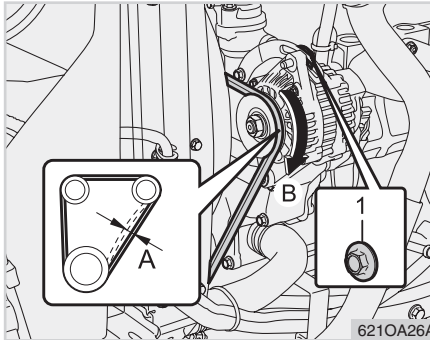
1. When storing the tractor for a long period, remove the battery from tractor, adjust the electrolyte to the proper level and store in a dry place out of direct sunlight.



- The battery self-discharges while it is stored.

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

ADJUSTING FAN BELT TENSION



(1) Bolt

(A) Check the Belt Tension

(B) To Tighten



CAUTION

To avoid personal injury:

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

Proper fan belt tension

A deflection of between 7 ~ 9 mm (0.28 ~ 0.34 in.) when the belt is pressed in the middle of the span.

- Stop the engine and remove the key.
- Apply moderate thumb pressure to belt between pulleys.
- 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.
- Replace fan belt if it is damaged.



6-24 L3503 / LK45

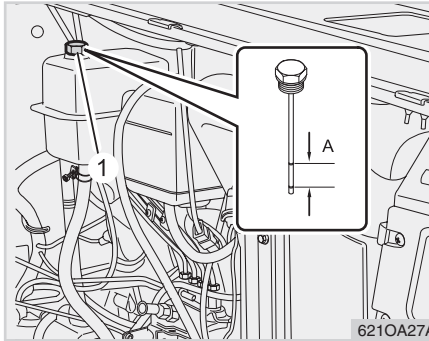
EVERY 200 HOURS REPLACING ENGINE OIL FILTER

See "Initial 50 hours" in page 10-13.

REPLACING HYDRAULIC OIL FILTER

See "Initial 50 hours" in page 10-14.

CHECK THE POWER STEERING OIL

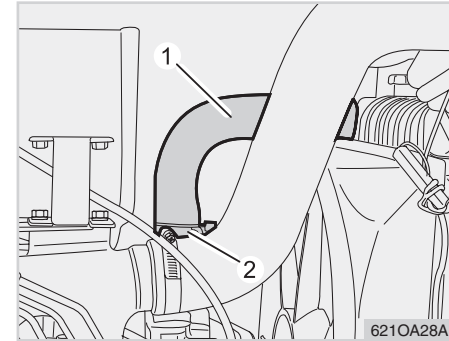


(1) Gauge

(A) Oil Level is Acceptable Within This Range.

Check that the oil level is within the specified range.

CHECKING RADIATOR HOSE AND CLAMP



(1) Radiator Hoses

(2) Clamp

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 hose.

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

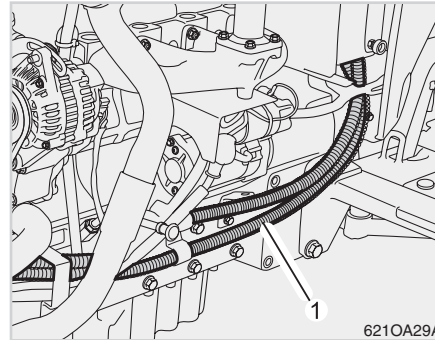


PRECAUTION AT OVERHEATING

Take the following actions in the event the coolant temperature be nearly or more than the boiling point, what is called "Overheating"

1. Stop the machine operation in a safe place and keep the engine unloaded idling.
2. Don't stop the engine suddenly, but stop it after about 5 minutes of unloaded idling.
3. Keep yourself well away from the machine for 10 minutes or while the steam blown out.
4. Checking that there is no danger of burn, get rid of the causes of overheating according to the manual, see "Troubleshooting" section, and then, start the engine again.

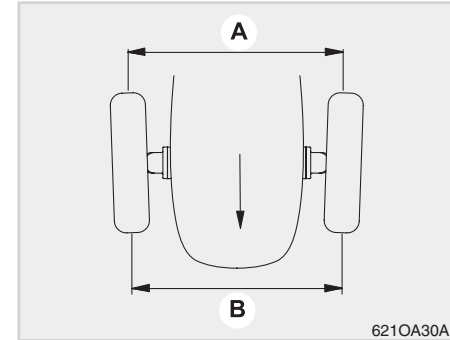
CHECKING POWER STEERING LINE



(1) Power Steering Line

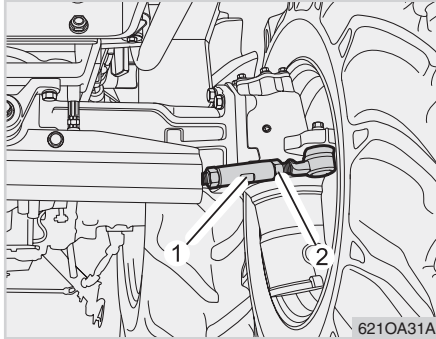
1. Check to see that all hydraulic lines and hose clamps are tight and undamaged.
2. If damage is found, replace the hose or clamp at once.

ADJUSTING TOE-IN



(A) Wheel - to - wheel distance at rear
(B) Wheel - to - wheel distance at front

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



(1) Tie Rod (2) Lock Nut

ADJUSTING PROCEDURE

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

EVERY 400 HOURS CHANGING TRANSMISSION FLUID

See "Initial 50 hours" in page 10-15.

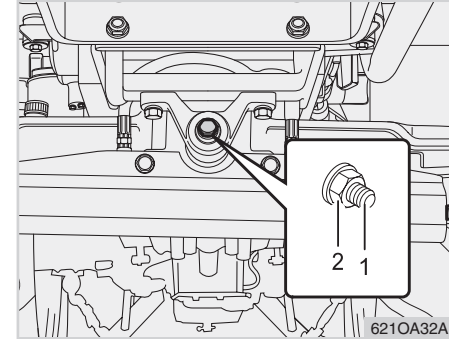
REPLACING FUEL FILTER ELEMENT

(See "Cleaning fuel filter" in every 100 hours maintenance.)

CHANGING FRONT AXLE CASE OIL

See "Initial 50 hours" in page 10-16.

EVERY 600 HOURS ADJUSTING FRONT AXLE PIVOT



(1) Adjusting Screw (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.



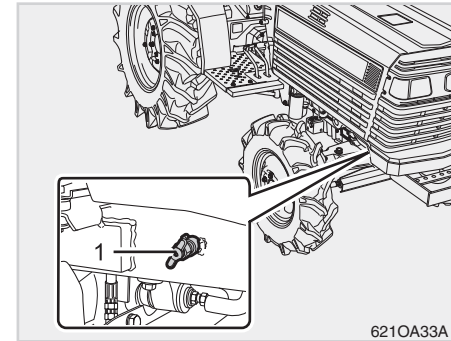
EVERY 800 HOURS ADJUSTING ENGINE VALVE CLEARANCE

Consult your local **KIOTI** dealer for this service.

EVERY 1 YEAR REPLACING AIR CLEANER ELEMENT

(See "Cleaning Air Cleaner Element" in every 100 hours maintenance.)

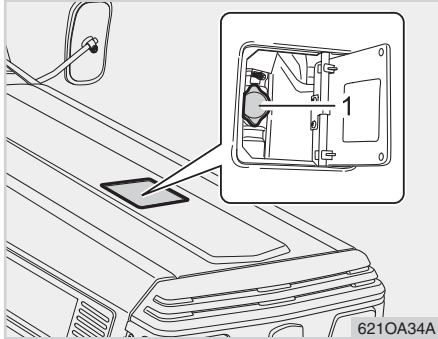
EVERY 2 YEARS FLUSH COOLING SYSTEM AND CHANGING COOLANT



(1) Drain Plug

IMPORTANT

- Do not start engine without coolant.
- Use clean, fresh water and anti-freeze to fill the radiator and recovery 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.



(1) Radiator Cap

CAUTION

To avoid personal injury:

- **Do not remove the radiator cap when the engine is hot. Then loosen cap slightly to the stop the relieve any excess pressure before removing cap completely.**

1. Stop the engine and let it cool.
2. To drain the coolant, open the radiator drain plug and remove radiator cap.

The radiator cap must be removed to completely drain the coolant.

3. After all coolant is drained, close the drain plug.
 4. Fill with clean water and cooling system cleaner.
 5. Follow the cleaner manufacture's instructions.
 6. After flushing, fill with clean water and anti-freeze until the coolant level is just below the port.
- Install the radiator cap securely.
7. Fill with coolant up to the "FULL" mark on the recovery tank.
 8. Start and operate the engine for few minutes.
 9. Stop the engine and let cool.
 10. Check coolant level of recovery tank and add coolant if necessary.

Model	Coolant capacity
L3503	8.4 L (2.22 U.S.gal.)
LK45	7.1 L (1.88 U.S.gal.)

ANTI-FREEZE

If cooling water freezes, it can damage the cylinders and radiator. It is necessary, if the ambient temperature falls below 0°C (32°F), to remove cooling water after operating or to add anti-freeze to it.

1. There are two types of anti-freeze available; use the permanent type (PT) for this engine.
2. Before adding anti-freeze for the first time, clean the radiator interior by pouring fresh water and draining it a few times.
3. The procedure for mixing of water and anti-freeze differs according to the make of the anti-freeze and the ambient temperature, basically it should be referred to SAE J1034 standard, more specifically also to SAE J814C.
4. Mix the anti-freeze with water, and then fill into the radiator.

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

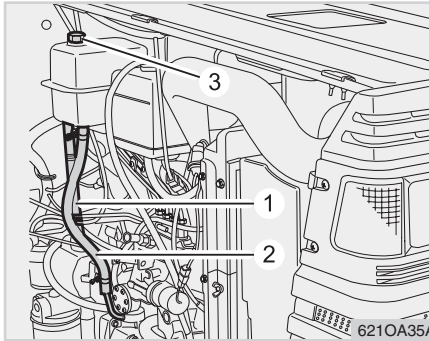


* At 760 mmHg pressure (atmospheric). A higher boiling point is obtained by using a radiator pressure cap which permits the development of pressure within the cooling system.

NOTE

- The above date represents industry standards that necessitate a minimum glycol content in the concentrated anti-freeze.
- When the cooling water 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.)

CHANGE THE POWER STEERING OIL



- (1) Return pipe (2) Pipe
(3) Feeding port

1. Remove the pipe on the bottom of the tank and drain the oil.
2. Drain the oil from the return pipe of the power steering. At this time, turn the steering wheel completely clockwise and counterclockwise two or three times each.
3. Refill the tank with oil via the feeding port. After fully refilling the tank with oil, turn the steering wheel completely clockwise and counterclockwise two or three times each.

Oil capacity

2 L (0.53 U.S.gal.)

REPLACING RADIATOR HOSE (WATER PIPES)

Replace the hoses and clamps.

(See "Checking Radiator Hose and Clamp" in every 200 hours maintenance.)

REPLACING POWER STEERING HOSE

Replace the hoses and clamps.

(See "Checking power steering line" in every 200 hours maintenance.)

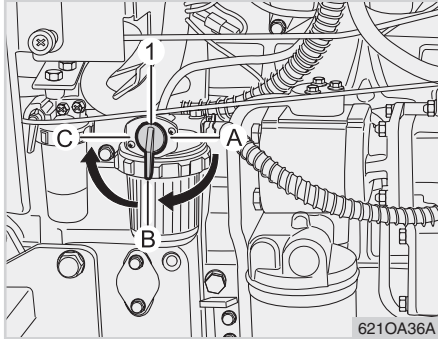
REPLACING FUEL HOSE

Replace the hoses and clamps.

(See "Checking Fuel line" in every 100 hours maintenance.)



SERVICE AS REQUIRED BLEEDING FUEL SYSTEM



(1) Fuel Cock

(A) Close

(B) Open

(C) Airbleeding

Air must be removed:

1. When the fuel filter or lines are removed.
2. When tank is completely empty.
3. After the tractor has not been used for a long period of time.

The air in fuel system is automatically removed when running the engine.

The method of airbleeding is as follows.

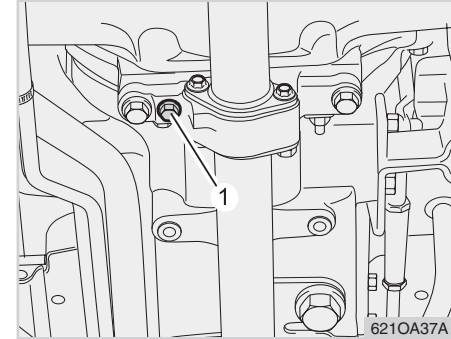
1. Fill the tank with fuel.
2. Turn the fuel filter cock to the AIR position.
3. Open the cock in the fuel injection pump.
4. Start the engine and stop it after it has run for one minute.
5. Close the fuel injection pump cock.
6. Turn the fuel filter cock to the On position.



CAUTION

- **The fuel pump cock must be kept closed except when airbleeding. If not, it may cause damage of the engine.**

DRAINING CLUTCH HOUSING WATER



(1) Plug

Your tractor is equipped with a plug under the clutch housing.

After you operate your tractor in the rain, snow, or after washing the tractor, water may get into the clutch housing. If this happens, remove the plug in the clutch housing and drain water. Remember to reinstall the plug to avoid serious damage to clutch.

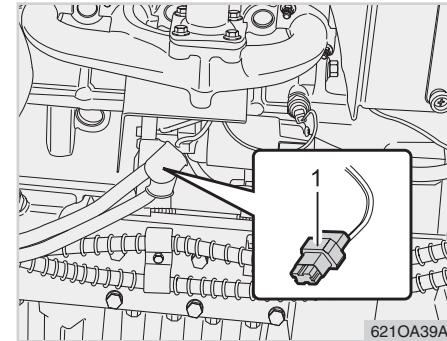
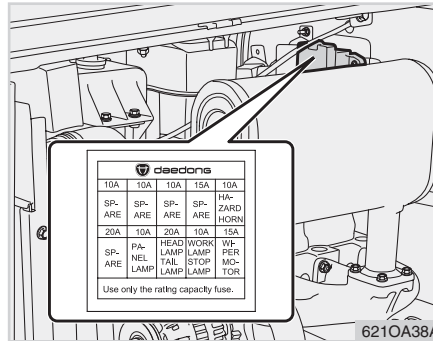


REPLACING FUSE

The tractor electrical system is protected from potential damage by fuses.

A blown fuse indicates that there is an overload or short somewhere in the electrical system.

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



(1) Slow Blow Fuse

⊕ IMPORTANT

- Before replacing a blown fuse, determine why the fuse blew and make any necessary repairs. Failure to follow this procedure may result in serious damage to the tractor electrical system. Refer to the troubleshooting section of this manual or your local KIOTI dealer for specific information dealing with electrical problems.

Slow Blow Fuse

60A



REPLACING LIGHT BULB

1. Head lights and rear combination lights:

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

2. Other lights:

Detach the lens and replace the bulb.

No.	Light	Capacity
1	Head Lights	35W / 35W
2	Stop Lights/Tail Lights	21W / 5W
3	Turn signal Lights	21W
4	Work Light/Back Lights	21W/5W
5	Instrument panel Light	3.4W/1.7W

* 3.4W(Illumination), 1.7W(Warning light)



STORAGE

TRACTOR STORAGE 7-2

REMOVING THE TRACTOR FROM STORAGE..... 7-3

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TRACTOR STORAGE

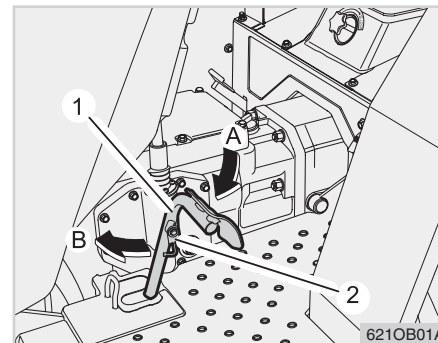
CAUTION

To avoid personal injury:

- Do not clean the machine with engine running.
- To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.
- When storing, remove the key from the key switch to avoid unauthorized persons from operating the tractor and getting injured.

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

1. Check the bolts and nuts for looseness, and tighten 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 for five minutes to circulate oil throughout the engine block and internal moving parts.
6. Pull the engine stop knob all the way out.
7. Keep the clutch disengaged. If the clutch is left engaged for a long period of time, the clutch plate may rust, making clutch disengagement impossible at the next operation.



(1) Clutch Pedal
(A) Depress

(2) Latch
(B) Hook to Lock

8. With all implements lowered to the ground, coat any exposed hydraulic cylinder piston rods with grease.
9. Remove the battery from the tractor. Store the battery following the battery storage procedures. (See "Direction for storage in every 100 hours in periodic service section.)



REMOVING THE TRACTOR FROM STORAGE

10. Keep the tractor in a dry place where the tractor is sheltered from rain. Cover the tractor.
11. Store the tractor indoors in a dry area that is protected from sunlight and excessive heat. If the tractor must be stored outdoors, cover it with a waterproof tarpaulin.

Jack the tractor up and place blocks under the front and rear axles so that all four tires are off the ground. Keep the tires out of direct sunlight and extreme heat.

IMPORTANT

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

1. Check the tire air pressure and inflate the tires if they are low.
2. Install the battery. Before installing the battery, be sure it is fully charged.
3. Check the fan belt tension.
4. Check all fluid levels (engine oil, transmission/hydraulic oil, engine coolant and any attached implements.)
5. Start the engine. Observe all gauges. If all gauges are functioning properly and reading normal, move the tractor outside. Once outside, park the tractor and let the engine idle for at least five minutes. Shut the engine off and walk around tractor and make a visual inspection looking for evidence of oil or water leaks.
6. With the engine fully warmed up, release the parking brake and test the brakes for proper adjustment as you move forward. Adjust the brakes if necessary.



MEMO





TROUBLESHOOTING

ENGINE TROUBLESHOOTING 8-2

TRACTOR TROUBLESHOOTING 8-4

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8



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) inlet 0.25 mm (0.010 in.) exhaust 0.30 mm (0.012 in.)
	• Engine oil become thick in cold weather and engine cranks slow.	• Change grade of oil according to the weather (temperature).



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 PTO 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. L3503 - Inlet 0.12 ± 0.02 mm (0.005 ± 0.001 in.), - Exhaust 0.12 ± 0.02 mm (0.005 ± 0.001 in.) LK45 - Inlet 0.25 ± 0.05 mm (0.010 ± 0.002 in.), - Exhaust 0.30 ± 0.05 mm (0.012 ± 0.002 in.)
	• 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.



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.
3. Brake is not operated properly	• Brake does not operate or only one brake pedal operates	• The pedal is incorrectly adjusted. Adjust the pedal play.
		• The brake pedal play is excessive. Adjust the play.
	• Brake pedal does not return properly	• The brake lining is worn or stuck. Have it replaced in a workshop.
		• The brake return spring is damaged. Replace it.
4. Steering wheel is not operated properly	• Steering wheel is heavy or vibrates	• Grease is insufficient on each mating surface. Remove rust and apply grease.
		• The toe-in is incorrect. Adjust it again.
		• The tire inflation pressure is different. Inflate the left and right tires into the specified pressure.
	• Steering wheel play is excessive	• Each connection is loose. Re-tighten each connection and replace the part.
		• 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.



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.



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 wirings are poorly contacted. Check and clean them.
• Work lamps do not come on	• The bulb is blown. Replace it.	
	• The ground and terminal wirings are poorly contacted. Check and clean them.	
7. Heater/air conditioner motor is faulty	• Fan speed is slow or no air is blown out	• The fan speed control switch and motor are faulty. Repair or replace them.
		• The air suction filter is clogged.
		• The wiring is short circuited. Check and repair it.
	• Fan speed cannot be controlled	• Replace the fan speed control switch.
		• The motor is faulty. Repair or replace it.



CAUSE		COUNTERMEASURES
8. A/C performance is poor	• Abnormal noise occurs	• The internal parts are not sufficiently lubricated. Add lubricant.
		• The belt is loose. Adjust the belt tension.
		• The bracket is loose. Tighten its bolts again.
		• Inner and outer components are damaged. Check and repair them.
	• Refrigerant and oil are leaked	• The sealing washer is broken. Replace it.
		• The tightening bolt is loose. Tighten it.
	• High temperature and low pressure occur	• The refrigerant is insufficient. Add it.
		• The compressor is faulty. Repair or replace it.
	• Compressor clutch does not operate	• The wiring is faulty. Check and replace it.
		• The clutch clearance is excessive. Adjust it.
		• The voltage is low. Replace the battery.
		• The internal part is malfunctioning. Replace it.
	• Clutch slips	• The voltage is low. Replace the battery.
		• The clutch disc is contaminated. Clean it.
		• The internal part is defective. Repair and clean it.

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



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